iema
Institute of Environmental Management & Assessment

INSTITUTE OF ENVIRONMENTAL MANAGEMENT & ASSESSMENT

APPROVAL CRITERIA FOR CARBON, GHGs, FOOT PRINTING, ACCOUNTING and MANAGEMENT.

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CARBON, GHG's, FOOTPRINTING, ACCOUNTING and MANAGEMENT

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Contents

IEMA CPD Courses.

Carbon, GHGs, Foot Printing, Accounting and Management.

Introduction.

Climate change has been identified as one of the greatest challenges facing nations, governments, business and citizens over future decades (IPCC 2007). Past and current actions, including the release of carbon dioxide (CO2) and other greenhouse gases through human activities such as the burning of fossil fuels, emissions from chemical processes, and other sources of anthropogenic greenhouse gases, will have an effect on future global climate.

Carbon foot printing and GHG reporting is a complex topic where the knowledge and understanding is still expanding.

Within the Sustainable Development agenda, many organizations are seeking to give more focus to the need to address their use of energy and the impact of Climate Change. An important issue is that of understanding their present and future energy demand, identifying and quantifying their aspects of GHG emissions, either to improve performance and reduce risk, or meet stakeholder expectations on labelling etc. Recently there has been a plethora of guidance on managing GHGs, calculations and carbon footprint calculators.

IEMA has developed this syllabus to guide providers in delivering outcomes that enhance overall understanding and highlight appropriate actions and should reasonable match their client's requirements and expectations.

Course Content.

1. <u>All courses should ensure that delegates have a thorough understanding of Module 1 - Understanding Climate Change, GHGs, Carbon and Energy.</u>
2. Delegates should have an awareness of all the issues in Modules 2 – 6.
3. Providers may then develop understanding and skills on any of the topics in Modules 2 – 6, using a relevant standard where appropriate, depending on the required client outcomes having regard for the course length. For example:
   - A course may be titled "Carbon Accounting and Management for Organisations". The outcomes might be to provide an overview of Climate Change (Module 1) and carbon foot printing and enable a delegate to identify the direct GHG emissions of their organisation and then facilitate improved performance in the energy management of the organisation's buildings, transport, procurement etc providing specific guidance on achieving best practice.
   - A course may be titled "Carbon Foot printing – Assessing Goods and Services". The outcomes might be to provide an overview of Climate Change and carbon (Module 1), have the skills and ability to measure GHGs (Module 3) and apply PAS 2050 (Module 4) and produce a verifiable carbon footprint report for a product or service (Module 5).

4. Practical, worked examples, case studies and appropriate exercises are expected to be an integral aspect of any course.
5. Providers should develop a suitable method of participant assessment, that will allow the Course Provider to evaluate areas such as;
   - What the delegate thought about the course
   - How they can improve the course

Course Title.

In assessing and certifying a course, IEMA will expect the course title to accurately represent the specified outcomes, and the relevant depth of coverage.

Course Length.

The minimum course length is to be one day (introduction/overview). Additional days will be required according to depth and breadth of content delivered from Modules 2-6.

Course Syllabus.

Module 1. Understanding Climate Change, GHGs, Carbon and Energy

Key Learning Objectives

After completion of Module 1 a participant must be able to:

- Explain in general terms the mechanism of Climate Change,
- Identify the aspects and impacts – both globally & locally? - associated with Climate Change and anthropogenic causes
- Explain how the Earth Systems naturally cycle, store and release carbon and the nutrients linked to Climate Change.
- Explain the role of fossil fuels in disrupting natural cycles.
- Understand the critical role of land use change and forestry in releasing and sequestrating carbon.
- State the sources and value of UK energy, and understand futures supplies forecasts.
- Understand the economic and social drivers underlying energy use and how these might impact on the organisation.
- State the limitations of GHG reporting as an indicator of sustainability.

A participant will have the skills and abilities to:
1.1 Explain the mechanism of global warming, radiative forcing – global warming potential (GWP), regulators, history, Climate Change, global dimming and the threats arising.
1.2 Outline the alternative case that Climate Change is happening naturally and be able to objectively counter the key points.
1.3 Explain the challenges, opportunities and benefits of addressing Climate Change.

1.4 State the main GHGs and their GWP (Kyoto), explain the role of other GHGs and impacts.
1.5 Identify the anthropogenic activities/processes/sources that trigger each of the GHG emissions.
1.6 Outline the natural sources of GHGs.
1.7 Explain the Carbon & Nitrogen Cycles, carbon sinks, terrestrial and marine cycling/exchanges of carbon.
1.8 Explain the role of land use change and forestry (LULUCF) in releasing and sequestrating carbon.
1.9 Outline the disruption in the biosphere arising from fossil fuel use (3 media, emissions COx, SOx, NOx, particulates, and impact of acidification in the biosphere).
1.10 State the means of

- Sequestrating CO2
- Storing CO2

and the benefits and limitations of each method (biological processes - biomass, soil, biochar, and CCS)
1.11 Identify energy sources, supply, outline future projections, and demand.
1.12 Outline the strategic issues relating to "peak oil", energy security, and alternative energy supplies.
1.13 Outline the opportunities and limitations relating to renewables. (solar (3), wind, wave, tidal, hydro, biomass/bio fuels, geothermal etc)
1.14 Outline the issues relating to energy use and misuse – efficiency v effectiveness, Socio and economic barriers and drivers to energy efficiency and reduction.
1.15 Outline the limitations of GHG reporting v sustainability.

Module 2. Climate Change - the Drivers.

Key Learning Objectives

After completion of this module a participant should be able to:

- Appreciate the international and national policy background to carbon accounting and management.

A participant should be aware of the key protocols, directives that drive UK Energy and GHG Policy, and outline the UK responses, targets and performance to include:
2.1 UNFCCC - Kyoto Protocol.
2.2 Overview – Mechanisms –Emissions trading –Joint Implementation – Clean Development Mechanism Targets. Global. EU. UK. UK CO2 target.
2.3 EU ETS (Directive 2003/87/EC)
2.4 UK Performance
2.5 UK Energy and Climate Change Policy
2.6 Instruments – Corporate Reduction Commitment - Climate Change Levy (CCL) – Climate Change Agreements (CCA) – Enhanced Capital Allowances (ECA) – Renewables Obligations (RO) – Labelling etc
2.7 Climate Change Act 2008.

- Objectives
- Targets
- GHG reporting requirements

Module 3. Measurement

Key Learning Objectives

After completion of this module a participant should be able to:

- Understand the mechanisms of a greenhouse gas/carbon footprint quantification process
- Have the knowledge to implement data gathering processes to capture data for the quantification of greenhouse gas emissions
- Understand the application of carbon dioxide emission factors and carbon dioxide equivalence

A participant will have the skills and ability to outline the stages in defining the units, gathering data for implementing a carbon accounting standard.

3.1 Be aware of the Units of Carbon and Carbon Dioxide equivalence.
3.2 Outline the process of LCA, and identification of Direct and Indirect impacts (primary/secondary effects)
3.3 Outline System efficiencies. Energy return on energy investment.
3.4 Appreciate the need to Scope, select system boundaries, and baselines.
3.5 Be aware of GHGs and timescales.
3.6 Be aware of Energy - Fuel types – calorific value. Conversion factors energy/GHG. Electricity. CHP.
3.7 Outline the issues relating to embodied/embedded energy and GHGs of materials.
3.8 Transport – conversion factors & presenting a complete picture
3.9 Be aware of the emission issues relating to LULUCF, Soil Carbon, Aviation, Shipping – treatments - defaults
3.10 Know the Data sources DUKES, Defra, Environment Agency, etc
3.11 Explain the difference between reduction, efficiency, offsetting

Module 4. Methodologies

Key Learning Objectives

After completion of this module a participant should be able to:

- Appreciate the various international standards and protocols for GHG emissions quantification

A participant will have the skills and ability to identify the relevant standard for an

organisation/application and take initial steps towards its adoption.

4.1 Outline purpose & benefits, coverage, scope and applicability of the following carbon accounting standards:
4.2 WRI /WBCSD Greenhouse Gas Protocol – Corporate Standard, Project, Supply Chain, LULUCF
4.3 ISO 14064 - Structure 3 parts (Organisation, Projects, Validation)
4.4 PAS 2050. Specification. Guide.
4.5 Carbon Trust Standard, NEF etc

Module 5. Application

Key Learning Objectives

After completion of this module a participant should be able to:

- Understand how to calculate and aggregate GHG emissions, and the stages required to produce a credible carbon footprint

A participant will have the skills and ability to outline the stages in implementing a carbon accounting standard.

5.1 Outline the issues to be addressed in implementing the key stages of a carbon accounting standard as follows:

5.2 Determination of Objectives. Identification of audience. Selection of Product/Service and appropriate method. Engaging with Stakeholders.

5.3 Identification of the Process and its life cycle, Boundaries, Functional unit, Baseline year (organisation) or Baseline scenario (project), Data collection and Calculations.

5.4 Checking, validating, verifying, and reporting of data.

5.5 Communicating and reporting

Module 6. Performance Management.

Key Learning Objectives

After completion of this module a participant should be able to

- Outline issues, tools and methodologies for delivering energy and GHG reductions for an organisation

A participant will have the skills and ability to outline the management issues and generally recognised tools and techniques for furthering energy and GHG reductions and delivering performance improvements:

6.1 Understand the importance of achieving senior and operational management commitment to energy and GHG reduction.

6.2 Explain the economic and environmental benefits of reducing energy and resource use, improved efficiency.

6.3 Explain the importance of the integration of energy and GHG reduction objectives and targets into existing Policies and organisational management practices (including EMS, Procurement & staff engagement)

6.4 Outline the practical opportunities for energy reduction and carbon management through the application of relevant techniques and technologies.