

HR919-10 Environmental Accounting

22/23

Department

Life Sciences

Level

Taught Postgraduate Level

Module leader

Rob Lillywhite

Credit value

10

Module duration

2 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

The requirement to provide food and other land-based products for an expanding global population, while protecting the resources (land, water, air) that underpin its production, has forced governments and policymakers to address the environmental impact of land use. The conflicting need to provide food, fibre and fuel can result in unintended consequences in terms of resource use, greenhouse gas emissions and pollution. These problems, and possible solutions, are best understood by quantifying the environmental impact of production.

[Module web page](#)

Module aims

The module examines existing methods of environmental accounting, for example, life cycle assessment, ecological footprinting and carbon footprinting and demonstrates how they can be used to quantify, differentiate and interpret the environmental impacts of agricultural and other land based systems.

The module examines possible solutions and the role of sustainability in the agri-food system.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

- Examine the environmental burdens of land use (greenhouse gases, pesticides etc).
Examine competing land use issues
- Examine and critique the different environmental accounting methods
 - o Life cycle assessment (LCA)
 - o Footprinting (ecological, water and carbon)
- Appreciate, identify and discuss relevant methodologies
 - o Understand how different approaches can be used in different circumstances
 - o Methods for using data inventories in LCA and footprinting
 - o Construct a life cycle assessment
 - o Construct a carbon and water footprint
- The presentation and interpretation of LCA and footprint results
 - o Compare results from food, fibre and fuel production systems
 - o Make recommendations on suitable approaches
- Special case. For example, Use all the different approaches to examine one crop production system to reveal how the approach may influence the results and interpretation. Understand how different stakeholder groups use different approaches to promote their own point of view; conventional versus organic production, or the use of advanced breeding technologies.
- Examples will be presented, often as case studies for class discussion. Examples will be topical, but might include evaluation of the case for increasing temperate arable farming for bioenergy crops; the balance of tropical forestry against soy bean farming; discussion of sources of soil pollution and the effects on soil and water quality; the impacts and values of monitoring, regulation and mitigation.
- Examine how the environmental burdens associated with land use can be reduced

Learning outcomes

By the end of the module, students should be able to:

- To understand the context in which environmental accounting operates, i.e. the requirement to reduce resource use and negative environmental impacts.
- To develop, analyse and communicate solutions to limit society's resource use and environmental burden.
- To appreciate the complexity and trade-offs that exist between societal requirements, resource use, environmental impact and sustainable development.
- To describe, produce and evaluate different forms of environmental accounts.
- To develop the skills to critically interpret the accounts of others.

Indicative reading list

- Wackernagel & Rees. (1996). Our ecological footprint – Reducing human impact on the earth. New Society Publishers, Gabriola, BC, Canada.
- Chambers, Simmons & Wackernagel. (2000). Sharing nature's interest – Ecological footprints as an indicator of sustainability. Earthscan, London.

- Hecht. (2005). National environmental accounting: Bridging the gap between ecology and economy. Resources for the Future,
- Hendrickson. (2006). Environmental Life Cycle Assessment of Goods and Services: An Input-output Approach. John Hopkins University Press

[View reading list on Talis Aspire](#)

Subject specific skills

To understand the context in which environmental accounting operates, i.e. the requirement to reduce resource use and negative environmental impacts

To appreciate the complexity and trade-offs that exist between societal requirements, resource use, environmental impact and sustainable development

To describe, produce and evaluate different forms of environmental accounts

Transferable skills

To develop the skills to critically interpret the accounts of others

To develop, analyse and communicate solutions to limit society's resource use and environmental burden

Study

Study time

| Type | Required |
|-------------------|-----------------------------|
| Lectures | 13 sessions of 1 hour (17%) |
| Tutorials | 6 sessions of 1 hour (8%) |
| Practical classes | 6 sessions of 1 hour (8%) |
| Private study | 50 hours (67%) |
| Total | 75 hours |

Private study description

Independent research.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A3

| | Weighting | Study time | Eligible for self-certification |
|--|-----------|------------|---------------------------------|
| Assessment component | | | |
| Short Answer In-Module Test 50 questions. | 100% | 25 hours | No |

Reassessment component

Resubmission essay
Exact title given differs depending on course. Essay topic to cover learning outcomes.

Yes (extension)

Feedback on assessment

In-module test. Marking is undertaken by a single assessor. Scripts are moderated by a second assessor.

Availability

Courses

This module is Core for:

- Year 1 of THRA-D4A1 Postgraduate Taught Environmental Bioscience in a Changing Climate
- THRA-D4A3 Postgraduate Taught Food Security
 - Year 1 of D4A3 Food Security
 - Year 1 of D4A3 Food Security