

ICTQual AB

Qualification Specification



Level 1 Diploma in Energy Awareness and Sustainability



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Level 1 Diploma in Energy Awareness and Sustainability

Contents

About ICTQual AB	2
Course Overview	2
Certification Framework	3
Entry Requirements	3
Qualification Structure.....	4
Centre Requirements	4
Support for Candidates	6
Assessment.....	6
Unit Descriptors.....	7

Qualification Specifications about

ICTQual Level 1 Diploma in Energy Awareness and Sustainability

About ICTQual AB

ICTQual AB Ltd. is a distinguished awarding body based in the United Kingdom, dedicated to fostering excellence in education, training, and skills development. Committed to global standards, ICTQual AB provides internationally recognized qualifications that empower individuals and organizations to thrive in an increasingly competitive world. Their offerings span diverse industries, including technical fields, health and safety, management, and more, ensuring relevance and adaptability to modern workforce needs.

ICTQual AB delivers high-quality educational solutions through a network of Approved Training Centres worldwide. Their robust curriculum and innovative teaching methodologies equip learners with practical knowledge and skills for personal and professional growth. With a mission to inspire lifelong learning and drive positive change, ICTQual AB continuously evolves its programs to stay ahead of industry trends and technological advancements.

Course Overview

The ICTQual Level 1 Diploma in Energy Awareness and Sustainability is a comprehensive and practical program designed for individuals seeking to understand the fundamentals of energy management and sustainability across various industries. This qualification provides learners with critical insights into energy sources, efficiency practices, carbon footprint reduction, and sustainable industrial applications.

The course integrates theoretical concepts with real-world applications, ensuring that students acquire the knowledge and skills necessary to promote energy conservation and sustainability in workplaces and communities. Through industry-specific case studies and practical energy assessments, learners will develop a hands-on approach to identifying and implementing energy-efficient solutions.

Structured as a short-term, intensive program, this qualification is ideal for beginners building foundational knowledge in energy sustainability or professionals enhancing their expertise in energy management. Graduates will be well-prepared for entry-level roles in energy auditing, sustainability consulting, and environmental management. Additionally, this certification serves as a pathway for further education and specialized qualifications in energy and sustainability fields.

Certification Framework

Qualification title	ICTQual Level 1 Diploma in Energy Awareness and Sustainability
Course ID	EM0007
Grading Type	Pass / Fail
Competency Evaluation	Coursework / Assignments / Verifiable Experience
Assessment	The assessment and verification process for ICTQual qualifications involves two key stages: Internal Assessment and Verification: <ul style="list-style-type: none">✓ Conducted by the staff at the Approved Training Centre (ATC) to ensure learners meet the required standards through continuous assessments.✓ Internal Quality Assurance (IQA) is carried out by the centre's IQA staff to validate the assessment process. External Quality Assurance: <ul style="list-style-type: none">✓ Managed by ICTQual AB verifiers, who periodically review the centre's assessment and IQA processes.✓ Verifies that assessments are conducted to the required standards and ensures consistency across centres

Entry Requirements

To enroll in the ICTQual Level 1 Diploma in Energy Awareness and Sustainability candidates must meet the following entry requirements:

- ✓ Applicants must be at least 16 years old.
- ✓ No formal qualifications are required; however, a basic understanding of energy, sustainability, or environmental science is recommended.
- ✓ Candidates must have an interest in energy awareness and sustainability and be willing to engage in both theoretical and practical learning.
- ✓ For non-native English speakers, a minimum English language proficiency level equivalent to CEFR A2 may be required to ensure full engagement with the course content.

Qualification Structure

This qualification comprises 10 mandatory units, Candidates must successfully complete all mandatory units to achieve the qualification.

Mandatory Units	
Unit Ref#	Unit Title
EM0007-01	Introduction to Energy & Sustainability
EM0007-02	Energy Sources & Industry Applications
EM0007-03	Energy Use in Key Industries (Practical Perspective)
EM0007-04	Basic Energy Efficiency Practices
EM0007-05	Introduction to Carbon Footprint & Environmental Impact
EM0007-06	Practical Energy Audits (Industry-Specific Case Studies)
EM0007-07	Sustainable Practices Across Industries
EM0007-08	Industry Compliance & Energy Regulations (Basic Awareness)
EM0007-09	Future Trends in Energy & Sustainability
EM0007-10	Final Practical Project

Centre Requirements

To ensure quality training delivery, centres must adhere to the following standards:

1. Centre Approval

- ✓ Centres must be formally approved by ICTQual AB before delivering this qualification.
- ✓ Approval involves a review of facilities, policies, and staff qualifications.

2. Qualified Staff

- ✓ **Tutors:** Must hold a minimum Level 1 qualification in a relevant field (e.g., Environmental Science, Energy Management) and have teaching experience.
- ✓ **Assessors:** Must possess an accredited assessor qualification and expertise in environmental or energy-related disciplines.
- ✓ **Internal Quality Assurers (IQAs):** Must be appropriately qualified and experienced to oversee assessment standards.

3. Learning Facilities

- ✓ **Classrooms:** Equipped with digital and multimedia resources for interactive learning.
- ✓ **Practical Training Areas:** Suitable environments for conducting experiments related to energy efficiency and sustainability.
- ✓ **Technology Access:** Centres must provide learners with access to computers, software for energy analysis, and online learning platforms.

4. Health and Safety Compliance

- ✓ All training facilities must comply with health and safety regulations.
- ✓ Centres must conduct regular risk assessments for practical activities.

5. Learning Resources

- ✓ **Course Materials:** Approved textbooks, study guides, and digital content must align with the qualification curriculum.
- ✓ **Assessment Tools:** Templates and guidelines must be provided to ensure standardized evaluation processes.
- ✓ **E-Learning Support:** Centres offering online or blended learning must implement an effective Learning Management System (LMS).

6. Assessment and Quality Assurance

- ✓ Centres must ensure assessments meet ICTQual's competency standards.
- ✓ Internal quality assurance (IQA) must be conducted to maintain consistency.
- ✓ External verifiers from ICTQual AB will review assessment and training practices.

7. Learner Support

- ✓ **Qualification Guidance:** Support for coursework and assignments.
- ✓ **Career Pathway Assistance:** Information on progression opportunities in sustainability and energy sectors.
- ✓ **Accessibility Support:** Accommodations for learners with disabilities or language barriers.

8. Policies and Compliance

Centres must uphold the following policies in accordance with ICTQual standards:

- ✓ Equality, Diversity, and Inclusion Policy.
- ✓ Health and Safety Policy.
- ✓ Safeguarding and Learner Protection Policy.
- ✓ Complaints and Appeals Procedure.
- ✓ Data Protection and Confidentiality Policy.

9. Reporting Requirements

- Centres must provide ICTQual with regular reports on learner registrations, progress, and certification outcomes.
- Assessment records must be maintained for external auditing and quality assurance purposes.

Support for Candidates

Centres should ensure that materials developed to support candidates:

- ✓ Facilitate tracking of achievements as candidate's progress through the learning outcomes and assessment criteria.
- ✓ Include information on how and where ICTQual's policies and procedures can be accessed.
- ✓ Provide mechanisms for Internal and External Quality Assurance staff to verify and authenticate evidence effectively.

This approach ensures transparency, supports candidates' learning journeys, and upholds quality assurance standards.

Assessment

This qualification is competence-based, requiring candidates to demonstrate proficiency as defined in the qualification units. The assessment evaluates the candidate's skills, knowledge, and understanding against the set standards. Key details include:

1. Assessment Process:

- ✓ Must be conducted by an experienced and qualified assessor.
- ✓ Candidates compile a portfolio of evidence that satisfies all learning outcomes and assessment criteria for each unit.

2. Types of Evidence:

- ✓ Observation reports by the assessor.
- ✓ Assignments, projects, or reports.
- ✓ Professional discussions.
- ✓ Witness testimonies.
- ✓ Candidate-produced work.
- ✓ Worksheets.
- ✓ Records of oral and written questioning.
- ✓ Recognition of Prior Learning (RPL).

3. Learning Outcomes and Assessment Criteria:

- ✓ **Learning Outcomes:** Define what candidates should know, understand, or accomplish upon completing the unit.
- ✓ **Assessment Criteria:** Detail the standards candidates must meet to demonstrate that the learning outcomes have been achieved.

This framework ensures rigorous and consistent evaluation of candidates' competence in line with the qualification's objectives.

Unit Descriptors

EM0007-01: Introduction to Energy & Sustainability

The aim of this unit is to provide learners with a foundational understanding of energy and sustainability. Learners will explore the importance of energy awareness in daily life and industries while analyzing global energy consumption trends. This unit will help them develop a critical perspective on energy use and its impact on sustainability.

Learning Outcome:

1. Understand the concept of energy and sustainability

Assessment Criteria:

- 1.1 Define energy and sustainability in simple terms.
- 1.2 Explain the relationship between energy use and environmental sustainability.
- 1.3 Identify key principles of sustainable energy practices.
- 1.4 Discuss the role of renewable and non-renewable energy sources in sustainability.
- 1.5 Provide examples of sustainable energy practices in daily life.
- 1.6 Analyze the impact of unsustainable energy use on the environment.
- 1.7 Compare and contrast energy sustainability in developed and developing countries.

2. Recognize the importance of energy awareness in daily life and industries.

- 2.1 Explain how energy awareness can reduce energy consumption in households.
- 2.2 Identify energy-saving practices in daily activities (e.g., lighting, heating, transportation).
- 2.3 Discuss the role of energy efficiency in reducing operational costs for industries.
- 2.4 Analyze case studies of industries that have successfully implemented energy-saving measures.
- 2.5 Evaluate the impact of energy awareness campaigns on public behavior.
- 2.6 Describe the importance of employee training in energy management for industries.
- 2.7 Propose ways to promote energy awareness in local communities.

3. Analyze global energy consumption trends.

- 3.1 Identify the primary sources of global energy consumption (e.g., fossil fuels, renewables).
- 3.2 Explain the factors driving changes in global energy demand.
- 3.3 Compare energy consumption patterns across different regions (e.g., Asia, Europe, North America).
- 3.4 Analyze the impact of population growth and urbanization on energy consumption.
- 3.5 Discuss the role of technology in shaping global energy trends.
- 3.6 Evaluate the implications of energy consumption trends on climate change.
- 3.7 Predict future energy consumption trends based on current data and policies.

4. Understand the role of energy in achieving sustainability goals.

- 4.1 Explain how energy efficiency contributes to achieving the United Nations Sustainable Development Goals (SDGs).
- 4.2 Identify key international agreements related to energy and sustainability (e.g., Paris Agreement).
- 4.3 Discuss the role of governments and organizations in promoting sustainable energy practices.
- 4.4 Analyze the challenges of transitioning to sustainable energy systems globally.
- 4.5 Evaluate the role of innovation and technology in advancing energy sustainability.
- 4.6 Propose strategies for integrating renewable energy into national energy policies.
- 4.7 Assess the economic, social, and environmental benefits of sustainable energy systems.

5. Apply knowledge of energy and sustainability to real-world scenarios.

- 5.1 Conduct a basic energy audit for a household or small business.
- 5.2 Develop a simple energy-saving plan for a specific industry (e.g., hospitality, manufacturing).
- 5.3 Analyze the energy consumption data of a case study and identify areas for improvement.
- 5.4 Create a presentation on the importance of energy awareness for a target audience.
- 5.5 Participate in a group discussion on the challenges of achieving global energy sustainability.
- 5.6 Design a poster or infographic highlighting key energy sustainability practices.
- 5.7 Write a report on how a specific country or region is addressing energy sustainability challenges.

EM0007-02: Energy Sources & Industry Applications

This unit aims to equip learners with knowledge of various energy sources, both renewable and non-renewable, and their applications across industries. By understanding the role of energy in agriculture, manufacturing, transportation, and construction, learners will be able to assess the sustainability and efficiency of different energy options.

Learning Outcome:

- 1. Understand the principles and applications of renewable energy sources in various industries.**

Assessment Criteria:

- 1.1 Explain the working principles of solar, wind, hydro, geothermal, and biomass energy systems.
 - 1.2 Identify the key components and technologies used in renewable energy systems.
 - 1.3 Analyze the role of renewable energy in agriculture (e.g., solar-powered irrigation, biomass for waste management).
 - 1.4 Evaluate the use of renewable energy in manufacturing (e.g., solar-powered factories, wind energy for machinery).
 - 1.5 Discuss the application of renewable energy in construction (e.g., geothermal heating, solar panels in building design).
 - 1.6 Compare the advantages and limitations of different renewable energy sources in specific industries.
 - 1.7 Propose a renewable energy solution for a given industry scenario.
- 2. Understand the principles and applications of non-renewable energy sources in various industries.**
 - 2.1 Explain the extraction, processing, and utilization of coal, oil, and natural gas.
 - 2.2 Identify the key technologies and infrastructure used in non-renewable energy systems.
 - 2.3 Analyze the role of non-renewable energy in transportation (e.g., fuel for vehicles, aviation, and shipping).
 - 2.4 Evaluate the use of non-renewable energy in mining (e.g., diesel-powered machinery, coal for steel production).
 - 2.5 Discuss the application of non-renewable energy in heavy industries (e.g., natural gas for cement production, oil for petrochemicals).
 - 2.6 Compare the advantages and limitations of different non-renewable energy sources in specific industries.
 - 2.7 Propose strategies to reduce reliance on non-

3. Analyze the environmental and economic impacts of renewable and non-renewable energy sources.

renewable energy in a given industry scenario.

- 3.1 Compare the carbon footprint of renewable and non-renewable energy sources.
- 3.2 Evaluate the environmental impacts of energy extraction, production, and consumption in different industries.
- 3.3 Discuss the economic benefits and challenges of transitioning to renewable energy in specific industries.
- 3.4 Analyze the long-term sustainability of non-renewable energy sources in global industries.
- 3.5 Assess the role of government policies and incentives in promoting renewable energy adoption.
- 3.6 Identify the social and economic implications of energy source choices in developing vs. developed countries.
- 3.7 Propose a balanced energy mix for an industry to minimize environmental and economic impacts.

4. Apply knowledge of energy sources to solve real-world industry problems.

- 4.1 Conduct an energy audit for a specific industry and identify areas for improvement.
- 4.2 Design a renewable energy system tailored to the needs of a specific industry (e.g., solar for agriculture, wind for manufacturing).
- 4.3 Develop a plan to integrate renewable energy into an industry currently reliant on non-renewable sources.
- 4.4 Evaluate the feasibility of transitioning to renewable energy in a given industry scenario.
- 4.5 Propose energy efficiency measures to reduce reliance on non-renewable energy in a specific industry.
- 4.6 Create a cost-benefit analysis for implementing renewable energy solutions in an industry.
- 4.7 Present a case study demonstrating the successful application of renewable energy in an industry

5. Understand the role of innovation and emerging technologies in energy sources and industry applications.

- 5.1 Identify emerging technologies in renewable energy (e.g., floating solar panels, advanced wind turbines).
- 5.2 Discuss the potential of hybrid energy systems (e.g., solar-wind, biomass-geothermal) in various industries.
- 5.3 Evaluate the role of energy storage technologies (e.g., batteries, hydrogen) in improving renewable energy adoption.

- 5.4 Analyze the impact of digitalization and smart technologies on energy management in industries.
- 5.5 Explore the potential of carbon capture and storage (CCS) in reducing emissions from non-renewable energy use.
- 5.6 Discuss the challenges and opportunities of integrating emerging energy technologies into existing industries.
- 5.7 Propose an innovative energy solution for a specific industry challenge.

EM0007-03: Energy Use in Key Industries (Practical Perspective)

The aim of this unit is to examine energy consumption across key industries from a practical standpoint. Learners will analyze real-world examples of energy optimization in manufacturing, logistics, construction, retail, hospitality, and agriculture. By evaluating energy-efficient practices, they will gain insights into industry-specific energy management strategies.

Learning Outcome:

Assessment Criteria:

- 1. Understand and apply energy optimization techniques in manufacturing and production industries.**

- 1.1 Explain the principles of lean manufacturing and their impact on energy efficiency.
- 1.2 Analyze case studies of factories that have successfully implemented energy-saving measures.
- 1.3 Demonstrate the use of automation tools to monitor and reduce energy consumption in production processes.
- 1.4 Develop a plan to optimize energy use in a hypothetical manufacturing setup.
- 1.5 Evaluate the cost-benefit analysis of energy-efficient technologies in manufacturing.
- 1.6 Identify common energy waste areas in production lines and propose solutions.
- 1.7 Present a report on the role of renewable energy in reducing the carbon footprint of manufacturing.

- 2. Evaluate energy efficiency strategies in transportation and logistics.**

- 2.1 Compare the energy efficiency of traditional fuel vehicles versus electric vehicles (EVs).
- 2.2 Analyze the impact of alternative fuels (e.g., biofuels, hydrogen) on reducing emissions in logistics.
- 2.3 Develop a route optimization plan to minimize fuel consumption in a delivery fleet.
- 2.4 Assess the feasibility of transitioning to electric vehicles for a logistics company.
- 2.5 Explain the role of telematics in improving fuel efficiency in transportation.
- 2.6 Create a case study on a company that has successfully reduced energy use in its logistics operations.
- 2.7 Propose strategies for integrating renewable energy into transportation systems.

- 3 Implement energy-efficient practices in construction and real estate.**

- 3.1 Explain the principles of designing energy-efficient buildings (e.g., passive design, insulation).
- 3.2 Analyze the role of smart lighting systems in reducing energy consumption in buildings.

- 3.3 Develop a plan to retrofit an existing building with energy-efficient technologies.
 - 3.4 Evaluate the benefits of using renewable energy sources (e.g., solar panels) in real estate projects.
 - 3.5 Assess the impact of green building certifications (e.g., LEED, BREEAM) on energy efficiency.
 - 3.6 Create a case study on a construction project that achieved significant energy savings.
 - 3.7 Propose strategies for integrating energy storage systems into building designs.
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- 4 Identify and apply energy-saving measures in retail and hospitality sectors.**
 - 4.1 Analyze energy consumption patterns in retail stores, hotels, and restaurants.
 - 4.2 Develop a plan to reduce energy costs in a hotel or restaurant using energy-efficient appliances.
 - 4.3 Explain the role of smart energy management systems in the hospitality industry.
 - 4.4 Evaluate the impact of LED lighting and HVAC optimization on energy savings in retail spaces.
 - 4.5 Create a case study on a retail chain that has successfully implemented energy-saving measures.
 - 4.6 Propose strategies for using renewable energy in hospitality operations (e.g., solar water heating).
 - 4.7 Assess the financial and environmental benefits of energy efficiency in the retail sector.
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- 5 Apply renewable energy and energy-efficient solutions in agriculture and food processing.**
 - 5.1 Explain the use of solar-powered irrigation systems in agriculture.
 - 5.2 Analyze the energy requirements of cold storage facilities and propose energy-efficient solutions.
 - 5.3 Develop a plan to integrate renewable energy (e.g., biogas, solar) into food processing operations.
 - 5.4 Evaluate the impact of energy-efficient machinery on reducing operational costs in agriculture.
 - 5.5 Create a case study on a farm that has successfully adopted renewable energy technologies.
 - 5.6 Propose strategies for reducing energy waste

- in food processing and packaging.
- 5.7 Assess the role of energy audits in improving energy efficiency in the agriculture sector.
6. **Demonstrate the ability to conduct energy audits and propose tailored solutions for key industries.**
- 6.1 Explain the steps involved in conducting an energy audit for a specific industry.
 - 6.2 Analyze energy audit reports and identify key areas for improvement.
 - 6.3 Develop an energy audit checklist tailored to a manufacturing, hospitality, or agricultural facility.
 - 6.4 Propose energy-saving measures based on audit findings for a hypothetical business.
 - 6.5 Evaluate the effectiveness of implemented energy-saving measures in a case study.
 - 6.6 Create a presentation on the role of energy audits in achieving sustainability goals.
 - 6.7 Assess the challenges and opportunities of implementing energy audits in different industries.

EM0007-04: Basic Energy Efficiency Practices

This unit aims to develop learners' understanding of energy efficiency principles and practices. They will explore techniques for reducing energy waste, optimizing appliance use, and implementing workplace energy-saving strategies. Through case studies, learners will gain practical knowledge of how industries can minimize energy consumption.

Learning Outcome:

1. Understand and apply techniques for reducing energy waste

Assessment Criteria:

- 1.1 Identify common sources of energy waste in residential, commercial, and industrial settings.
- 1.2 Demonstrate the ability to turn off unused equipment and systems to save energy.
- 1.3 Explain the benefits of efficient lighting systems (e.g., LED, motion sensors) and their impact on energy consumption.
- 1.4 Implement strategies to reduce heat loss in buildings (e.g., insulation, sealing gaps).
- 1.5 Analyze real-world examples of energy waste reduction in different industries.
- 1.6 Calculate potential energy savings from implementing waste reduction techniques.
- 1.7 Create a checklist for reducing energy waste in a specific workplace or home environment.

2. Evaluate and compare energy-efficient appliances and systems

- 2.1 Identify key features of energy-efficient appliances (e.g., ENERGY STAR ratings, inverter technology).
- 2.2 Compare energy consumption data of standard vs. energy-efficient appliances across industries.
- 2.3 Explain the cost-benefit analysis of investing in energy-efficient appliances.
- 2.4 Demonstrate the ability to select appropriate energy-efficient appliances for specific industry needs (e.g., HVAC systems in hotels, machinery in factories).
- 2.5 Analyze case studies of industries that have successfully transitioned to energy-efficient appliances.
- 2.6 Calculate the payback period for energy-efficient appliances in different scenarios.
- 2.7 Recommend energy-efficient appliances for a given workplace or household based on specific requirements.

3. Implement workplace energy-saving techniques

- 3.1 Identify energy-saving opportunities in different workplace environments (e.g., offices, hotels, factories).
- 3.2 Develop an energy-saving action plan tailored to a

- specific industry.
 - 3.3 Explain the role of employee behavior in achieving energy efficiency goals.
 - 3.4 Implement energy-saving techniques such as optimizing HVAC settings, using natural lighting, and scheduling equipment usage.
 - 3.5 Analyze case studies of successful energy-saving initiatives in offices, hotels, and factories.
 - 3.6 Monitor and record energy consumption before and after implementing energy-saving measures.
 - 3.7 Present a report on the effectiveness of implemented energy-saving techniques in a workplace setting.
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- 4. Analyze industry-specific case studies on energy efficiency**
 - 4.1 Identify energy efficiency challenges and solutions in specific industries (e.g., hospitality, manufacturing, health care).
 - 4.2 Compare energy efficiency practices across different industries.
 - 4.3 Explain the impact of energy efficiency measures on operational costs and environmental sustainability.
 - 4.4 Analyze data from industry case studies to evaluate the success of energy efficiency initiatives.
 - 4.5 Propose energy efficiency improvements for a given industry based on case study findings.
 - 4.6 Discuss the role of technology and innovation in enhancing energy efficiency in various industries.
 - 4.7 Present a case study analysis highlighting key lessons and best practices for energy efficiency.

EM0007-05: Introduction to Carbon Footprint & Environmental Impact

The aim of this unit is to provide learners with a fundamental understanding of carbon emissions and their environmental impact. Learners will explore how industries contribute to carbon footprints and examine practical methods for reducing emissions. Additionally, they will be introduced to the concept of carbon offsetting and its role in sustainability.

Learning Outcome:

Assessment Criteria:

1. Understand how industries contribute to carbon emissions

- 1.1 Identify the primary sources of carbon emissions in at least three different industries (e.g., manufacturing, transportation, energy production).
- 1.2 Explain the role of industrial processes (e.g., combustion, chemical reactions) in generating greenhouse gases.
- 1.3 Analyze data on carbon emissions from a specific industry and interpret trends over time.
- 1.4 Compare the carbon footprints of different industries and explain the factors contributing to variations.
- 1.5 Discuss the environmental and social impacts of high carbon emissions in industrial sectors.
- 1.6 Use case studies to illustrate how specific industries contribute to global carbon emissions.
- 1.7 Demonstrate an understanding of the relationship between energy consumption and carbon emissions in industrial settings.

2. Evaluate practical ways to reduce an industry's carbon footprint

- 2.1 Identify and explain at least five energy efficiency measures that can be implemented in industrial settings.
- 2.2 Propose renewable energy solutions (e.g., solar, wind, biomass) suitable for specific industries.
- 2.3 Develop a plan to reduce waste and improve resource efficiency in a chosen industry.
- 2.4 Assess the feasibility of implementing carbon reduction strategies in different industrial contexts.
- 2.5 Explain the role of technology (e.g., carbon capture, energy-efficient machinery) in reducing carbon emissions.
- 2.6 Use case studies to demonstrate successful carbon footprint reduction initiatives in industries.
- 2.7 Create a checklist of best practices for industries to minimize their environmental impact.

3. Demonstrate a basic understanding of carbon offsetting

- 3.1 Define carbon offsetting and explain its role in mitigating climate change.
- 3.2 Identify and describe at least three types of carbon offset projects (e.g., reforestation, renewable energy projects).
- 3.3 Evaluate the effectiveness of carbon offsetting as a strategy for industries to achieve net-zero emissions.
- 3.4 Calculate the carbon offset requirements for a hypothetical industry based on its emissions data.
- 3.5 Discuss the ethical and practical challenges associated with carbon offsetting.
- 3.6 Compare voluntary and mandatory carbon offset schemes and their applicability to different industries.
- 3.7 Use case studies to illustrate how industries have successfully implemented carbon offsetting initiatives

4. Analyze the environmental impact of industrial activities

- 4.1 Identify the key environmental impacts (e.g., air pollution, water usage, deforestation) associated with industrial activities.
- 4.2 Explain how carbon emissions contribute to broader environmental issues such as climate change and biodiversity loss.
- 4.3 Assess the lifecycle environmental impact of a product or process in a specific industry.
- 4.4 Use tools (e.g., carbon calculators, environmental impact assessments) to measure the environmental footprint of industrial activities.
- 4.5 Propose strategies to mitigate the environmental impact of industrial operations.
- 4.6 Discuss the role of regulations and policies in reducing the environmental impact of industries.
- 4.7 Present a report on the environmental impact of a chosen industry, including recommendations for improvement.

5. Develop a carbon reduction plan for an industry

- 5.1 Conduct a carbon audit for a hypothetical or real-world industry to identify emission sources.
- 5.2 Set realistic and measurable carbon reduction targets for an industry.
- 5.3 Propose a mix of strategies (e.g., energy efficiency, renewable energy, carbon offsetting) to achieve carbon reduction goals.
- 5.4 Create a timeline and action plan for implementing carbon reduction measures.
- 5.5 Identify potential barriers to implementing the plan and propose solutions to overcome them.
- 5.6 Calculate the projected reduction in carbon

- emissions resulting from the proposed plan.
- 5.7 Present the carbon reduction plan to stakeholders, justifying the chosen strategies and their expected outcomes.

EM0007-06: Practical Energy Audits (Industry-Specific Case Studies).

This unit aims to equip learners with the skills to conduct basic energy audits in workplaces or homes. They will learn to identify energy wastage in different industries and apply practical energy assessment techniques. By engaging in hands-on energy audits, learners will develop problem-solving skills for real-world energy efficiency improvements.

Learning Outcome:

Assessment Criteria:

1. Understand the principles and steps of conducting an energy audit.

- 1.1 Explain the purpose and benefits of energy audits in different settings (e.g., workplace, home, industry).
- 1.2 Describe the key steps involved in conducting an energy audit.
- 1.3 Identify the tools and equipment required for an energy audit (e.g., energy meters, thermal cameras).
- 1.4 Demonstrate the ability to collect and analyze energy consumption data.
- 1.5 Interpret energy audit findings to identify areas for improvement.
- 1.6 Compare energy audit methodologies for different types of buildings or industries.
- 1.7 Present a summary of energy audit results in a clear and structured format.

2. Identify energy wastage in various industries.

- 2.1 Analyze energy consumption patterns in specific industries (e.g., manufacturing, hospitality, healthcare).
- 2.2 Identify common sources of energy wastage in industrial processes (e.g., inefficient machinery, poor insulation).
- 2.3 Evaluate the impact of energy wastage on operational costs and environmental sustainability.
- 2.4 Propose practical solutions to reduce energy wastage in different industrial settings.
- 2.5 Compare energy efficiency practices across industries.
- 2.6 Use case studies to demonstrate the identification of energy wastage in real-world scenarios.
- 2.7 Create a report outlining energy wastage and potential savings for a specific industry.

3. Conduct a basic energy assessment for a small business or school.

- 3.1 Plan and prepare for an energy assessment, including setting objectives and gathering necessary tools.
- 3.2 Collect and record energy consumption data

- from a small business or school.
 - 3.3 Identify key areas of energy use and potential inefficiencies in the assessed location.
 - 3.4 Analyze energy data to calculate potential savings from efficiency measures.
 - 3.5 Recommend practical, cost-effective energy-saving measures for the assessed location.
 - 3.6 Present findings and recommendations to stakeholders in a clear and actionable manner.
 - 3.7 Reflect on the challenges and lessons learned during the energy assessment process.
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- 4. Apply industry-specific knowledge to energy audits.**
 - 4.1 Explain how energy audits differ across industries (e.g., manufacturing vs. hospitality).
 - 4.2 Identify industry-specific energy consumption patterns and wastage points.
 - 4.3 Use industry-specific case studies to demonstrate energy audit techniques.
 - 4.4 Develop tailored energy efficiency strategies for different industries.
 - 4.5 Evaluate the feasibility and impact of proposed energy-saving measures in specific industries.
 - 4.6 Collaborate with peers to simulate an energy audit for an industry-specific scenario.
 - 4.7 Create a detailed energy audit report for an industry-specific case study.
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- 5. Demonstrate practical skills in energy auditing tools and techniques.**
 - 5.1 Operate energy auditing tools (e.g., energy meters, thermal imaging cameras) effectively.
 - 5.2 Demonstrate the ability to measure and record energy usage accurately.
 - 5.3 Use software tools to analyze energy data and generate reports.
 - 5.4 Apply problem-solving skills to identify and address energy inefficiencies.
 - 5.5 Conduct a mock energy audit using provided tools and equipment.
 - 5.6 Evaluate the accuracy and reliability of energy audit data.
 - 5.7 Demonstrate safe and ethical practices during energy audits.

EM0007-07: Sustainable Practices Across Industries

The aim of this unit is to explore sustainable energy practices across different industries. Learners will examine green energy initiatives, smart energy solutions in transportation, and energy-efficient systems in offices and malls. This unit will enable them to assess and recommend sustainable energy solutions for various industrial applications.

Learning Outcome:

Assessment Criteria:

1. Understand and evaluate green energy initiatives in the manufacturing industry.

- 1.1 Explain the concept of green energy and its importance in reducing carbon emissions in manufacturing.
- 1.2 Identify key renewable energy technologies (e.g., solar, wind, biomass) applicable to manufacturing processes.
- 1.3 Analyze case studies of manufacturing companies that have successfully implemented green energy initiatives.
- 1.4 Assess the financial and environmental benefits of adopting green energy in manufacturing.
- 1.5 Develop a basic plan for integrating renewable energy into a manufacturing facility.
- 1.6 Evaluate challenges and solutions in transitioning to green energy in manufacturing.
- 1.7 Demonstrate knowledge of industry standards and certifications for sustainable manufacturing practices.

2. Analyze smart energy solutions in the transportation industry.

- 2.1 Explain the role of electric vehicles (EVs) and hybrid technologies in reducing fuel consumption and emissions.
- 2.2 Compare and contrast traditional fuel-saving techniques with modern smart energy solutions.
- 2.3 Evaluate the infrastructure requirements for implementing electric fleets in urban and rural areas.
- 2.4 Analyze case studies of companies or cities that have successfully adopted electric fleets and fuel-saving technologies.
- 2.5 Develop a cost-benefit analysis for transitioning to electric or hybrid fleets in a transportation business.
- 2.6 Identify challenges (e.g., charging infrastructure, battery disposal) and propose solutions for smart energy adoption in transportation.

3. Implement energy-efficient HVAC and lighting systems in commercial spaces.

2.7 Demonstrate understanding of government policies and incentives promoting smart energy solutions in transportation.

- 3.1 Explain the principles of energy-efficient HVAC systems and their impact on energy consumption.
- 3.2 Identify key features of energy-efficient lighting systems (e.g., LED, motion sensors, daylight harvesting).
- 3.3 Analyze case studies of offices and malls that have reduced energy consumption through HVAC and lighting upgrades.
- 3.4 Conduct an energy audit for a commercial space to identify inefficiencies in HVAC and lighting systems.
- 3.5 Develop a proposal for retrofitting a commercial space with energy-efficient HVAC and lighting systems.
- 3.6 Evaluate the return on investment (ROI) for implementing energy-efficient systems in commercial buildings.
- 3.7 Demonstrate knowledge of building codes and standards related to energy-efficient HVAC and lighting.

4. Promote sustainable water and energy use in agriculture.

- 4.1 Explain the importance of sustainable water and energy management in agricultural practices.
- 4.2 Identify renewable energy technologies (e.g., solar-powered irrigation, biogas) applicable to agriculture.
- 4.3 Analyze case studies of farms that have successfully implemented sustainable water and energy practices.
- 4.4 Assess the environmental and economic benefits of using renewable energy in agriculture.
- 4.5 Develop a plan for integrating solar-powered irrigation or other renewable energy systems into a farming operation.
- 4.6 Evaluate challenges (e.g., water scarcity, energy costs) and propose solutions for sustainable agriculture.
- 4.7 Demonstrate understanding of government programs and incentives supporting sustainable water and energy use in agriculture.

5. Evaluate the role of policy and innovation in driving sustainable practices across industries.

- 5.1 Explain the impact of government policies and regulations on promoting sustainable practices in manufacturing, transportation, commercial spaces, and agriculture.
- 5.2 Identify key global and local initiatives supporting green energy and sustainability.
- 5.3 Analyze the role of technological innovation in advancing sustainable practices across industries.
- 5.4 Evaluate the effectiveness of corporate sustainability programs in reducing carbon footprints.
- 5.5 Develop a report on the potential of emerging technologies (e.g., AI, IoT) in enhancing energy efficiency and sustainability.
- 5.6 Assess the role of public-private partnerships in driving sustainable energy solutions.
- 5.7 Demonstrate understanding of international agreements (e.g., Paris Agreement) and their influence on industry practices.

EM0007-08: Industry Compliance & Energy Regulations (Basic Awareness)

This unit aims to provide learners with an introduction to energy regulations and compliance requirements in key industries. By analyzing workplace safety laws and sustainable energy policies, learners will gain an understanding of legal frameworks governing energy conservation. Case studies will illustrate how companies implement regulatory measures.

Learning Outcome:

Assessment Criteria:

1. Understand energy regulations in key industries

- 1.1 Identify the key energy regulations applicable to industries such as manufacturing, construction, and healthcare.
- 1.2 Explain the purpose and scope of energy regulations in reducing carbon emissions and promoting sustainability.
- 1.3 Compare energy regulations across different regions or countries (e.g., EU, USA, Asia).
- 1.4 Describe the role of regulatory bodies (e.g., EPA, Ofgem) in enforcing energy compliance.
- 1.5 Analyze the impact of non-compliance with energy regulations on businesses.
- 1.6 Discuss recent updates or changes in energy regulations and their implications for industries.
- 1.7 Summarize the process of obtaining energy compliance certifications (e.g., ISO 50001).

2. Understand workplace safety and energy conservation laws

- 2.1 Identify workplace safety laws related to energy systems (e.g., electrical safety, handling of renewable energy equipment).
- 2.2 Explain the importance of energy conservation laws in reducing operational costs and environmental impact.
- 2.3 Describe the role of risk assessments in ensuring workplace safety during energy-related activities.
- 2.4 Analyze case studies of workplace accidents related to energy systems and the lessons learned.
- 2.5 Discuss the integration of energy conservation laws into workplace policies and procedures.
- 2.6 Evaluate the role of employee training in ensuring compliance with safety and conservation laws.
- 2.7 Develop a basic workplace safety checklist for energy-related operations.

3. Analyze real-world case studies of companies implementing sustainable energy policies

- 3.1 Identify companies that have successfully implemented sustainable energy policies and their motivations.

- 3.2 Explain the steps taken by these companies to align with energy regulations and sustainability goals.
 - 3.3 Analyze the challenges faced by companies during the implementation of sustainable energy policies.
 - 3.4 Evaluate the outcomes (e.g., cost savings, carbon footprint reduction) of these policies for the companies.
 - 3.5 Compare the approaches of different companies in similar industries to sustainable energy compliance.
 - 3.6 Discuss the role of innovation and technology in achieving compliance and sustainability.
 - 3.7 Propose recommendations for other companies to adopt similar sustainable energy policies.
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4. **Apply knowledge of energy regulations to practical scenarios**
 - 4.1 Interpret energy regulations and apply them to a given industry scenario.
 - 4.2 Develop a basic compliance plan for a company to meet energy regulations.
 - 4.3 Identify potential risks of non-compliance in a given scenario and suggest mitigation strategies.
 - 4.4 Create a workplace safety plan for a renewable energy installation project.
 - 4.5 Evaluate the effectiveness of a company's existing energy policies and suggest improvements.
 - 4.6 Conduct a mock energy audit to assess compliance with regulations.
 - 4.7 Present findings and recommendations for achieving compliance in a simulated business case.

EM0007-09: Future Trends in Energy & Sustainability

The aim of this unit is to familiarize learners with emerging trends in energy and sustainability. Topics such as smart grids, AI-driven energy management, and carbon-neutral businesses will be explored. Learners will analyze how industries are adapting to sustainable energy transitions and future technological advancements.

Learning Outcome:

Assessment Criteria:

1. Understand the concept and applications of smart grids in modern energy systems.

- 1.1 Explain the key components and functions of a smart grid.
- 1.2 Analyze the role of smart grids in improving energy efficiency and reliability.
- 1.3 Evaluate case studies of smart grid implementations in different industries (e.g., residential, commercial, industrial).
- 1.4 Demonstrate how smart grids integrate renewable energy sources into the power network.
- 1.5 Discuss the challenges and opportunities associated with smart grid adoption.
- 1.6 Propose a smart grid solution for a specific industry or community.
- 1.7 Assess the impact of smart grids on reducing carbon emissions and enhancing sustainability.

2. Explore the role of Artificial Intelligence (AI) in energy management.

- 2.1 Define AI and its applications in energy management systems.
- 2.2 Analyze how AI optimizes energy consumption in industrial and commercial settings.
- 2.3 Evaluate case studies of AI-driven energy management systems (e.g., predictive maintenance, demand forecasting).
- 2.4 Demonstrate the use of AI tools for monitoring and controlling energy usage.
- 2.5 Discuss the ethical and privacy concerns related to AI in energy management.
- 2.6 Propose an AI-based solution to improve energy efficiency in a specific industry.
- 2.7 Assess the potential of AI in achieving net-zero energy goals.

3. Understand the concept of carbon-neutral businesses and their role in sustainability.

- 3.1 Define carbon neutrality and its importance in combating climate change.
- 3.2 Analyze the strategies businesses use to achieve carbon neutrality (e.g., carbon offsetting, renewable energy adoption).
- 3.3 Evaluate case studies of carbon-neutral businesses across different industries.
- 3.4 Demonstrate how to calculate a business's carbon

- footprint.
- 3.5 Discuss the challenges businesses face in transitioning to carbon neutrality.
 - 3.6 Propose a carbon-neutral roadmap for a specific business or industry.
 - 3.7 Assess the impact of carbon-neutral practices on brand reputation and profitability.
- 4. Examine how industries are preparing for sustainable energy transitions.**
- 4.1 Identify the key drivers for sustainable energy transitions in various industries.
 - 4.2 Analyze the role of government policies and incentives in promoting energy transitions.
 - 4.3 Evaluate case studies of industries successfully transitioning to sustainable energy (e.g., automotive, manufacturing, agriculture).
 - 4.4 Demonstrate how industries are integrating renewable energy technologies into their operations.
 - 4.5 Discuss the economic and social impacts of sustainable energy transitions on industries.
 - 4.6 Propose a transition plan for an industry to adopt sustainable energy practices.
 - 4.7 Assess the long-term benefits of sustainable energy transitions for industries and the environment.
- 5. Explore emerging trends and innovations in energy and sustainability.**
- 5.1 Identify emerging trends in energy and sustainability (e.g., hydrogen energy, energy storage, circular economy).
 - 5.2 Analyze the potential of emerging technologies to transform energy systems.
 - 5.3 Evaluate case studies of innovative energy projects (e.g., green hydrogen, carbon capture, and storage).
 - 5.4 Demonstrate how emerging trends can address current energy challenges.
 - 5.5 Discuss the barriers to adopting emerging energy technologies.
 - 5.6 Propose an innovative solution to enhance sustainability in a specific industry.
 - 5.7 Assess the global impact of emerging trends on achieving sustainable development goals (SDGs).

This unit aims to consolidate learners' knowledge through a hands-on project. They will conduct a mini energy assessment of a local business, school, or home and propose industry-specific energy-saving solutions. By applying theoretical concepts to practical scenarios, learners will develop critical thinking and problem-solving skills in energy management.

Learning Outcome:

Assessment Criteria:

1. Conduct a Mini Energy Assessment

- 1.1 Identify and list all major energy-consuming systems (e.g., lighting, HVAC, appliances, machinery).
- 1.2 Collect and record energy usage data (e.g., electricity bills, meter readings, or energy monitoring tools).
- 1.3 Analyze energy consumption patterns and identify peak usage times.
- 1.4 Identify areas of energy waste or inefficiency (e.g., outdated equipment, poor insulation).
- 1.5 Use industry-specific tools (e.g., thermal cameras, power analyzers) to assess energy performance.
- 1.6 Document findings in a clear and structured report.
- 1.7 Present findings to stakeholders in a professional manner.

2. Identify Industry-Specific Energy Challenges

- 2.1 Research and describe the typical energy consumption patterns of the chosen industry.
- 2.2 Identify industry-specific energy challenges (e.g., high HVAC usage in hospitality, machinery in manufacturing).
- 2.3 Compare the assessed site's energy usage with industry benchmarks.
- 2.4 Highlight any regulatory or compliance requirements related to energy use in the industry.
- 2.5 Identify potential risks or barriers to implementing energy-saving measures in the industry.
- 2.6 Provide examples of best practices from similar industries.
- 2.7 Justify the relevance of identified challenges to the assessed site.

3. Propose Energy-Saving Solutions

- 3.1 Recommend at least three energy-saving measures (e.g., LED lighting, insulation, energy-efficient appliances).
- 3.2 Justify the proposed solutions with evidence (e.g., cost savings, energy savings, environmental benefits).
- 3.3 Tailor solutions to the specific needs and

constraints of the assessed site.

- 3.4 Include industry-specific solutions (e.g., energy-efficient machinery for manufacturing, smart thermostats for hospitality).
- 3.5 Estimate the potential energy and cost savings for each proposed solution.
- 3.6 Provide a timeline for implementing the proposed solutions.
- 3.7 Suggest sources of funding or incentives (e.g., government grants, rebates) to support implementation.

4. Develop an Implementation Plan

- 4.1 Outline the steps required to implement each energy-saving solution.
- 4.2 Identify the resources (e.g., tools, materials, personnel) needed for implementation.
- 4.3 Assign roles and responsibilities for implementing the solutions.
- 4.4 Develop a budget for the proposed solutions, including upfront costs and long-term savings.
- 4.5 Include a risk assessment and mitigation plan for potential challenges.
- 4.6 Provide a timeline with milestones for each phase of implementation.
- 4.7 Ensure the plan aligns with industry standards and regulations.

5. Evaluate the Impact of Proposed Solutions

- 5.1 Estimate the reduction in energy consumption for each proposed solution.
- 5.2 Calculate the potential cost savings over a specified period (e.g., 1 year, 5 years).
- 5.3 Assess the environmental impact (e.g., reduction in carbon emissions) of the proposed solutions.
- 5.4 Compare the proposed solutions with alternative options in terms of cost and effectiveness.
- 5.5 Identify potential challenges or limitations in achieving the estimated impact.
- 5.6 Suggest methods for monitoring and verifying the impact of implemented solutions.
- 5.7 Present the evaluation in a clear and concise format, using charts or graphs where appropriate

6. Communicate Findings and Recommendations

- 6.1 Prepare a professional report summarizing the energy assessment, findings, and recommendations.
- 6.2 Use visual aids (e.g., charts, graphs, diagrams) to enhance understanding of the data.
- 6.3 Deliver a clear and concise presentation to stakeholders.

- 6.4 Address potential questions or concerns from stakeholders during the presentation.
- 6.5 Tailor the communication style to the audience (e.g., technical details for engineers, simplified explanations for non-experts).
- 6.6 Highlight the benefits of the proposed solutions in terms of cost savings, energy efficiency, and environmental impact.
- 6.7 Provide a written summary of the presentation for stakeholders to reference.

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