

**Assessment of the efficiency of the water
footprinting approach and of the
agricultural products and foodstuff
labelling and certification schemes**

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**Final Report:
Part B – Recommendations for Certification**

**Prepared for
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Assessment of the efficiency of the water footprinting approach and of the agricultural products and foodstuff labelling and certification schemes

Draft Final Report – Part B: Recommendations for Certification

prepared for

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1. INTRODUCTION

1.1 Objectives

This report forms the second of two documents produced for this study. It relates to the work required under Task 2 and in particular:

- Task 2C: Specification of recommendations on certification schemes regarding the efficient use of water resources.

This report begins by providing a detailed review of existing certification and labelling schemes, standards and initiatives that are focused on water, sustainability or the environment more generally. It then considers the requirements of a certification scheme for water. A series of questions are asked to help determine how a certification scheme would need to be designed, what and who it would need to cover and how performance should be assessed. Section 4 of this report then sets out what could be considered as the minimum criteria that should be included in existing certification schemes to increase their emphasis on sustainable water use. Additional criteria for water use that go beyond these minimum requirements are then suggested.

2. REVIEW OF CERTIFICATION AND LABELLING SCHEMES, STANDARDS AND INITIATIVES

2.1 Overview

This Section provides a review of certification and labelling schemes, standards and initiatives. The description of certification schemes includes those that operate within a supply chain (business-to-business or B2B schemes) and those that are aimed at communicating product qualities to consumers (business-to-consumers or B2C schemes). Labelling schemes that require third party certification are also included, as are standards and initiatives focused on water, sustainability or the environment more generally.

The schemes reviewed are:

- Global and international schemes:
 - Alliance for Water Stewardship (AWS);
 - Cradle-to-Cradle®;
 - Global Good Agricultural Practice (GLOBALG.A.P.);
 - Global Reporting Initiative;
 - ISO (development of a water footprinting standard);
 - Linking Environment And Farming Marque (LEAF);
 - People4Earth;
 - UTZ; and
 - Water Stewardship Initiative (responsible for establishing the AWS).
- European and national schemes:
 - European Water Stewardship Program (regional initiative for AWS);
 - EU Eco-label;
 - Umweltzeichen (Austria);
 - Raisio's H2O Label (Finland);
 - Milieukeur (Netherlands);
 - Grenelle de l'Environnement (France);
 - NF Environnement (France);
 - Nordic Swan Eco-label (Nordic countries);
 - KRAV (Sweden);
 - Red Tractor Assurance (UK); and
 - Waterwise Marque (UK).
- non-European and national schemes:
 - Smart Approved WaterMark (Australia);
 - Eco-benefits programme/Cleaner Production (Uganda);
 - Earthsure Environmental Product Declaration eco-label (United States);
 - Green Restaurant Association (United States and Canada);
 - Green Seal (United States); and
 - Water Brief for Business SEE Initiative (United States).

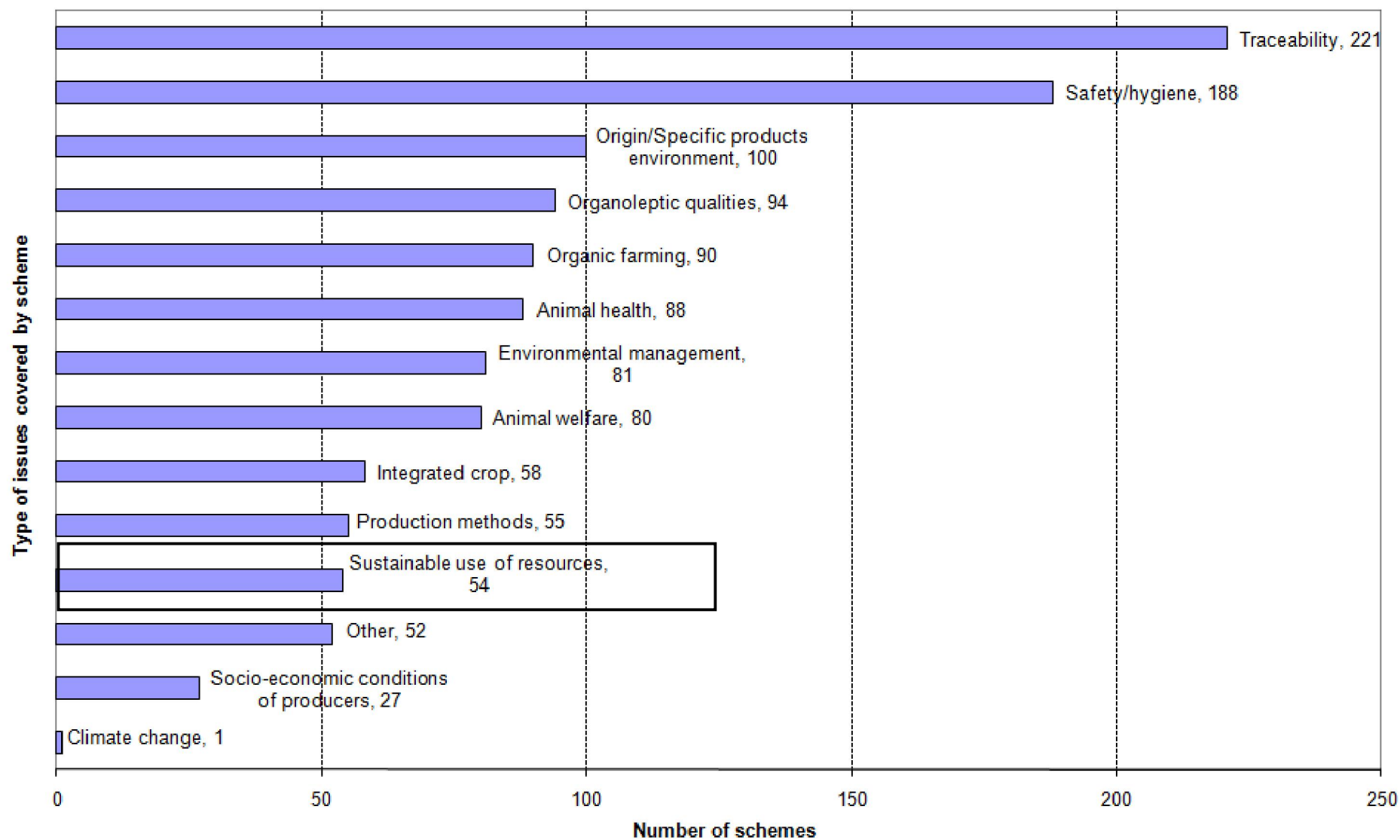


Figure 1: Overview of issues addressed by certification schemes in the agri-label database.

2.2 The Commission's Inventory of Labelling Schemes

The Commission's inventory of agricultural labels comprises 441 agriculture-related labelling schemes, which cover a wide range of issues (Areté, 2010). Figure 1 provides an overview of the types of issues covered by existing schemes. As can be seen, although none of the schemes in the agri-label database relate directly to water footprints, there are 54 schemes that relate to the sustainable use of resources. Not all of these 54 schemes include sustainable use of water resources so the most relevant schemes from the Agri-label database, together with schemes from outside the EU, are reviewed below.

2.3 Global and International Schemes

2.3.1 The Alliance for Water Stewardship

In 2008, the Water Stewardship Initiative (WSI) joined US The Nature Conservancy (TNC) and Pacific Institute to establish the Alliance for Water Stewardship. The aim of creating the Alliance for Water Stewardship (AWS) was to build multi-stakeholder consensus around best practice and to promote the responsible use of fresh water, in terms of its social and environmental sustainability. The AWS builds upon work carried out by the WSI (and the European Water Partnership) and a model has been created to provide the guiding framework for the water stewardship standard(s) that are to be developed (AWS, 2010). The AWS will be developed with stakeholder support to develop performance standards that can be used globally to certify water users who voluntarily practice sustainable water management (AWS, 2011).

Although the AWS standards are still in formation, the intentions of the proposed scheme suggest it will place higher water stewardship requirements on its members than any of the other schemes reviewed during this study. AWS (2010) identifies four areas of focus for the water stewardship standards:

- improved water flow regime;
- improved water quality;
- protected habitats; and
- equitable governance.

The scheme being developed by the AWS is aimed at companies that use significant quantities of water in their operations (including agricultural producers, beverage manufacturers, food processors and other food producers) and water utilities (AWS, 2010).

Considerable effort is currently being put into the AWS Water Stewardship Standards Program. This has the mission '*to promote the use of freshwater in a way that is socially beneficial, environmentally responsible and economically sustainable*'. To achieve this the AWS aims to build '*a new voluntary global water stewardship program that will recognise and reward responsible corporations, farming operations, cities and other water users for their sustainable use of water resources*' (AWS, 2011). Although it is a voluntary (rather than regulatory) scheme, the AWS

believe that the shortcomings of voluntary approaches can be overcome by having performance-based programmes with third party oversight and which include sanctions or rewards (Steelman and Rivera, 2006 in AWS, 2011).

Key aspects of the standards are likely to be the use of tools to measure the water footprint of interested business and setting standards that reduce the size and impact of the footprint. The AWS anticipates that companies wishing to be certified will need to measure their direct and indirect water footprints along with physical and chemical characteristics of the watersheds in which they operate.

The framework for certification is likely to be based on scoring systems with sector specific variants for the standards that need to be met, as well as geographic variants for the standards associated with both direct and indirect impacts. The intention is to develop certification based on a mix of process and outcome based standards:

- process based: applicants will have to submit an operation plan that addresses water availability, cumulative uses of water in the watershed and the implications of climate change;
- outcome based: the standard will be an assessment of the degree to which river flow has been altered by the applicant's water use and the cumulative alteration caused by all water users in the watershed. The outcome based standard(s) could focus on limiting the degree to which natural river flow conditions have been altered or require that water levels be maintained within targeted sustainability boundaries.

It is also intended that the standards will be harmonised with other standards such as ISO 144001 (Environmental Management System) and the Global Reporting Initiative. In this regard, it is intended that they will be *'designed to align, mutually reinforce and, so far as possible, avoid duplication with complementary standards or approaches such as sectorally-specific "best management practice" standards, water footprinting standards, environmental reporting standards, management system standards, etc.'* (AWS, 2011).

The AWS intends to include social justice among its standards. This includes objectives to (Hepworth, 2010):

- increase the proportion of people who have reliable access to safe drinking water and adequate sanitation;
- ensure that water needed by poorer communities to meet their livelihood requirements is protected and distributed appropriately;
- promote recognition and respect for the rights of indigenous peoples to the lands, territories and resources which they have traditionally owned, occupied or otherwise used;
- promote advances in addressing climate-related changes to water availability and associated consequences for water users; and
- help prevent and resolve disputes and conflict over access to water between competing uses.

In terms of business risks, AWS (2010) identifies three main types that will need to be covered in the water stewardship standards (as a minimum):

- physical risks: direct risks related to a lack of water of adequate quality;
- reputational risks: due to competition for clean water, conflicts with other water users and impacts on ecosystem health; and
- regulatory risks: linked to physical and reputational pressure, deterioration in ecological conditions, and increased competition leading to more regulation, price increases and loss of operating licences.

The AWS has indicated that the standards should be designed so that their implementation does not disadvantage small and medium-sized enterprises, or disproportionately advantage businesses in more developed countries (AWS, 2011).

The Water Roundtable process which is overseeing the development of the standards is to be completed, with this including submission of its outputs to the AWS Board, by 31 December 2012. Work will then start on developing the certification bodies required to assess compliance with the scheme, with this expected to take three years to develop fully.

The AWS, and the Water Roundtable, are being developed with stakeholder support to develop performance standards that can be used globally to certify water users who voluntarily practice sustainable water management (AWS, 2011). The stakeholders include businesses, water service providers, civil society organisations and public sector agencies (AWS, 2010a). The approach will follow the ISEAL Code of Good Practice for Setting Social and Environmental Standards. The AWS plan to undertake a detailed stakeholder engagement process to produce the standards. Stakeholders can be involved during development of the standards (Kaledin, 2010):

- through participation by providing comments on documents and process design as documents are posted onto the AWS website;
- through participation in a working group;
- by becoming a stakeholder in a regional initiative (for example, by becoming a Member, Strategic Partner, Project Partner or Institutional Partner to the European Water Partnership);
- by joining the Water Roundtable Global Steering Committee; or
- through financial support to the AWS, regional initiatives or the Water Roundtable.

Standards will be piloted through Regional Engagement teams with targeted groups in key regions and sectors. A Global Steering Committee is then expected to strengthen the international standards based on feedback and regional issues and needs. The International Standard Development Committee (ISDC) will decide which standards will be included (and excluded) in the AWS International Water Stewardship Standard. This Committee will be comprised of 15 members from three different stakeholder groups (business and water service providers; civil/society organisations; and public sector agencies) and eight geographic regions (AWS, 2011a).

Standards under the AWS Water Stewardship Program will be owned by the AWS but certification and accreditation is to be outsourced to independent organisations (Murphy, 2010). The certification program is ultimately to be administered by an independent non-profit organization (with a global spread of offices) that will oversee the auditing of applications.

One of the aims of the AWS Model for Change is to enable businesses and water service providers participating in the water stewardship scheme to benefit from support and encouragement from civil society organisations and public sector agencies. This is expected to deliver market opportunities for participants, encouraging higher levels of uptake and, in turn, to greater social, environmental and policy benefits (AWS, 2010a). The scheme is also expected to help those applying the standards to obtain an improved understanding of water risks and opportunities. This understanding will help them to identify, evaluate, manage and reduce their physical water-related business risks and costs by improving operational efficiency and cumulative impacts, including along supply chains (AWS, 2010b).

The proposed AWS Water Stewardship Standard(s) are expected to be based around basic water stewardship standard requirements, with additional ‘going beyond basic’ requirements (AWS, 2010c). It is anticipated that this will provide benefits such as (based on AWS, 2010b):

- greater awareness, responsibility and action on water management issues, including cumulative impacts at the watershed level by primary water users;
- being able to use baseline information to measure and compare the impacts of water users;
- bolstering regulatory efforts to achieve specific social and environmental goals;
- using the standards to complement and support for the achievement of water-related policy objectives and compliance with legal and regulatory regimes;
- collaborative action between public service agencies, businesses and water service providers;
- reducing the costs of addressing conflicting interests; and
- helping to align stakeholders around consensus-driven watershed-level goals.

The overall structure of the AWS Water Stewardship Standards Program is expected to (AWS, 2011):

- be able to support an evaluation of the performance of a site or organisation;
- take account of and aim to address the impacts of an organisation’s direct and indirect water use;
- be global in geographic scope but aim to address impacts at a watershed level;
- support and not diminish water regulation and policy;
- be able to deliver benefits to water users (businesses), civil society organisations and public sector agencies;
- involve a collaboration of organisations focused on water stewardship and environmental protection;
- align with, mutually reinforce and (as far as possible) avoid duplication with complementary standards, water footprinting standards, environmental reporting standards, etc.;

- not disadvantage small and medium-sized enterprises, or enterprises in least developed countries;
- conformance to be objectively verified and tangible outcomes in water management practice and performance can be independently identified;
- standards are still being developed, but the development process is intended to be transparent and inclusive; and
- specify the combination of process and/or performance requirements considered optimal to achieve the specified objectives.

2.3.2 Cradle to Cradle

Cradle to Cradle® is a certification scheme, run by McDonough Braungart Design Chemistry (MBDC), based on life cycle assessment. It is a multi-attribute eco-label that considers a product's safety to humans as well as the environment (MBDC, 2011).

There are four levels of product certification: Basic, Silver, Gold and Platinum. In order to be certified at a certain level, a product must meet the minimum criteria for that level in all five criteria categories. Each product has its materials and manufacturing processes assessed under five categories:

- material health (consideration is given to the toxicity ratings of chemicals used);
- material reutilisation (covers the amount of recycled content);
- renewable energy use (for the highest certification level, platinum, all energy used at the final assembly stage must be renewably powered);
- water stewardship (company needs to implement innovative water conservation and discharge measures to gain the highest certification level); and
- social responsibility (company has to operate with due regard to health, safety and the rights of people and the planet).

At the current time it does not appear that there are any food products *per se* covered by the scheme (although food packaging materials are). It does, though, cover products that end up being used in the agricultural sector. For example, a textiles company originally used dyes, which resulted in product scraps being classified as toxic waste. Changing the dyes meant that the textile scraps could be shredded into a felt-like sheet and subsequently sold to farmers (and gardeners) for mulch.

The scheme does take the water stewardship practices of a company into account as part of the wider assessment process. This includes reference to use of the World Business Council for Sustainable Design (WBCSD) Global Water Tool or the Global Environmental Management Initiative (GEMI) Design for Sustainability tool (see also the Part A Report, Section 4). At Gold level, it is necessary to complete a water audit, with reference again made to the GEMI Internet site for use of the tools available there (e.g. 'Collecting the Drops' Water Sustainability Planner).

Although the scheme appears to be designed for US companies (given the reliance on US EPA information and US classifications) there are two companies identified as certification partners in Germany and Spain.

Table 1 summarises the criteria used to assess water stewardship; the criteria are not repeated in their entirety.

Table 1: Cradle to Cradle Certification Criteria for Water Stewardship
<p>Water Stewardship Guidelines: Applicant shall create or adopt a set of principles or guidelines that illustrate the facility's strategies for protecting and preserving the quality and supply of water resources. Examples include the World Business Council for Sustainable Development – Water Principles.</p> <p>Water Audit: Applicant shall perform a water audit for the manufacturing facility. This means that all water flows associated with product manufacture/assembly are fully characterised. This includes characterising water source(s), water usage, and quality of water discharges.</p> <p>i) Water Source(s)</p> <ul style="list-style-type: none">• Types of water sources the facility(ies) relies upon.• Whether the facility is located within or adjacent to a RAMSAR listed wetland• Description of the watershed within which the facility operates, including whether the facility withdraws or discharges effluent to a water source that is listed as impaired by the EPA, state or local authorities? What are the water concerns for the area and how does the facility impact these concerns? Ask the local or regional water authority whether the facility is considered a major or minor user of water relative to other users in the watershed region.• In view of the global nature of this certification program, specific methodological adaptations in other countries might be applicable. <p>ii) Water Usage</p> <ul style="list-style-type: none">• How much water is used per unit of product produced?• What measures have been taken to conserve water resources? <p>iii) Water Discharges</p> <ul style="list-style-type: none">• Meets or exceeds water quality regulations <p>Innovative Conservation Measures (higher level certification): Applicant shall demonstrate that the facility responsible for final assembly/manufacture has implemented and provided documentation of conservation measures taken in last five years to reduce consumption of domestic and sanitary water.</p> <p>Innovative Discharge Measures (higher level certification): Applicant shall demonstrate that the facility responsible for final assembly/manufacture has implemented innovative projects for reclaiming, recycling or preserving the quality of water resources. Document any novel methods or processes employed for improving the quality of water resources (e.g., constructed wetlands, green roofs, and composting toilets).</p> <p>Source: http://www.mbdc.com/detail.aspx?linkid=2&sublink=9 <i>Cradle to Cradle is a trademarked product.</i></p>

The application process involves checking the criteria then completing an applicant survey and material appendix for review by MBDC. The costs of obtaining certification under this scheme are dependent on the complexity of the product and how much it costs to assess the product. The prices range from \$5,500 to \$75,000 (from MBDC Internet site). For example, the costs associated with the required material assessment of a product are given as follows:

- for 1-10 product components, €500 per component;

- for 11-25 product components, €400 per component; or
- for 25+ product components, €300 per component.

There would then be further costs for process evaluation (given as €4,000), the MBDC audit (given as €1,500) and for the end certificate (given as €500) (information from MBDC Internet site). The certification can be renewed provided that all criteria are still met.

The benefits of certification are reported as differentiation of products from those of companies' competitors. It also ensures that the toxicity hazards of all product ingredients have been expertly assessed.

2.3.3 GlobalG.A.P

The GLOBALG.A.P, formerly known as EUREPG.A.P (G.A.P. standing for Good Agricultural Practices), is a private sector organisation that sets voluntary standards for certification of agricultural (and aquaculture) production processes. Applied around the world, the scheme aims to minimise the negative impacts of farming, decrease chemical inputs and ensure responsible attitudes to worker health and safety and animal welfare. The scheme is a business to business (B2B) one, covering farm inputs to when the product reaches the farm gate. The label is not visible to consumers (there are strict guidelines with regard to what containers the label can be placed on to avoid it being seen by consumers). The scheme is open to producers all over the world, with the aim of establishing **one** global standard, covering different product applications. The GLOBALG.A.P has a three year revision cycle to ensure that technical and market developments are taken into account in the standard.

Certification is based on a checklist of requirements, which have to be met. For example, for fruit and vegetables, several categories are assessed including soil management, substrates, pre-harvest, harvesting and produce handling. There are also general criteria, which include a section on environment and conservation. The criteria for crops include several related to water including whether there is a water management plan to optimise water usage and reduce waste. To maintain standards, annual and unannounced inspections are carried out.

The scheme consists of a set of normative documents, which set out the schemes regulations, controls and compliance criteria. Users of other standards can apply for benchmarking, where an independent process is used to determine whether or not such standards show equivalence. Where existing farm assurance systems or existing national or regional schemes are assessed as being equivalent to GLOBALG.A.P, they can be recognised under the scheme. This avoids farmers having to undergo several different audits for different schemes. As a result, certification under the scheme is carried out by more than 100 independent and accredited certification bodies in more than 100 countries.

The following standards are equivalent to GLOBALG.A.P certification since they have completed the benchmarking process (note that all standards refer to fruit and vegetables unless otherwise stated) (from GLOBALG.A.P Internet site):

- Amagap (Austria);
- Assured produce (UK);
- Banagap (France);
- Certified Natural Meat Program (cattle and sheep in Uruguay);
- Chilegap (Chile);
- Chinagap standard and certification rule (combinable crops);
- Florverde (flower and ornamentals in Colombia);
- IP SIGILL GAP (Sweden);
- Mexico G.A.P. (Mexico);
- MPS-GAP (Netherlands);
- Naturane (Spain);
- Natursense (Spain);
- New Zealand GAP (New Zealand);
- QS-GAP (Germany);
- SwissGAP Horticultur (flower and ornamentals in Switzerland); and
- UNE 155000 (Spain).

The Integrated Farm Assurance (IFA) scheme is the most relevant and provides the starting point or a reference for some other agricultural and food production certification schemes (such as the LEAF Marque described in Section A1.3).

The Control Points and Compliance Criteria acting as the basis for certification are divided into ‘scopes’, e.g. types of production and then ‘modules’, e.g. tea. In relation to water, criteria cover the environment and conservation, with this including requirements for a plan setting out the management of wildlife and for conservation, which should include knowledge of water supplies. There are also some water specific requirements in the Crop base module criteria, e.g. ‘*Can the producer justify the methods of irrigation used in light of water conservation?*’

The scheme is supported by a range of brand names and retailers from across the EU. It is therefore important with respect to its global coverage.

Annual registration fees are levied (these vary by product type). There are also certificate licence fees, as well as fees for certification body training. For example, fees may include:

- producer registration fee:
 - for covered crops these can range from €5 to €500 per year, depending on size of operations (prices above for operations of <0.5 ha and ≥500 ha respectively);
 - for non-covered crops, the range is from €2 (<0.5ha) to €500 (≥10,000ha);
 - for livestock producers of meat, these range from €5 to €1,000 per year, based on size of operations (prices above for operations producing <30 and ≥ 5,000 tons of meat respectively); or
 - for producers of fresh milk, the range is from €5 to €1,000 also (<70 to ≥10,000 tons).

- annual membership costs:
 - retailer membership fees range from between €5,000 and €9,000, depending on annual turnover (\leq €5 billion to $>$ €15 billion); or
 - for individual suppliers membership fees are €1,550 per year.

There are also certificate licence fees that apply to each certificate issued. These vary depending on whether they are applied to Integrated Farm Assurance (IFA) and Plant Propagation Material (PPM) or Compound Feed Manufacturers and Chain of Custody. For example, for IFA and PPM, there is a fee of €25 for each certificate issued according to GLOBALG.A.P General Regulations Option.

2.3.4 Global Reporting Initiative

The Global Reporting Initiative (GRI) is a ‘network-based’ organisation, which has pioneered a sustainability reporting framework. The framework sets out principles and performance indicators that can be used to measure and report economic, environmental and social performance. The framework is based around the Sustainability Reporting Guidelines (version 3 of the guidelines, also known as G3 Guidelines, were published in 2006).

One of the aims of the GRI is to develop a standardised approach to sustainability reporting and information. With regard to water, the G3 Guidelines include reporting requirements for total withdrawal by source, water sources significantly affected by withdrawal of water and percentage and total volume of water recycled.

2.3.5 ISO

The International Organization for Standardization (ISO) is considering the development of a water footprint standard (both inventory and impact based) that will deliver principles, requirements and guidelines for water footprinting of products, processes and organizations. It is hoped that this work will provide internationally harmonised metrics for water footprints (thus avoiding unjustified claims) and will fill an important gap in its environmental management portfolio that would allow freshwater use to be considered in Life Cycle Analysis (LCA) studies. The standard would *inter alia*:

- deliver guidelines for a water footprint metric;
- define how the different types of water sources should be considered and how local environmental and socio-economic conditions should be treated; and
- address the communication issues linked to water footprinting (based on ISO 14020 series on environmental labels and declarations).

The ISO standard on ‘*water footprint requirements and guidelines*’ (ISO 14046), aims to be consistent and coherent with ISO 14000 series, and with environmental metrics such as the carbon footprint, LCA (ISO 14040 and ISO 14044), GHG accounting (ISO 14064-1,-2,-3 and ISO 14067-1), and with environmental communication (ISO 14020, ISO 14067-2). Working Group 8 has recently proposed a scope for the standard as specifying ‘*requirements and guidelines to assess and report water footprints based on LCA*’. It is not being proposed that the standard

should offer a methodology for calculating offsets or compensation, but it would address positive aspects, such as the benefits of decreasing the water footprint (Raimbault and Humbert, 2011).

Work on the standard began in 2009 and was due to last three years, with an end date in June to September 2011. Consultation with the ISO, however, has indicated that a standard is not likely to be established until 2013 to 2014.

2.3.6 LEAF (Linking Environment And Farming) Marque

The LEAF Marque is a practice-based B2B and B2C assurance scheme aimed at promoting the principles of integrated farm management (IFM) and, through this, demonstrating commitment to meeting high standards of food production. It takes as its starting point the GLOBALG.A.P scheme but then includes additional and more demanding criteria. It is aimed at farmers with the objective of enabling them to demonstrate their environmental credentials, but can also be joined by supply chain businesses. For example, food processing companies and retailers can join LEAF Marque to enable the LEAF logo to appear on consumer products. In addition to formal certification, LEAF provides an auditing tool to help farmers implement IFM.

The Marque is based on a list of questions about how a farmer manages their farming activities. For each question there is a 'control point' (or threshold) that the farm must meet in order to qualify for LEAF Marque certification. The questions are to be applied across a whole farm. The standard is also to be accompanied by the completion of a LEAF Audit, which helps generate action plans, policies and review dates and contains additional reference material. Certification bodies carry out an independently verified inspection each year. There are 18 certification bodies that have completed LEAF Marque training (note that these operate in different countries, providing coverage for all growing regions).

To gain the LEAF Marque, farmers must be able to demonstrate care for the environment by:

- using crop rotations to keep the soil in good condition;
- carefully managing hedgerows to provide a variety of habitats and food for wildlife;
- using pesticides and fertilisers only when absolutely necessary;
- leaving a buffer strip as a wildlife corridor between crops and nearby watercourses;
- recycling on-farm waste and conserving energy;
- assessing the environmental impact of their farming practices and constantly striving to improve them for the benefit of the environment;
- minimising pollution;
- improving water efficiency and quality; and
- increasing biodiversity: wider field margins, tree planting.

Table 2 sets out the water-related criteria from the LEAF Global Standard assessment guidelines. These include both criteria directly related to water use and efficiency, and criteria covering indirect impacts on water, e.g. the impact of pollution on water quality.

Table 2: LEAF Marque Criteria Related Directly to Water Use and Efficiency	
Criteria	Description
1.4 Do you have a farm environmental policy?	The key to achieving sound environmental performance is about communicating to everyone involved in your business what you are trying to achieve. You must have a farm environmental policy that is communicated to all staff. It must be documented and forms the basis for the farm's objectives and targets. The policy must include references to : 3. optimising energy and water efficiency; Etc.....
1.5 Have you a documented plan setting out your short and long-term environmental objectives?	You must develop from your Environmental Policy a documented plan that sets out your short-term and long-term (1 to 5 years) environmental objectives. The plan must include aspects such as energy, water, pollution and other aspects of the business that impact on the environment. It must also include non-food enterprises that impact on the business.
1.6 As part of the plan, are targets set to improve and enhance the environment?	You must set targets, with a timescale, to improve and enhance the environment. This must include a link to your Whole Farm Conservation Plan, but must also include targets on water, soil, air and energy use. The targets must be measurable and linked to monitoring when appropriate.
4.2 Have you completed a waste minimisation process on the farm?	All farms produce some waste and by-products. Some such as slurries and manure's can be recycled on the farm. Others need to be taken off-farm for disposal. By minimising the quantities of waste and by-products produced, you can save money on storage, handling, and disposal. You should identify waste minimisation opportunities, which could include:- • Reducing the quantity of rainfall entering slurry/dirty water storage systems; • Re-using some water collected from roofs etc; Etc.
5.4 Have you completed a water management plan for the whole farm?	All businesses must complete a plan to show that they have considered the issue of water use and discharge. You must complete a water management plan. This must identify where water is being used and plan how water use can be minimised and the environmental impact of water use mitigated. Justification of water use and sources must be included. Also consider the following: - leakage; - collection and re-use of some waters such as clean roof water or cooling water; and - irrigation scheduling. Water abstracted from streams, rivers, canals or boreholes, etc. may require a licence from your regulatory organisation. Within the plan also consider discharges to the environment.
5.5 Do you review your water management plan annually?	You must review your water management plan every year to take account of changes to your farming practices and new ideas in resource management.
5.6 When purchasing new equipment or establishing new buildings do you look for water	When purchasing new equipment or establishing new buildings you should look for the best available and appropriate technology. This should include water and energy efficient

Table 2: LEAF Marque Criteria Related Directly to Water Use and Efficiency	
Criteria	Description
and energy efficient products / designs?	products / designs, you should justify your decision based on economic and environmental criteria, without forgetting animal welfare issues, etc.
5.7 (New 2009) Do you measure the water efficiency of your enterprises /crops?	You should measure water efficiency of all irrigated water i.e. water that is either taken from the mains or from the environment and directly irrigated or stored for later use. A recording system should be implemented so that efficiency can be measured by litres (or m ³) of water per tonne of output. Data should be uploaded to LEAF via the data portal on the LEAF website.
5.8 (New 2009) Do you take account and analyse your water efficiency measurements, justify any change and plan to implement practices to improve water efficiency?	You should review your water efficiency measurements annually to justify any changes and consider any agronomic or technological practices that may help to improve water efficiency. See LEAF Audit for information on IFM and water. Develop an action plan as part of the LEAF Audit or water management plan. See additional notes for information on different practices that will improve water efficiency.

These criteria form a fairly comprehensive basis for water stewardship assessment, although with seemingly more focus on water pollution and quality than use and efficiency. However, this would appear to be recognised by LEAF, given its inclusion in 2009 of new criteria relating to water efficiency, and the fact that this is an area that LEAF is currently researching further. LEAF is also active in helping farmers achieve these criteria, producing guides on how best to develop practices such as water management (e.g. in their *Waterwise on the farm* publication produced by the UK Environment Agency *et al*; 2007).

The focus on water quality rather than water use is noted in a University of Hertfordshire report by Lewis *et al* (2010) which carried out a comparison of the environmental criteria included in UK farm assurance schemes. The Leaf Marque scored high for water quality but low for water resources in a rough assessment of scheme prioritisation of issues, as judged by prevalence (%) in their criteria. Lewis *et al* (2010) also demonstrates though that in comparison to other schemes, the LEAF Marque has a relatively high focus on water use, even if it is given lesser prominence than other issues such as biodiversity.

The LEAF Marque currently covers around 400 registered farms in the UK, totalling 119,000ha. However, LEAF's website also indicates that there are certified farms abroad, in both EU and non-EU countries, although details as to the number and size of these could not be found. Guidance on the standards is produced in five languages: English, Spanish, French, Italian and Portuguese. The technical advisory committee checks and updates standards regularly and is made up of representatives from various bodies. For example, in the UK, these include the Environment Agency, RSPB, and the Department for Environment, Food and Rural Affairs (Defra).

In terms of its take up in the UK, the Marque has a fairly small share of the market in certification schemes compared to some of the other assurance schemes assessed by Lewis *et al* (2010): Tesco's 'Nature's Choice' scheme has 15,400 farms registered,

with 9,350 certified, covering a total of 507,530ha; while GLOBALG.A.P¹ covers over 80,000 producers in over 80 countries. However, Lewis *et al* (2010) concluded that the assurance scheme developed by LEAF was '*leading the way in the environmental labelling of food*'.

Despite its currently low take-up, LEAF indicates that it is growing, with it now having a long list of corporate partners including major supermarket retailers such as ASDA, Marks & Spencer, Sainsbury's and Waitrose, major food brand manufacturers such as Birds Eye, Heinz, Quaker Oats, Nestlé and McCain and support from agro-chemical manufacturers Dow AgroSciences and BASF. The LEAF 2010 Annual Report also notes that the scheme saw a '*62% increase during 2010 in farmers becoming LEAF certified both in the UK and overseas*'. It goes on to state that '*some 39 countries in Europe, Middle East, South and North America are now adopting LEAF's IFM practices*'. The website also presents reports of LEAF-certified agricultural producers in sub-Saharan Africa. There is also evidence of the LEAF Marque being promoted by partners. For example, the 2010 Annual Report also mentions that the retailer Waitrose '*encouraged all their overseas suppliers to become LEAF Marque certified*'.

Customers can trace LEAF Marque products back to the farm on which they were produced by entering the LEAF Tracks number from the packet into the LEAF website.

According to the UK LEAF Marque Internet site, there are significant cost-savings for farmers by participating in the scheme (66% of LEAF farmers agreed that they had benefitted financially through participation). On average, it is estimated that farms saved £14,000 (or £40 per hectare) by adopting LEAF and IFM principles. A report by Mills *et al* (2010) found that LEAF Marque membership and the use of audits had resulted in savings of £14,000 per year following installation of a water reservoir, £700 per year from installation of tanks to recycle water and installation of more efficient irrigation systems, leading to savings from water consumption. In addition, 40% of those interviewed attributed benefits to water quality and water quantity to LEAF membership.

A total of 54% of respondents felt that LEAF membership had helped them deal with environmental regulations, mainly from completing the LEAF audit. The LEAF audit was considered to be 'ahead of the game' so when new regulations were introduced, members had already had time to acclimatise or had already met the new requirements. The report also notes that LEAF is in negotiation with the UK Environment Agency to agree the principle of a 'lighter touch' for inspection of LEAF members, in recognition of their commitment to achieving high environmental standards.

The LEAF Marque is applicable to the labelling and certification of fruit, vegetable and feed material products sold and marketed anywhere in the world. Farmers applying for the Marque are independently inspected and certified by third party

¹ Although GLOBALG.A.P has a much greater take-up and thus global coverage, the 'evaluation of water' is far less developed.

certification bodies on an annual basis. The standard need to be applied in conjunction with the LEAF audit. Farmers wishing to obtain the LEAF Marque have to contact one of the authorised certification bodies. These bodies are able to carry out the independent inspection required. One such certification body states on its application form that subscription to the scheme costs £277 per year (around €310).

For farms, the annual fees are as follows:

- 121 hectares or less: £72;
- 121-405 hectares: £144; and
- 405+ hectares: £216.

For corporate membership to the scheme, the fees are as follows:

- 50 employees or less: £696;
- 50-100 employees: £1,032;
- 100-200 employees: £2,070; and
- 200+ employees: £2,400.

For other membership types, annual fees are:

- college: £210;
- advisers and consultants: £72;
- Green box (tool for recording information on farm performance): £60; and
- LEAF Marque buyers and sellers: £180.

2.3.7 People4Earth

People4Earth is a non-profit organisation and associate member of ISEAL, which aims to ‘*improve people’s well-being and the earth’s sustainability*’. It is active in 144 countries spread across the world. People4Earth has developed a Sustainability Standard, consisting of 108 criteria, which it describes as being applicable to all products. The Sustainability Standard applies to the product itself, production and packaging, and covers the whole life cycle of the product (so includes use, disposal or reuse of products).

People4Earth also provides a life cycle-based Sustainability Accounting and Management System, to measure, improve and communicate the sustainability of companies and their products. The criteria relating to water fall under two categories: ‘air, water and soil pollution’ and ‘conservation of natural resources’.

Under the ‘air, water and soil pollution’ category, the criteria require:

- the identification and description of any emissions or effluents, both by the certified company and in their supply chain;
- that plans are implemented to reduce pollution and progress towards these targets is made;

- that best practice is maintained throughout the product chain; and
- that pollution reduction goals are embedded in the product development process.

The brief for conservation of natural resources states that *'natural resources shall be viewed by business as capital and treated with equal care as human, financial and physical capital'*. The criteria relate to:

- inventory analysis and evaluation of impacts across the life cycle and state that that long life-span will be a feature of the product;
- that materials and water used are measured and disclosed;
- that plans to reduce water use are implemented and progress made towards targets (both in the company and supply chain); and
- that the company moves towards renewable or recycled materials.

People4Earth is currently working on a consumer label that will give a sustainability score on products, with the aim of providing consumers with point-of-purchase information on the sustainability of a product.

2.3.8 UTZ

UTZ is an independent non-profit NGO and member of the ISEAL alliance dedicated to *'creating an open and transparent marketplace for socially and environmentally responsible goods'*. UTZ certification covers coffee, cocoa and tea (and has contributed to palm oil assessment). In terms of scale, the scheme covers over 400,000 tons of certified coffee from 23 producing countries, over 40,000 tons of cocoa from 5 countries and 7,000 tons of tea from 4 countries. Its activities are largely (exclusively, depending on definition) based in developing countries.

UTZ has developed a web-based Traceability System, which enables trade between UTZ certified producers and buyers to be traced. UTZ has developed the UTZ Code of Conduct, which follows a risk-based approach as well as a principle of continuous development. The full requirements of the scheme cover a broad range of sustainability objectives, from environmental to social and economic. Annual inspections are undertaken to ensure certification compliance.

2.4 European and National Schemes

2.4.1 EU Eco-label

Description of the Scheme

The EU Eco-label is a voluntary scheme started in 1992, with certified products allowed to display the logo. Products and services covered include cleaning products, appliances, paper products, textiles, home and garden products, lubricants and tourist accommodation. The scheme is open to all products and services *except* food, drink, pharmaceuticals and medical devices (although consideration is currently being given to the inclusion of food and feed products).

Independent organisations are responsible for assessing applications and awarding the EU Eco-label at the national level. To do this, competent bodies are designated to operate the scheme within Member States. These bodies review and assess applications from companies who wish to use the eco-label on their products and services. For certain products, factory inspections and compliance tests may be carried out to ensure compliance with the criteria. The criteria used vary depending on the product/service.

Product criteria are developed as follows:

1. draft criteria are developed;
2. The European Commission adopt measures to establish the criteria following consultation with the EU Eco-labelling Board (EUEB);
3. measures are published in the Official Journal of the European Union (OJEU); and
4. new criteria are published in the OJEU.

The EU Eco-label does not refer to water specifically, although criteria for individual product types do take water consumption during production into account. AEAT (2004) indicate that there are benefits for the environment (i.e. resource savings, discharge savings, etc.) when eco-labelled products are purchased in preference to standard products.

The costs of gaining certification include an application fee (to cover the cost of processing the application) and an annual fee (for the use of the Eco-label). There are reductions in fees of 20% for applicants who have already received certification under EMAS and ISO 14001. Application fees range from €200 to €1200 (with a maximum of €600 for SMEs and applicants from developing countries, a maximum of €350 for micro-enterprises). Annual fees for use of the Eco-label are €1500 (with a maximum of €750 for SMEs and applicants from developing countries, and a maximum of €350 for micro-enterprises).

2.4.2 European Water Partnership

The European Water Partnership (EWP) Water Stewardship Program Standard aims to comprise social and economic aspects, as well as criteria for sustainable water management. This approach, which feeds into the AWS through the EWP's role as regional initiative for Europe, is based on qualitative and straightforward quantitative measures; these may include measures of water consumption but not necessarily the water footprint

The Water Stewardship Program Standard is part of the EWP's Communication of Sustainable Water Management project. It aims to advance water stewardship by:

- raising awareness;
- creating the basis for an objective reporting, certification and communication scheme for water stewardship; and
- providing guidance to European water users and defining the principles and criteria of sustainable water management.

Additionally, it aims to comprise social and economic aspects, be valid on a global scale (though focused on Europe) and be valid across sectors.

The standard has not yet been fully developed but pilot studies were carried out in 2010 with BASF SE, Coca Cola and Holmen Paper. The standard includes criteria for sustainable water management and a table of potential indicators used to evaluate and certify compliance criteria.

The criteria are based on four core principles:

1. Achieve and maintain sustainable water abstraction in terms of water quantity (monitoring of abstraction and evaluation of impacts);
2. Ensure the achievement and maintenance of good status in terms of chemical quality and biological elements (effluents must be recorded and evaluated, with characterisation; the destinations affected by water discharges must be identified and described and potentially related issues of local water quality must be highlighted);
3. Restore and preserve water-cycle related high conservation value ecosystems (impact on changes in water status and linked ecological processes must be evaluated);
4. Achieve equitable and transparent water governance (this entails compliance with all legal requirements; long term evaluation; water management must be planned, implemented and monitored; water efficiency must be improved; best practice must be implemented; transparency, awareness raising and continuing improvement must be ensured).

EWP (2010) illustrates possible criteria for the European Water Stewardship Standard Principles. For example, the criteria for Principle 1 are:

- 1.1: quantification and monitoring of total and net water abstraction by source. This includes abstraction from: self-supply sources; alternative water resources; and water supply by a public water system; and
- 1.2: description and evaluation of the impact of water abstraction appropriate to the scale, intensity of water management and uniqueness of sensitive or significantly affected sources.

EWP (2010) also identifies indicators proposed for monitoring Water Stewardship/Sustainable Water Management.

2.4.3 Umweltzeichen

The Austrian Eco-label Umweltzeichen was established in 1990. It provides information on the environmental impact of production, use and waste disposal of products. The awarding body is the Austrian National Ministry of Environment. The label covers a range of sectors including the building sector, households, traffic,

cleaning and sanitary sector, renewable energy and energy efficiency, office equipment and gardening. It also applies to tourism, schools and training facilities.

There are detailed guidelines (with 'should' and 'must' criteria) for each product/service category. These guidelines are developed by an advisory board, which consists of representatives from government authorities, NGOs, subject experts and businesses/employees. The criteria included within the scheme refer to economical use of resources including water.

The development of the criteria by a board of mixed stakeholders helps to ensure that they are practical, and also that suggested criteria are produced independently of suppliers/vendors.

There are fees for having the eco-label; these depend on different factors according to what is being labelled, including product sales/turnover (for goods), number of beds (for tourism businesses), type of school (for school labelling), etc. The fees for products are dependent on annual sales of products and turnover, with fees ranging from €350 to €2,200. The initial application fee is 25% of the annual usage fee. For tourism services, fees are dependent on the number of bed spaces, with businesses with 20 bed spaces paying €350 annually whilst those with 200 or more beds pay €800 per year. These fees include the initial application fee. In subsequent years, the annual fees are used to support the certification programme (including any tests) and to finance marketing activities.

2.4.4 Raisio's H₂O Label

Raisio is a Finnish based food company that has added a water footprint label to its packaging to indicate the total water consumption for certain products. It was the world's first food company to add an H₂O label on product packaging, with this indicating the amount of water that is used to produce 'Elovena Oat Flakes'. The label provides an indication of the oat flakes water footprint, including the amount of water used in plant growth, during the production stages as well as in the packaging materials. Although Raisio notes on its website that the water footprint also includes the amount of water that is discarded as waste, it subsequently notes that the production process does not generate any wastewater, as oat flakes are made by steaming (Raisio, 2010).

Raisio claims to have developed its own calculation model at a time when no internationally established formula existed (Palmer, 2009). As a result, it would not be possible to compare the water footprint of Raisio's Elovena Oat Flakes with a product whose water footprint has been calculated using a different methodology.

Other organisations with an interest in product labelling have argued that the type of label produced by Raisio is potentially misleading as a product's true ecological impact is not based on water alone. The critical element missing from such a label is the impact that water use has had in relation to local pressures and scarcity. Compared to carbon, water presents some unique challenges in this regard. Indeed, Coca-Cola (TCCC & TNC 2010: 26) has recognised this problem, stating that '*While water footprints are an excellent tool for companies to begin to understand their*

water use, care must be taken when communicating about water footprint assessments. Numeric water footprints on labels do not provide the information needed to make informed choices among products.'

2.4.5 Grenelle de l'Environnement

In 2007, the '**Grenelle de l'Environnement**' (a think tank and stakeholder consultation forum) was established by the French government to define the key points of government policy on ecological and sustainable development issues in the coming five years. One of the ideas that emerged from the Grenelle de l'Environnement was a requirement that all products and services sold in France display indications of their environmental impact. In 2009, the French Senate adopted a law, '*Grenelle 2: the bill on the national commitment to the environment*', which stipulates that consumers must be informed by means of marking, labelling, display or any other suitable method, the amount of natural resources consumed, or the impact on the natural environment, that is attributable to products during their lifecycle. This includes the impacts of water consumption, energy, pesticide use and possible damage to biodiversity. This mandatory eco-labelling initiative is being managed by the Association Française de Normalisation (AFNOR), the French national standardisation body, in collaboration with the French Environment and Energy Management Agency (ADEME).

The Grenelle de l'Environnement has adopted an environmental impact based approach (a Type III approach under DIN EN ISO 14025) to eco-labelling using Product Category Rules to define what must be provided in Environmental Product Declarations. In late 2009, it was announced that work was underway to develop Product Category Rules in accordance with draft standards for several hundred products, including around 150 mass produced food and drink items. While Product Category Rules are yet to be published, some principles have been established. For example, labelling will be limited to the end product and will exclude any post-purchase impacts as these cannot be guaranteed (Defra, 2009).

As noted on the CLCV website, however, the precise measurement of the environmental footprint of food products has proved far more difficult than was originally thought and, having originally been scheduled for the 1 January 2011, the mandatory labelling scheme has been postponed indefinitely. A feasibility study was scheduled to start on 1 July 2011 but results are not expected before 2012. It is pertinent to note that it has been reported that the mandatory labelling initiative may have cost as much as 5% of the final product price and that this cost would be passed on to French consumers, unless retailers and suppliers share the burden (Gain Report, 2009).

2.4.6 NF Environnement

The NF Environnement scheme is the official French ecological certification. The voluntary certification mark was created in 1991 and is issued by AFNOR Certification (a subsidiary company of AFNOR). It covers both products and services and takes into account the whole life cycle of a product.

To use the NF Environnement Mark, a product has to meet certain ecological and fitness for purpose criteria, which have been determined by representatives from a range of organisations including manufacturing companies, consumers, environmental protection, distributor associations and public authorities.

All criteria are available to view on the internet, thus ensuring transparency. New categories are developed and old ones revised over time. Once certified as compliant by an independent organisation, then the mark can be displayed (provided that the annual fee is paid)

Costs of obtaining the NF mark include those associated with fees, audit visits, rights to use the brand and product testing. Such costs can be up to several thousand Euros, but are proportional to turnover and capped at €9,000 per product category per year. Note that there may be some cost savings where companies already have quality monitoring and management procedures in place.

2.4.7 Milieukeur

Milieukeur is a Dutch B2C eco-label for environmentally preferable foodstuffs, consumer goods and services (including vegetables, beer, pork, fire extinguishers, butchers, green electricity and car washes) which are produced/processed within the Netherlands and Spain and sold/marketed within the Netherlands. The Milieukeur eco-label is managed by the Milieukeur Foundation (a Dutch non-profit organisation) and has been in existence since 1995. Products that are awarded the Milieukeur label are less environmentally damaging than similar products. It is a voluntary label and issued by Stichting Milieukeur, Den Haag.

As of January 2011, 22 products and 622 companies were certified with the Milieukeur label. The Milieukeur certification criteria cover the whole life-cycle of the product or service, from raw material extraction and production to use and waste-disposal. The certification covers a wide range of sustainability criteria, including materials, energy use, water use, use of hazardous substances, packaging and waste, plant protection, use of fertilizers, animal welfare, nature conservation and food safety. However, water use is not one of the main criteria, with the focus being more on other aspects of agricultural production.

When applying for Milieukeur, a company has to approach a relevant certification body with information on the product they wish to be certified. Further information may be requested by the body, with tests being undertaken if necessary (note the process is more complicated for crop/livestock products and processed foods). Once it has been determined that all criteria for the product are met, a certificate is awarded. Standards are maintained with an annual inspection. There is an application fee as well as a membership fee.

In order to ensure that the sustainability criteria are up to date, they are reviewed (and, if necessary, adjusted) every two to five years by the Milieukeur Foundation. The Milieukeur Board selects product categories and establishes award criteria. The Board includes representatives from government, manufacturers, consumers, retail and environmental organisations.

The standard is verified by an independent third party, and the costs of obtaining the Milieukeur eco-label vary. A routine fee is charged on an annual basis, with this varying depending on the annual sales of the certified product. Fees are dependent on the product type. Registration with Milieukeur costs between €235 for an individual organisation to €470 for a group of organisations. In addition, producers must pay a fee according to the production area covered, with some examples being:

- €115/ha glasshouse production;
- €5/ha arable;
- €47/ha strawberries;
- €25/ha fruit trees; and
- €9/100m² mushrooms.

In order to obtain certification, producers must pay a certification body (of which there are several, creating competition) and this is around 0.5-2 days work at a cost of €500-€1,500.

A study carried out by University of Groningen (Feitsma, 2008) commissioned by the Dutch Ministry of Agriculture, Nature and Food Quality has concluded that this scheme was important to improving the sustainability of extensive agriculture, because it takes as its starting point the need for sustainable production. The study also concluded that the Milieukeur was more suitable than some other schemes as it helps ensure transparency in extensive agriculture.

2.4.8 The Nordic Swan Eco-label

The Nordic Eco-label (commonly referred to as the Nordic Swan) is the official Eco-label of the Nordic countries and was established in 1989 by the Nordic Council of Ministers with the purpose of providing an environmental labelling system that would contribute to sustainable manufacturing and consumption. The Eco-label was initiated as a practical tool for consumers to help them actively choose environmentally-sound products, and conforms to ISO 14024 type 1 Eco-labelling with third party verification.

Environmental criteria are developed for different product groups, which take into account a product's impact on the environment from the raw material to waste stages (i.e. over its lifecycle). This includes:

- energy/climate;
- raw materials;
- harmful chemicals;
- hazardous effluents;
- waste;
- packaging;
- instructions for use; and
- government requirements.

The eco-label also sets criteria for quality and performance. As can be seen from the above list, the label does not cover water efficiency as a criterion and, to date, it has

not been extended to any food products (although it has been applied to restaurants and to supermarket operations). However, consultation has suggested that consideration is being given to developing an eco-label specific to water embodied in loaves of bread.

Nordic Eco-labelling applies three criteria when selecting the product groups that are suitable for eco-labelling:

- **Relevance**, which is assessed according to the specific environmental problems relating to the product group and how wide they are in scope;
- **Potential**, which is evaluated by looking at the possible environmental gain within the product group; and
- **Steerability**, which is a measure of how the product, activity or problem might be affected by the eco-label.

2.4.9 KRAV

KRAV is an association with 27 members representing farmers, processors, trade, consumers, environmental interests and animal welfare interests. According to the KRAV Internet Site, KRAV has been a key player in the organic market in Sweden since 1985. There are now KRAV standards for 19 different types of production, and more than 5,500 KRAV certified products. Standards are based on International Federation of Organic Agriculture Movements (IFOAM) Basic Standards and EU standards for organic production, but have additional requirements to the EU standards and cover more areas including the certification of restaurants and industrial kitchens, fishing and textiles. Criteria also refer to social justice issues.

To have the KRAV label, a company has to be responsible for the product. Where the company is based outside Sweden, this is still possible (certification can be based on that undertaken by a certification body and an additional KRAV audit, or the Swedish importer can obtain certification). Certification is carried out by an independent body which must be accredited to ISO Guide 65/EN 45 011.

The latest KRAV standards for different types of production (including agriculture, aquaculture, feed production, and food processing) are published on the KRAV website, and include references to water. For example, there should be a protective zone beside streams, wetlands and lakes, and farmers should make sure that water resources are not overexploited. Ongoing work takes place to improve standards, with changes published on KRAV's website.

The cost of being able to use the KRAV label is based on certification costs and a licence fee to the KRAV association. Separate costs are provided for businesses outside Sweden who wish to label their products and import them for the Swedish market. The cost of obtaining certification and the KRAV mark are dependent on the annual sales value of the products, for example, if the annual sales of a product total less than 1 million Swedish Krona (around €110,000), then the KRAV mark costs 400 Swedish Krona (approximately €44). Where the sales figure is higher, then the fee is a percentage of the sales figure.

The Swedish KRAV label (for organic food) was the subject of three surveys. These showed that recognition of the label is high, typically exceeding 50% each year, and increasing. The organic label and retailers' private brands (including KRAV) are generally connected to issues such as decreased environmental impacts or organic production. They are typically seen as very or fairly trustworthy by 50% to 80% of the public (Konsumentverket 1995/1996:13 in Nilsson *et al*, 2004).

Consumers in the survey were also asked what labelling schemes they know are related to food products. More than 10% could not point to any scheme and about 40% suggested the Nordic eco-label (the Swan) for goods and services. The KRAV label was the most known food label, but the knowledge of other schemes was much lower (Nilsson *et al*, 2004).

2.4.10 Red Tractor Assurance

Assured Food Standards (ASF) is an independent non-profit organisation that manages, develops and promotes the Red Tractor mark. AFS has a board with representatives from a range of organisations including the National Farmers' Union (NFU), the Ulster Farmers' Union, the Agricultural and Horticultural Development Board, Dairy UK and the British Retail Consortium. AFS manages the certification bodies, which check that the various standards are being met. Work is currently underway to harmonise the Red Tractor standards under a single mark, since AFS represents a range of individual assurance schemes.

AFS schemes include:

- Assured Combinable Crops Scheme (cereals, oilseeds, pulses and sugar);
- Assured Produce (fruit, vegetables and salad);
- Assured Chicken Production (chicken);
- Assured British Pigs (pig meat);
- Assured Dairy Farms (milk); and
- Assured British Meat (beef and lamb).

Other schemes that are given equivalent status include:

- Farm Assured Welsh Livestock (beef and lamb);
- Northern Ireland Farm Quality Assurance Scheme (beef and lamb);
- Genesis Quality Assurance (arable crops, beef, lamb, dairy, pigs);
- Soil Association Farm Assured (beef, sheep and cereals); and
- Quality British Turkey (turkey).

The Red Tractor Scheme includes assurance standards across the food supply chain covering pre-farm, farm, post-farm and checkers and services:

- pre-farm: covers livestock feed and Safe Haven Scheme (for potatoes);
- farm: covers beef and lamb, dairy, pigs, poultry, crops and produce;
- post-farm (for processing, transport): covers beef and lamb, dairy, pigs, poultry and crops (cold crush oilseeds); and

- checkers and services: provision of services for farmers, scheme members, trade and industry so that assurance status of Assured Red Tractor Producers can be checked (e.g. when certification expires, products that are certified, etc.).

Joining the scheme involves choosing a certification body, sending off an application form and payment, having an assessment, and subsequently gaining certification. Assessments are undertaken by independent certification bodies. Certification lasts for one year and needs to be renewed if the farm wishes to continue to sell assured produce.

Standards require scientifically based integrated crop management and good horticultural practice, with an emphasis on decreasing pesticide use. Water use is dealt with in relation to irrigation. Standards note that scientifically recognised methods of predicting irrigation needs should be used to avoid excessive or inadequate use of water. Also, the most efficient and commercially practical water delivery system should be used so that water resources are used most effectively.

Standards are licensed to certification bodies that have accreditation to EN45011. These certification bodies carry out routine assessments as well as random checks of all certified producers.

Red Tractor Assurance notes that being certified brings benefits to farmers including:

- wider market access;
- legal compliance (assured standards are set at or higher than legal minimums);
- red tractor quality mark (placed on product at point of sale to inform consumers);
- industry representation (Red Tractor Assurance represents its members to Defra, FSA, etc.);
- scheme support (members are provided with manuals, information, templates for records, etc.);
- industry information (regular newsletters and other information are provided to members); and
- red tractor assurance checkers and services (can be used to verify assurance status of any stock purchased as well as for online self assessment checks).

Annual membership/certification fees are payable (these are supplied by certification bodies when requesting an application pack). Annual membership and certification fees vary by product type (and may have to be requested from the particular certification body for that product). For example, for dairy farmers, the annual registration fee for 2011/12 is £100 (€112) with an additional litreage fee collected in two instalments.

Note it is our understanding that other similar schemes operate in other Member States and that actions have been taken to develop mutual recognition across these; an example is mutual recognition with schemes in the Netherlands and Belgium.

2.4.11 Waterwise Marque

Waterwise is an independent not-for-profit NGO and the Waterwise Marque covers bathroom, kitchen, white goods and outdoor water using products. The Waterwise Internet site notes that Marque should be referred to as a Marque or an award, not an endorsement or a certification mark. The Marque is focused on water efficiency, with the logo specifying ‘award winning water saver’.

Products that are water efficient, reduce wastage or raise awareness of water efficiency can apply for the Waterwise Marque. Applications can be submitted anytime, with judging taking place twice yearly (March and October).

The Waterwise Marque can be used indefinitely on a product that has been awarded it (provided the product has not changed significantly). However, Waterwise does review the market each year, and may ask Marque holders to reapply if the market has changed significantly. The application fee is £500 plus VAT.

2.5 Non-European Schemes

2.5.1 Smart Approved WaterMark

The Smart Approved WaterMark (SWM) is an Australian water saving label for products and services that help to reduce water use. It is a not-for-profit organisation supported by Government and by the industry sectors that have products covered by the labelling scheme. It is also the sister scheme to Australia’s Water Efficiency Labelling and Standards (WELS) scheme. To date, SWM has received around 360 applications and has certified around 240 products (personal communication, 2011).

The aim of the scheme is to promote water conservation in Australia, through its accreditation of water saving products and services. Interestingly, many local governments and water utilities may provide rebates to individuals/businesses that purchase approved water efficient products.

Although the scheme does not cover food products or processing, it does cover products which fall under the heading of ‘watering’, with this including subsurface slow release irrigation, drip irrigation, soil moisture monitors, sprinkler systems, etc. It also covers greywater and rainwater harvesting systems. The criteria used to assess products include:

- water saving (main aim of the product or service should be directly related to reducing water use);
- fit for purpose (appropriate use of product or service should be consistent with supplied instructions);
- meets regulations and standards (product or service should be of high quality and meet industry standards as well as customer expectations regarding water use); and
- environmentally sustainable (product or service is environmentally sustainable and will not adversely affect the environment).

The application process involves filling in a form and providing documentary evidence along with an application fee (note that detailed guidelines have been produced for applications from certain product groups e.g. irrigation equipment, plant pots, mulches, etc.). An expert panel meets every quarter to assess applications. Once approved, the Smart WaterMark logo can be used to promote the product or service.

Products with the SWM are licensed to carry the mark for a period of two years, after which time the SWM can be taken back if market conditions have changed and if more water efficient products have become available (e.g. this has been done with pool covers). Before re-approving products to carry the SWM, new research may need to be undertaken (this may be done in conjunction with universities) and market conditions and changes in technology may be reassessed.

SWM is similar to the Soil Association label (UK), EPA Water Sense (USA) and Waterwise Marque (UK), in the respect that the SWM is a quality mark and only the best products receive the mark. SWM is trying to promote cross compliance with guidelines across these different organisations to increase the global applicability of the label. Although SWM is an Australian labelling scheme, products with the SWM are increasingly being sold overseas.

The costs of applying for the SWM are given in Table 3.

Category	Application Fee per Product or Service	Two Year Licensing Fee	Renewal Fee
Small Business < 5 employees	€ 163	€ 244	€ 244
Medium business Enterprises 6-20 employees	€ 325	€ 488	€ 488
Not-for-profit & Educational organisations	€ 325	€ 488	€ 488
Government & Local Government	€ 488	€ 976	€ 976
Corporate > 20 employees	€ 488	€ 976	€ 976

* Converted using mid-market exchange rate on 30/08/2011 (1 AUD = 0.739098 EUR, 1 EUR = 1.35300 AUD)

Research indicates that applicants use the Smart Approved WaterMark to:

- gain a marketing advantage;
- show corporate social responsibility;
- increase sales; ensure inclusion in rebate schemes; and
- for personal ethics.

2.5.2 Certification Mapping for Uganda

The Uganda Cleaner Production Centre (UCPC) was set up as a project by UNIDO. It now provides Cleaner Production services, supporting companies through a programme so that they are compliant with environmental requirements. Cleaner Production is an approach that enables businesses to maximise economic gains while minimising negative environmental impacts (Walaga, 2003)

Although the programme focuses on manufacturing, it does include food processing, e.g. the Kakira Sugar Factory has reduced water use (and hence waste generation) through taking part in the programme. The Uganda Fish Processors and Exporters Association has also developed a programme to help its members take part in the process (Walaga, 2003).

Where companies complete a 10-month Eco-Benefits Programme run by the National Cleaner Production Centre, they receive a certificate (which can be renewed) and a label, and are promoted in a brochure. The approach is based on six principles (Walaga, 2003):

1. avoidance of waste generation at each stage of a production process;
2. conservation of raw materials, water and energy through improved process efficiency;
3. substitution of toxic and dangerous materials;
4. reduction of level of toxicity of all emissions and effluents at source;
5. recovering, recycling and reusing by-products and wastes where possible; and
6. reduction of environmental, health and safety impacts of products over their entire life cycles.

The benefits of Cleaner Production are (Walaga, 2003):

- it leads to improved efficiency with better use of materials, energy and water; and
- participating businesses gain competitive advantages over those who have not yet undertaken the programme (the programme also helps businesses to meet environmental standards).

The costs vary greatly depending on which technologies and methods are employed to clean up production processes (Walaga, 2003).

UCPC (2004) gives savings that have been achieved:

- Tools company:
 - re-installation of a plumbing system at a one-off cost of US\$1,500 has reduced water bills by US\$400 per year.
- Sugar production company:
 - reduction in wet floor cleaning leading to reduced water bills;

- reuse of filter effluent and overflow from condensers cooling water for can wash and monitoring and repair of condensate and water leaks, leading to reduced water consumption and waste volume; and
- better maintenance of pumps, reducing suspended solids and BOD in run-off water, with capital costs of US\$323,000 and cost savings of US\$455,500.
- Steel mill:
 - use of a water gun and monitoring water usage: saving US\$75 per year in water bills, with no capital cost.
- Foam mattress producer:
 - use of a water gun and monitoring water usage: saving US\$75 per year in water bills, with no capital cost.
- Sweets producer:
 - water conservation through improved housekeeping resulting in savings in water pumping costs of US\$2,040 and capital costs of US\$528; and
 - further areas of improvement were also identified for improvement in the following year to reduce water consumption by 10%.

2.5.3 Earthsure Environmental Product Description Eco-label

The Earthsure Program is managed by the Institute for Environmental Research & Education (IERE) based in Washington in the US, but has ‘global scope’ (Earthsure Program, 2009). The program is a Type III Environment Product Declaration that conforms to ISO 14025:2006. It covers many types of product (including meat) with each product category having different criteria, known as Product Category Rules (PCR) (Earthsure Meat, 2006). Impacts covered by the meat category include climate change, ozone depletion, acidification, eutrophication, photochemical smog, aquatic toxicity, fossil fuel depletion, mineral resource depletion, water use, antibiotic use, soil losses, hormones used, and genetically modified organisms (Earthsure Meat, 2006).

To obtain an Environmental Product Declaration (EPD), an applicant selects a programme operator or reviewer, undertakes a life cycle assessment (LCA) and drafts the EPD in accordance with the Product Category Rule (PCR). The EPD is then reviewed. Following approval, it can be published (Earthsure Program, 2009).

The Earthsure label can be displayed on approved products, along with a website address so that the EPD can be accessed. The information from the LCA can also be printed on the packaging, or on a website (Earthsure Program, 2009).

For a new product category, development of the PCR is undertaken by a committee including representatives from the organisation requesting the EPD, an upstream vendor and/or a consumer, and environmental and consumer NGOs. Once a new PCR is developed, a review of the analysis is undertaken by a third party (which involves at least three experts). Earthsure criteria are reviewed every five years or as needed (Earthsure Program, 2009). Where new Product Category Rules are

developed, these are typically funded by the first companies wishing to use the label (Earthsure Program, 2009).

Consumers can find further information on the Environmental Product Declaration by looking up the website address given with the Earthsure logo (Earthsure Program, 2009). For meat products, consumers can obtain information about the particular farm. Information is displayed as an ecoprofile (Earthsure Meat, 2006). Fees are paid to use the label (the funds raised maintain the scheme) and are levied on a case-by-case basis (Earthsure Program, 2009).

2.5.4 Green Restaurant Association (GRA)

Operational since 1990, the GRA is a non-profit organisation that undertakes environmental assessments of restaurants to help them gain certification as a Certified Green Restaurant. The scheme operates in the USA and Canada.

An Environmental Assessment of the restaurant is performed, with criteria based on Green Restaurant 4.0 Standards (developed by the GRA). The GRA then uses this baseline assessment to assist the restaurant to improve and become a Certified Green Restaurant. Certification is undertaken on a points based system, with water efficiency included as one of the categories. As time progresses, restaurants have to gain more points (i.e. improve their performance). Certified restaurants have to continually improve, thus ensuring that environmental practices become better and better with time. Costs of becoming a Certified Green Restaurant are dependent on the length of the contract, the size of the restaurant, and the number of locations involved. The lowest rates are around US\$300 (approximately €210) per year.

Certification is undertaken by an independent organisation, which determines the points awarded. The Green Restaurant Association (GRA) offers three certification options: existing restaurants, new builds and events. Certification allows restaurants to use the logo on their premises, menus, websites, etc. Meanwhile, the GRA also lists the restaurant on its guide and website.

2.5.5 Green Seal

A USA based organisation, set up in 1989, the Green Seal develops life-cycle based sustainability standards for products and services. It also provides certification of products, services and manufacturing premises for those meeting set criteria. A pilot standard for manufacturing premises is currently being tested; this does ensure account is taken of water use. However, the Green Seal mark itself does not refer to water.

Most work has been undertaken in the business-to-business market, although some Green Seal products can be found in retail stores. The scheme covers household products, construction materials, paints and coatings, printing and writing paper, hand soaps and cleaners, institutional cleaning products, food packaging, paper towels, commercial cleaning services, and hotels and lodging properties.

To obtain certification, companies have to check that their product/service meets the requirements specified in the standard and complete a preliminary certification request. Upon submission, the company will receive an application for certification, a confidentiality agreement and the fee schedule. Once these are returned, company evaluation begins (this usually lasts around six months). When the evaluation is nearly complete, an auditor will carry out an on-site audit. Any corrective actions have to be undertaken within 120 days of the audit report. Once all conditions are met, the Green Seal Certification is awarded and can be used on pre-approved materials. Monitoring takes place each year.

The requirements for manufacturers of products (currently at the pilot stage) include a section on water conservation goals and management, water use tracking and water conservation performance. Green Seal Standards are revised periodically to ensure that products displaying the mark remain as environmental leaders. Products or services with the mark need to recertify to be able to continue to use the mark.

Fees include an initial evaluation fee as well as an annual monitoring fee (note that applicants also have to cover the travelling costs for the auditor). Fees vary by sales revenue and number of products and services. Product certification fees vary depending on sales revenue from products and number of products being certified. Where annual sales revenue is less than \$5 million (€3.5 million) and a single product is being certified, the evaluation fee is £6,000 (€4,200) and the monitoring fee is \$4,200 (€2,900). However, where annual sales revenue is £500 million (€350 million), single product evaluation fees are \$9,500 (€6,700) and the monitoring fee is \$6,700 (€4,700). The fee for pilot standard for producer companies is available upon submission of application.

2.5.6 Water Brief for Business SEE Initiative

In 2005, the Business Roundtable launched the S.E.E. (Society, Environment and the Economy) Change initiative. This initiative asks America's leading companies to set goals that benefit society, the environment and economy. In essence, it aims to help companies to *'do well by doing good'*.

Under this initiative, water is seen as a priority area and the initiative aims to educate companies of the issues associated with water use and resource scarcity. The Initiative also identifies the potential for constraints on water availability to represent a serious obstacle to economic development.

The aim of the Roundtable is to provide an educational function, raising the awareness of member CEOs and motivating them to look at water use in their company, and how this use affects water resources. It also asks them to identify what role they can play in addressing the challenge. The SEE Change Initiative provides the tools and framework for designing and implementing a sustainable water initiative.

The Business Roundtable Internet site asks companies to think about five questions:

- what actions are companies taking?: considering what actions are being taken by other companies enables benchmarking for self-assessment;

- where is water critical to the business value chain, and what is current water intensity?: this includes consideration of the water footprint, the company exposure to water-related risks, what opportunities water presents for the company, how water-use practices fit with the company's core values and, in light of the answers to the above questions, is there a case for investing in a sustainable use initiative;
- where are the greatest business risks today and tomorrow?: to help businesses identify and understand global environmental water-related risks;
- what are business strategies and tactics on water?: to help companies understand how and why to improve water quality and availability for everyone; and
- why should our company take action now?: where the SEE Change Internet site identifies eight potential benefits:
 1. to strengthen the 'licence to operate' with communities and secure the licence to grow;
 2. to secure consistent water supply for the short- and long-term;
 3. to prepare for possible production interruptions from changing weather patterns or water-related energy shortages;
 4. to reduce costs (raw water, treatment and energy);
 5. to strengthen the supply chain;
 6. to improve stakeholder relations and enhance branding;
 7. to achieve regulatory certainty and obtain regulatory goodwill; and
 8. to create new revenue streams for new products and services.

3. KEY REQUIREMENTS OF A CERTIFICATION SCHEME

3.1 Overview

A number of key questions need to be answered to determine the requirements of a best practice EC certification scheme for water. These questions are:

- What are the aims of the scheme?
- Who needs to be included?
- How should they be included?
- Who needs to be provided with information on the results and how should the results be communicated?

The answers to each of these questions are given below, together with illustrations and examples from the review of certification and labelling schemes (Section 2).

3.2 What are the Aims of the Scheme?

The aims of the scheme need to be:

- to reduce the environmental impacts of water use;
- to reduce the social impacts of water use; and
- to reduce the economic impacts of water use (including business risks).

The aims of the scheme are to assess the extent to which a product affects the environment. This means that the scheme must be able to identify which products are more and less harmful to the environment, allowing the less harmful products to be certified. The scheme, therefore, needs to include some outcome-based criteria². University of Hertfordshire *et al* (2010) found that outcome-based schemes are uncommon and tend to be focused on a single issue (e.g. carbon). This is due to difficulties associated with assessing environmental outcomes associated with different production activities. The study also found that available life-cycle analysis (LCA) techniques do not include agreed methods for damage characterisation and that there are a lack of standardised methods that are sufficiently accepted to act as the basis for a multi-dimensional scheme. The development of a scheme that covers a range of environmental, social and/or economic impacts will, therefore, require the development of standardised methods.

3.2.1 Reducing the Environmental Impacts of Water Use

The LEAF (Linking Environment And Farming) Marque is based around a series of questions about how a farmer manages their farming activities. Each question includes a threshold (control point) that must be met for the farm to qualify for LEAF Marque certification. A LEAF audit also has to be undertaken. This involves the generation of plans, policies and review dates (LEAF, 2011). LEAF is a practice

² Rather than practice-based, where a range of criteria are used to certify that particular practices were during production of the product.

rather than outcome-based scheme but it does cover water use and efficiency, and includes criteria that cover indirect impacts on water. These include (Leaf Marque, 2008):

- requirement for a water management plan for the whole farm;
- the need to review the water management plan annually;
- consideration of water efficient products when purchasing new equipment;
- measurement of water efficiency of the enterprise/crops; and
- taking account and analysing water efficiency measurements with justification for changes and a plan to implement practices to improve water efficiency.

The Australian Smart Approved WaterMark (Pers. Comm, 2011) identifies that sustainability is the hardest criterion to assess, with full LCA not undertaken, as this would be too costly. Environmental issues are only taken into account in terms of energy and water saving for materials and processes.

The Cradle to Cradle® scheme is based on LCA with materials and manufacturing practices of each product assessed against five categories, including water stewardship (MBDC, n.d.). This includes a water audit, which requires characterisation of water source(s), water usage and water discharges.

Proposals in France for mandatory eco-labelling have been postponed indefinitely due to the difficulties of precise measurements of the environmental footprint of products. The aim was to introduce a scheme that identifies the amount of natural resources consumed or the impact on the natural environment of products during their life cycle (excluding post-purchase impacts) (Le point sur la table, n.d.).

ISO is considering the development of a water footprinting standard (inventory and impact based, ISO 14046), with the aim of providing internationally harmonised metrics. Once published, this will allow freshwater use to be considered in LCA studies in a consistent manner. The standard aims to be consistent with the ISO 14000 series, including environmental metrics such as LCA (ISO 14040 and ISO 14044) and environmental communication (ISO 14020, ISO 14067-2) (Raimbault and Humbert, 2011). However, ISO have indicated that the standard is not likely to be established until 2013 to 2014.

The Alliance for Water Stewardship (AWS) is being developed to build multi-stakeholder consensus around best practice and to promote the responsible use of freshwater, in terms of environmental and social sustainability (AWS, 2011). The AWS is still in formation, but the intentions of the proposed scheme suggest it will place higher water stewardship requirements on its members than any of the other schemes reviewed during this study. AWS (2010) identifies four areas of focus for the water stewardship standards:

- improved water flow regime;
- improved water quality;
- protected habitats; and
- equitable governance.

EWP (2010) illustrates possible criteria for the European Water Stewardship Standard Principles. For example, for Principle 1 (achieve and maintain sustainable water abstraction in terms of water quantity) the criteria are:

- 1.1: quantification and monitoring of total and net water abstraction by source. This includes abstraction from: self-supply sources; alternative water resources; and water supply by a public water system; and
- 1.2: description and evaluation of the impact of water abstraction appropriate to the scale, intensity of water management and uniqueness of sensitive or significantly affected sources.

Criteria are also set for the three other principles (EWP, 2010):

- Principle 2: ensure the achievement and maintenance of good status in terms of chemical quality and biological elements (includes three criteria);
- Principle 3: restore and preserve water-cycle related high conservation value ecosystems (includes one criterion); and
- Principle 4: achieve equitable and transparent water governance (includes nine criteria).

EWP (2010) also identifies the indicators proposed for monitoring Water Stewardship/Sustainable Water Management.

The AWS anticipates that companies wishing to be certified will need to measure their direct and indirect water footprints or water consumption along with physical and chemical characteristics of the watersheds in which they operate. The intention is that certification will be based on a mix of process and outcome-based standards. It is proposed that the outcome-based standards will include an assessment of how much river flow has been altered by the applicant's water use and the cumulative alteration caused by all water users in the watershed. The standard could be linked to a requirement that water levels are maintained within sustainable boundaries (AWS, 2011).

There is also a number of tools available for measuring and assessing water use. These include the World Business Council for Sustainable Development (WBCSD) Global Water Tool and the Global Environmental Management Initiative (GEMI) Water Sustainability Planner. The Global Water Tool is designed for use by companies and organisations to map water use and assess the risks for the global operation and supply chain. It is designed to help companies identify whether sites, employees and suppliers are located in water scarce areas (WBCSD, n.d.). The GEMI Water Sustainability Planner is designed to enable users to create short- and long-term water sustainability strategies, develop action plans and undertake actions that will help improve water resource management within the operation and the community (GEMI, 2007).

3.2.2 Reducing the Social Impacts of Water Use

Very few schemes appear to cover the social impacts of water use, other than training and skills. The AWS does intend to include social justice among its standards. This includes objectives to (Hepworth, 2010):

- increase the proportion of people who have reliable access to safe drinking water and adequate sanitation;
- ensure that water needed by poorer communities to meet their livelihood requirements is protected and distributed appropriately;
- promote recognition and respect for the rights of indigenous peoples to the lands, territories and resources which they have traditionally owned, occupied or otherwise used;
- promote advances in addressing climate-related changes to water availability and associated consequences for water users; and
- help prevent and resolve disputes and conflict over access to water between competing uses.

The European Water Partnership (EWP) Water Stewardship Program Standard aims to comprise social and economic aspects, as well as criteria for sustainable water management (EWP, 2011). This approach, which feeds into the AWS, is based on qualitative and straightforward quantitative measures; virtual water and water footprint are not included. Similarly, the Water Stewardship Initiative (WSI), which is also feeding into the AWS, is a stakeholder-funded process to develop a Water Stewardship Brand, based on social responsibility and which will provide responsible water users with the opportunity to develop a competitive advantage (EWP, 2011). Fulponi (2006) identifies that voluntary standards related to social criteria, environmental performance and animal welfare are also gaining ground as strategies for customer loyalty and as a means of gaining market share.

3.2.3 Reducing the Economic Impacts of Water Use

Reputation risk, associated with company brand and image, can influence purchasing decisions. These risks could be linked to tensions and conflicts around access to water or degradation of water quality (WWF, 2011). Corporate and investor risk related to water is emerging as an important issue and is predicted to become more significant due to water stress internationally, growing public awareness and the poor management and poor valuation of water as a resource (WWF, 2011). A survey of one hundred FTSE100 and FTSE350 companies found that 92% agreed that a water crisis is looming, while 70% believed that the risks associated with water scarcity are equal to those of carbon emissions (WSP, 2009).

In terms of business risks, AWS (2010) identifies three main types that will need to be covered in the water stewardship standards (as a minimum):

- physical risks: direct risks related to a lack of water of adequate quality;
- reputational risks: due to competition for clean water, conflicts with other water users and impacts on ecosystem health; and

- regulatory risks: linked to physical and reputational pressure, deterioration in ecological conditions, and increased competition leading to more regulation, price increases and loss of operating licences.

3.2.4 Taking Account of Uncertainty

Richter (2009) notes that there is a general lack of reliable information about how much water is available and how it is presently being used, with these uncertainties being compounded by climate change. These pressures will be made worse by the rapid population growth occurring in some parts of the world such as Asia, with increases in world trade also resulting in expanding supply chains that are reaching into new watersheds and utilising new water sources.

3.2.5 Maintaining an Up-to-Date Scheme

Standards are dynamic and are continually changing due to advances made by research. Farmers, processors and traders need help to keep track of developments and to participate in influencing the development of new/updated standards (Walaga, 2003).

To ensure any scheme remains up-to-date, e.g. with developing technologies, it will be necessary to review and, if necessary, adjust the criteria. For example, the Dutch Milieukeur scheme requires sustainability criteria to be reviewed every two to five years by the Milieukeur Foundation (Kornyezetbarat Termek, n.d.) and the Earthsure Environmental Product Declaration (EPD) reviews criteria every five years (Earthsure Program, 2009). The French NF Environment also changes criteria over time, with new categories developed and old ones revised (EcolabelsFr, n.d.).

3.2.6 Impacts on Small Producers

A response by the Windwards Islands Banana Industry to the requirement for GLOBALG.A.P certification (then EUREPGAP) suggests that many of the prescriptions were better suited to estate or large farm operations and present considerable difficulty for small farm operations. It was considered that many small farmers would have to leave the industry if they were unable to meet the specified standards. Efforts by the EU to provide technical and financial assistance to adapt production to the standards were found to be cumbersome and discouraged efforts to obtain the funds (Cain, n.d.).

Walaga (2003) identifies that standards and certification can present serious barriers to markets for producers that are unable to meet specified standards or obtain the required certificates. However, Walaga (2003) also highlights the importance of standardisation and certification in breaking down barriers to markets in a global context.

The AWS has indicated that the standards should be designed so their implementation does not disadvantage small and medium-sized enterprises, or disproportionately advantage businesses in more developed countries (AWS, 2011).

3.3 Who Needs to be Included?

Since the aim of the scheme is to reduce the environmental, social and economic impacts of water use, it is clear that all water users need to be included. The scheme could be tailored to target those using the largest volumes of water first, or those that are having (or could potentially have) the greatest environmental, social and economic risks. For example, the AWS scheme is aimed at companies that use significant quantities of water (including agriculture, food and drink manufacturing and water utilities) (AWS, 2011^{Error! Bookmark not defined.}).

The 2030 Water Resources Group (2009) indicates that 3,100 billion m³ of global water is used by agriculture (71% of global water withdrawals), 800 billion m³ by industry and 600 billion m³ by domestic and municipal uses. Global water requirements are projected to grow to 4,500 billion m³ (agriculture), 1,500 billion m³ (industry) and 900 billion m³ (domestic and municipal) in 2030³. It is estimated that the growth in demand for water will result in a global gap between accessible, reliable supplies and 2030 water withdrawals of 2,800 billion m³ (assuming no efficiency gains) (2030 Water Resources Group, 2009).

Following on from this the 2030 Water Resources Group (2009) develops water availability cost curves. These give an indication of the amount of water that could be saved by undertaking specific actions and the costs of those actions. These cost curves (developed for case study countries) show that significant gains in water availability can be made by efficiency measures and improvements to water productivity at relatively low cost. The measures include increasing ‘crop per drop’ through improved efficiency of water application and net water gains through crop yield enhancement. This suggests that efforts to raise awareness and understanding of water use and the need for water efficiency through a certification scheme could result in significant benefits.

3.4 How Should they Be Included?

To encourage uptake of a certification scheme, it is essential that the targeted industries and sectors can see a real benefit. These benefits could be derived from:

- demand from purchasers (along the supply chain or from consumers) for products that have lower environmental and social impacts;
- demand from purchasers (along the supply chain) for products that have a risk of not being available (e.g. due to droughts), to reduce the business risks along the supply chain;
- opportunity to identify where cost savings can be made;
- opportunity to identify where environmental and social impacts can be reduced (e.g. for socially responsible reporting, to reduce risk of failing regulatory requirements or altruistic reasons);

³ Based on Water 2030 Global Water Supply and Demand model; agricultural production based on IFPRI IMPACT-WATER base case in 2030 Water Resources Group (2009).

- buy-in to a scheme from involvement (directly or indirectly through a trusted body) to the development, application and review of the scheme;
- opportunity to join a highly credible and trusted scheme; or
- low costs of the scheme and/or opportunities for product differentiation that make the scheme cost-effective to the company.

3.4.1 Developing a Scheme to Meet Specific Demands

Certification and labelling can be used to make the history of products more transparent and thus enable customers to express environmental and social values through their purchasing decisions. There are three types of attribute that can be used when making purchase decisions. These are (based on Auriol & Schilizzi, 2000):

- search attributes: where information is available allowing quality to be assessed before a purchasing decision is made;
- experience attributes: where quality cannot be assessed until a product is purchased and used; or
- credence attributes: where quality cannot be determined through purchase or use of the product. This can make it difficult for suppliers to demonstrate quality.

Certification is used in the case of credence attributes as it provides information on the unobservable quality element of the product. In this way, it allows credence attributes to be transformed into search attributes.

University of Hertfordshire *et al* (2010) found that the biggest driver for change was pressure along the supply chain. A scheme that can make information on water use (and its associated impacts) available along the supply chain may, therefore, have the greatest potential for influencing water use during production. The AWS Water Stewardship Program is predicted to deliver benefits along the supply chain and ‘externally’ through, for example (based on AWS, 2010b):

- demonstrating to customers that the business is acting in a responsible manner in regard to water resources;
- create and maintain positive community relations;
- create and/or preserve political goodwill to help secure access to water resources;
- enable priority access to socially and environmentally responsible markets, including suppliers, and attract socially responsible customers; and
- access financing.

Richter (2009) argues that certification programs have emerged as powerful tools for influencing both business practices and for responding to consumer preferences. Compliance with a scheme can bolster corporate reputations in relation to social responsibility and sustainability, with this having knock-on effects in terms of attracting investors and gaining new consumers.

3.4.2 Developing a Scheme that Enables Opportunities to Reduce Impacts and Costs

A report by Mills *et al* (2010) found that LEAF Marque membership and the use of audits had resulted in savings of £14,000 per year following installation of a water

reservoir, £700 per year from installation of tanks to recycle water and installation of more efficient irrigation systems, leading to savings from water consumption. In addition, 40% of those interviewed attributed benefits to water quality and water quantity to LEAF membership. A total of 54% of respondents felt that LEAF membership had helped them deal with environmental regulations, mainly from completing the LEAF audit. The LEAF audit was considered to be 'ahead of the game' so when new regulations were introduced, members had already had time to acclimatise or had already met the new requirements. The report also notes that LEAF is also in negotiation with the UK Environment Agency to agree the principle of a 'lighter touch' for inspection of LEAF members, in recognition of their commitment to achieving high environmental standards. The Cleaner Production Centre (Uganda) aims to support companies so they are compliant with environmental requirements (Walaga, 2003). UCPC (2004) identifies cost savings associated with actions to reduce water use of around US\$450,000 at a sugar production company (also includes benefits from better management of waste); US\$2,000 through improved housekeeping at a sweets producer, and US\$75 per year in water bills from use of water guns and monitoring at a steel mill.

One of the aims of the AWS Model for Change is to enable businesses and water service providers participating in the water stewardship scheme to benefit from support and encouragement from civil society organisations and public sector agencies. This is expected to deliver market opportunities for participants, encouraging higher levels of uptake and, in turn, greater social, environmental and policy benefits (AWS, 2010d). The scheme is also expected to help those applying the standards to obtain an improved understanding of water risks and opportunities. This understanding will help them to identify, evaluate, manage and reduce their physical water-related business risks and costs by improving operational efficiency and cumulative impacts, including along supply chains (AWS, 2010b).

Santacoloma (2007) recommends that assistance should be given to small-scale farmers in the supply chain. This could include training on management and market development. The International Trade Centre of the UN, which works with institutions and business to build trade capacity, is trying to address issues regarding the use and comparability of different labels. A survey carried out in 2008 highlighted a need for more information on standards, regulations and other non-tariff measures affecting market access, leading to the establishment of a programme (T4SD) aimed at developing a maintaining a web-based tool: a Standards Map⁴. This tool centralises and disseminations information on private standards and related research aimed at strengthening the capacity of producers, exporters and buyers.

ISEAL (2010) specifies general requirements for the transparent and accountable preparation, adoption and revision of standards that address social and environmental practices. The aim is to ensure that standards result in measurable progress towards social and environmental objectives without creating unnecessary barriers to international trade. This requires an improvement in consistency between standards, rather than increasing the number of standards, thereby enhancing their overall effectiveness. ISEAL (2010) draws on the ISO/IEC Code of Good Practice for

⁴

www.standardstmap.org

Standardisation and on the WTO Agreements on Technical Barriers to Trade. The ISEAL Code is being adopted by, for example, the AWS scheme and the LEAF Marque.

3.4.3 Developing a Scheme to Encourage Buy-In

Many labelling schemes involve stakeholders during the development of criteria. The involvement of customer representatives during the development and set-up of the scheme (for example, when considering which criteria to include and how) can help to prevent disputes (Nilsson *et al*, 2004). It also encourages buy-in from those customer representatives.

As noted above, for example, the AWS is being developed with stakeholder support. The AWS plan to undertake a detailed stakeholder engagement process to produce the standards. The International Standard Development Committee (ISDC) will decide which standards will be included (and excluded) in the AWS International Water Stewardship Standard. This Committee will comprise 15 members from three different stakeholder groups (business and water service providers; civil/society organisations; and public sector agencies) and eight geographic regions (AWS, 2011b). This high level of stakeholder engagement should encourage buy-in to the programme.

3.4.4 Credible and Trustworthy Schemes

To deliver the benefits described above, both the certification system itself and the authority undertaking certification must be trustworthy. Credibility is often strengthened through the creation of an independent certification firm that is regulated by government to avoid consumer deception or monopoly power (Auriol & Schilizzi, 2000).

The five most important elements when considering the credibility of a labelling scheme were found to be (based on Nilsson *et al*, 2004):

- **ownership structure:** retailer chains and food processing industries back up labelling schemes with the credibility of their brand names. They also use alliances with trustworthy bodies such as NGOs and public authorities;
- **stakeholder coverage:** involvement of stakeholders who can add their name to the scheme can also help to build credibility. The involvement of customer representatives (through consultation or inclusion on the boards of schemes) can enhance the appearance of the scheme in the market;
- **quality assurance traceability:** the level of strictness of quality assurance criteria was not seen to be a major factor for credibility. The process of criteria development and openness of the process is more important. Third-party verification is a common route to enhance trustworthiness and impartiality.
- **marketing system:** aggressive marketing can be used to help customers identify with the scheme (especially where this is associated with a brand), and can also

lead to an increase in trustworthiness. Schemes cannot just be launched into the market. There is a need for professional promotion, public relations and education of target markets.

- **transparency:** customers surveyed commonly request more information, especially on the concept and the differences between production practices and supposed environmental and quality benefits.

A survey by Johnston *et al* (2001) asked who was most trusted to guarantee certification. Respondents from the US preferred a government body (49%), with an environmental organisation second (23%) and the Marine Stewardship Council (MSC) third (5%). Respondents from Norway also preferred the government agency, but there was a much clearer majority (81%), the environmental organisation was chosen by 16% and the MSC by just 3%. The analysis showed that trust in the certification agency was an important influence, with reasons given by Norwegian respondents that the government agency was the 'most trusted'. Crespi & Marette (2003) found that the majority of French consumers (52%) trust independent consumer-action groups on food quality more than they do the French public agency for consumer protection (36%), advertising (5%) and other government agencies (4%). In addition, research carried out in the UK by consumer group 'Which?' found that three quarters of people interviewed said that environmental labelling schemes on foods should be run by organisations which are independent of producers and retailers⁵.

Standards under the AWS Water Stewardship Program will be owned by the AWS but certification and accreditation is to be outsourced to independent organisations (Murphy, 2010). The use of outsourced bodies to undertake certification and accreditation, combined with the high level of stakeholder involvement during development of the Program, should also help make the scheme credible and trustworthy.

3.4.5 Cost

The costs associated with certification and labelling can include one-off and ongoing costs, with fees often being linked to number of products, total sales, size of enterprise and/or type of products (based on University of Hertfordshire, 2010; Milieukeur scheme; GLOBALG.A.P⁶; NF Environnement; KRAV⁷):

- one-off/set-up costs: covering initial evaluation, registration and rights to use a brand; and
- ongoing costs: including annual registration/membership fees, auditing and certification checking and/or annual monitoring fees, costs of repackaging, costs of training, costs of new infrastructure or activities to meet the requirements of the scheme and enforcement costs.

⁵ Downloaded from Business Green Internet site:
<http://www.businessgreen.com/bg/news/1869875/government-urged-streamline-food-eco-labels>

⁶ http://www.globalgap.org/cms/front_content.php?idcat=9

⁷ www.krav.se

The costs of certification schemes are high when (based on Santacoloma, 2007):

- all the technical and business services, inputs and implementing systems of certified groups are provided. Set-up costs in particular will be high;
- when there are different import markets demanding different certification;
- when there is poor co-ordination and/or integration in the value chain; and
- when public support or alliances with other stakeholders are lacking.

The opportunity to reduce costs can be reflected in the way that the scheme has been developed and operates. For example, there may be an opportunity to reduce costs by allowing existing schemes to be assessed for equivalence. This allows other schemes to be recognised, avoiding the need for additional certification costs. The GLOBALG.A.P (Good Agricultural Practices) scheme follows this approach. However, opportunities to follow a similar cross-certification approach will depend on the extent to which other schemes assess similar criteria. As noted above, there are very few outcome-based schemes so opportunities for such an approach may be limited. Some schemes include reductions in fees for those that are registered or certified under other schemes. For example, fees for the EU Eco-label are reduced for those who have already achieved certification under EMAS or are certified under ISO 14001⁸.

Costs of GLOBALG.A.P were suggested to be ‘tremendous’ and that ‘it was cheaper to make a non-compliant farmer compliant [with GLOBALG.A.P requirements] than it was to meet the certification costs’ (Yudin, 2002 in Cain, nd). This was considered to lead to the certification costs becoming a barrier to trade (Cain, nd). For example, costs of certification in Uganda (Walaga, 2003) can be considerably higher than costs of the certifying body’s home country (e.g. a farm certified by a Swedish certifying body paid \$1,200 for certification compared with \$400-\$500 in Sweden). This difference occurs mainly because international European organisations levy charges based largely on costs in their home countries plus any travel expenses associated with the certification process. There are opportunities to keep costs down, though, by applying for certification through Internal Control Systems (groups of about 30 farms). In India, group certification costs for organic agriculture were one-tenth of the cost of individual certificates (IFOAM, 2008).

3.5 Who Needs to be Provided with Information on the Results and How Should the Results be Communicated?

The amount, type and level of information that should be provided on a scheme will depend on the intended audience. Different types of information could be provided, on both the scheme itself and the results for any one company or organisation:

- information on the scheme itself:
 - summary information on what the results of the scheme mean; or
 - detailed guidance on the criteria covered by the scheme, how they are assessed and how any summary (or partial) results are estimated.

⁸ http://ec.europa.eu/environment/ecolabel/ecolabelled_products/application_procedure_en.htm

- information on the results for any one company or organisation:
 - use of a label to demonstrate compliance with the scheme;
 - quality declaration;
 - partial information provision on overall performance against the scheme's aims; or
 - full information provision on performance against scheme criteria.

The extent to which all (or some) of the above information needs to be communicated will depend on the recipient. This could include:

- customers for the products (purchasers along the supply chain, consumers);
- regulators; and
- organisations responsible for protection and enhancement of the environment, society and the economy.

In addition, local communities and consumers may also benefit from information on the activities of businesses related to their water use, the impacts on watersheds and how these can be reduced. This will generally be similar information to that required by the supply chain (e.g. the extent to which a business is water efficient) or that needed by regulators (e.g. the extent to which impacts on a river, aquifer, etc. can be reduced by better management of water).

3.5.1 Information Needs of Customers

As noted above, customers surveyed (e.g. in Nilsson *et al*, 2004) requested more information on schemes, even where they had faith in a label. An option for increasing information provision may be to encourage retailers to play a more active role in promotion and marketing of schemes. Nilsson *et al* (2004) found that endorsements from retailers could also add to the credibility of the scheme, with retailers being considered to 'put the well-being of the consumer first'.

Different schemes provide different levels of information. The Cradle to Cradle® scheme provides four levels of certification: bronze, silver, gold and platinum. To be certified at a certain level, a product must meet the minimum criteria for that level in all five of the categories. The proposed AWS Water Stewardship Standard(s) are expected to be based around basic water stewardship standard requirements, with additional 'going beyond basic' requirements (AWS, 2010c). The LEAF Marque builds on the GLOBALG.A.P scheme by including additional and more demanding criteria. It is focused at farmers, but food processing companies and retailers can also join to enable the LEAF logo to appear on end products.

It will be important, especially for the supply chain, to ensure that the results of certification are presented so that they provide sufficient information for purchasers to make decisions. This will need to be tailored to the requirements of purchasers, so it will again be important to involve these stakeholders during development of the scheme.

3.5.2 Information Needs of Regulators and Organisations Responsible for Protecting Society and the Environment

Organisations responsible for protecting the environment could benefit from schemes such as the AWS Water Stewardship Program by (based on AWS, 2010b):

- greater awareness, responsibility and action on water management issues, including cumulative impacts at the watershed level by primary water users;
- being able to use baseline information to measure and compare the impacts of water users;
- bolstering regulatory efforts to achieve specific social and environmental goals;
- using the standards to complement and support the achievement of water-related policy objectives and compliance with legal and regulatory regimes;
- collaborative action between public bodies, businesses and water service providers;
- reducing the costs of addressing conflicting interests; and
- helping to align stakeholders around consensus-driven watershed-level goals.

It will be important during development of the scheme to understand what information is needed by regulators and organisations responsible for protecting society and the environment. As the AWS scheme is involving NGOs and public sector bodies in the development of the Water Stewardship Program, this should help ensure that both the criteria and information provided meets their needs.

3.6 Summary of Key Requirements

The above discussion suggests that the key requirements of a certification scheme for water are:

- includes outcome-based criteria;
- covers environmental, social and economic impacts;
- allows impacts to be assessed at the appropriate scale;
- is dynamic (can adapt to technological and methodological progress)
- encourages demand along the supply chain by providing information needed by supply chain customers;
- involves stakeholders in the set-up of the scheme, including the identification and agreement of criteria;
- reviews and, if necessary, updates criteria to keep the scheme up-to-date;
- is affordable and looks for opportunities to deliver benefits to scheme members, e.g. through ‘lighter touch’ inspections by regulators in recognition of the commitment of members to achieving high environmental standards;
- avoids duplication with other schemes (or allow cross-certification);
- avoids introducing new barriers to market;
- certification is undertaken by a trustworthy third-party;
- is transparent, with information available at the level needed by customers; and
- is based on a stewardship approach.

4. MINIMUM CRITERIA FOR SUSTAINABLE WATER USE IN EXISTING CERTIFICATION SCHEMES

4.1 Overview

This Section sets out what could be considered as the minimum criteria that should be included in existing certification schemes to increase their emphasis on sustainable water use. These criteria are based on those specific criteria for water use that are already included in existing schemes (rather than more general environmental or food assurance criteria). We then set out additional criteria for water use that go beyond these minimum requirements and which if promoted would provide further encouragement for sustainable water use in the agricultural products and food sector.

4.2 Existing Minimum Criteria for Sustainable Water Use

4.2.1 What is ‘Minimum’?

What are defined as minimum criteria are likely to vary between schemes. Minimum criteria are taken here as being the minimum requirements to enable certification under a given scheme. As such, they exclude any performance above minimum criteria.

4.2.2 What Criteria Represent ‘Minimum’?

Based on the approach adopted by the **GLOBALG.A.P.**, minimum requirements would be set against three types of control points:

- major must: all of these must be met;
- minor must: 95% of these must be met; and
- recommendatory: no minimum requirements.

The ‘Crops Base’ Control Points and Compliance Criteria for Integrated Farm Assurance (GLOBALG.A.P, 2011) includes the following (these are valid from 1 March 2011 and mandatory from 1 January 2012):

- Major must (irrigation/fertigation method, CB6.2):
 - Control point CB 6.2.1: can the producer justify the methods of irrigation used in light of water conservation?
 - Compliance criteria CB 6.2.1:
 - producer avoids wasting water;
 - producer uses the most efficient irrigation system that is technically available and financially affordable; and
 - producer complies with any legislation about local restrictions on water usage.

- Minor must (supply of irrigation/fertigation water, CB6.4):
 - Control point CB 6.4.1: to protect the environment, is water abstracted from a sustainable source?
 - Compliance criteria CB 6.4.1: sustainable sources are sources that supply enough water under normal (average) conditions
 - Control point CB 6.4.2: has advice on abstraction been sought from water authorities, where necessary?
 - Compliance criteria CB 6.4.2: where necessary there must be written communication on this subject (e.g. letter, licence, etc.)

Responsible water use is set out in Annex CB 2 as a GLOBALG.A.P guideline. Although this is not mandatory, the information collected through application of the guideline does underlie the Control Points and Compliance Criteria. Full details of the guideline on responsible water use are set out in Annex 1 to this report.

Minimum compliance under the **Red Tractor** farm assurance scheme requires compliance with all standards. For fresh produce, there are two standards associated with water use (Red Tractor Assurance, 2010) and which are similar to ‘major must’ criteria required under the GLOBALG.A.P:

- IG.2: to avoid excessive or insufficient water usage, scientifically recognised methods of systematically predicting the irrigation requirements must be utilised and crop irrigation must be based on identified need; and
- IG.3: the most efficient and commercially practical water delivery system must be used to ensure best utilisation of water resources.

The Sustainable Agriculture Network is the standards setting organisation for the Rainforest Alliance Certified System. The **Sustainable Agriculture Standard** (SAN) development process complies with the Code of Good Practice for Setting Social and Environmental Standards of the International Social and Environmental Accreditation and Labeling (ISEAL) Alliance. Under the ISEAL Alliance, it has been agreed to adopt the same criteria for certification of producer groups to reduce pressure on smallholder groups. This covers the Rainforest Alliance, the organic sector, the fair trade sector, UTZ certification, and 4C. Minimum compliance with the SAN requires: all critical criteria to be met; at least 50% of the applicable criteria for each principle; and at least 80% of the total applicable criteria.

The Sustainable Agriculture Standard (SAN) includes nine principles under water conservation, most of which are related to wastewater (see Annex 1 for full details of all the water conservation criteria). The two critical criteria for wastewater, which must be met for certification, are (Sustainable Agriculture Network, 2010):

- 4.5: **critical criterion:** the farm must not discharge or deposit industrial or domestic wastewater into natural water bodies without demonstrating that the discharged water complies with the respective legal minimum, and that the wastewater’s physical and biochemical characteristics do not degrade the receiving water body; and

- 4.7: **critical criterion:** the farm must not deposit into natural water bodies any organic or inorganic solids.

4.2.3 Comparison of Minimum Criteria Across Schemes

Table 4 presents a comparison of the criteria contained within the above schemes. The Table shows that all four schemes cover very similar areas within their minimum criteria.

Criterion	GLOBALG.A.P	Red Tractor	SAN
Avoids wasting water	Major must (has to be met)	Requires prediction of irrigation requirements and irrigation based on need	Must have water conservation program and must precisely determine and demonstrate volume of water applied and duration of application
Uses the most efficient irrigation system (technically available and affordable)	Major must (has to be met)	Most efficient and commercially practicable water delivery system	Requirements for use of best available technology
Complies with legislation about local restrictions on water usage	Major must (has to be met)	Scheme is additional to any statutory requirements	All water exploited must have the appropriate permits
Water must be abstracted from a sustainable source (where there is enough water under average conditions)	Minor must (95% must be met), advice must be sought and communication kept	Captured under environmental impact (producers must be aware of any practices that have an environmental impact)	Could be captured under ecosystem conservation (protection and restoration of existing natural ecosystems)

It is also important to compare the costs of the schemes; these are summarised in Table 5, overleaf.

4.2.4 Comparison of Minimum Criteria to Factors Needed to Measure Sustainable Water Use

To determine whether the minimum criteria described above are ‘sufficient’, it is necessary to consider the EU’s aims and objectives for certification schemes. These include:

- consider the potential for certification and labelling schemes to be reliably used in water scarcity and droughts policy planning and implementation;
- identify information provided by product labels on water performance; and
- assess how certification schemes regard efficient use of water.

Table 5: Comparison of Costs of Schemes			
Criterion	GLOBALG.A.P	Red Tractor	SAN
Registration fee	Vary depending on size and type of operation, from €2 to €1,000	Varies by farm size, e.g. €110 (up to 29 ha) to €400 (up to 250 ha)	Paid by importer, not by farmer
Membership costs	Vary depending on type of business (retailer, supplier) and annual turnover, typically €1,550 to €9,000 per year	Vary by product type, e.g. €100 per year for dairy farmers plus litreage fee	Participation fee based on volume of goods traded, e.g. for coffee is €0.022 per kg of green coffee registered on the marketplace
Certification costs (including licence fees)	Inspection and certification fees charged on per hour/per day (can be €6,000 to €7,000 per year) ¹ Licence fees vary by type of schemes, for IFA the fee is €25 for each certificate issued; smallholders can apply for certification in groups	Vary by product type	Based on fees (per day) for technicians and auditors, plus travel expenses (performed by local organisation and smallholder can organise an internal management system and seek certification as a group)
Costs of complying with criteria	Quality management system (QMS) and associated documentation places 'a heavy burden on producer groups' (consultant often needed to set up the QMS) ²	Considered expensive by some due to operating and record administration requirements (but these might be required by retailers anyway) ³	Funding may be available through the Finance Alliance for Sustainable Trade
Sources: 1 Moulin A (2008): <i>GLOBALGAP Certification: The example of the Mango Sector in Cote d'Ivoire</i> , Fruitrop, No. 162, December 2008, downloaded from: http://passionfruit.cirad.fr/index.php/download/%28id%29/3976/%28langue%29/eng/%28type%29/article 2 United Nations R (2009): <i>Comparative Study on the GLOBALGAP Fruit and Vegetables Standard and the EU Organic Agriculture Regulation</i> , paper presented at the Ad Hoc Expert Meeting on Facilitated Access of Small Organic Farmers in Developing Countries to Supermarket Shelves, 10-11 December 2009, Geneva, downloaded from: http://www.unctad.org/trade_env/test1/meetings/supermarket/Comparative%20study%20GlobalGAP%20OA%20unedited%20draft_.pdf 3 Kirk-Wilson R (2002): Review of Food Assurance Schemes , report for the UK Food Standards Agency, June 2002, downloaded from: http://www.food.gov.uk/multimedia/pdfs/FAS_Report.PDF			

The potential for schemes to inform policy planning and implementation can be assessed by considering how they could help the European Commission to address the key challenges for moving towards a water efficient and water savings economy. These challenges are (CEC, 2007):

- full implementation of the WFD;
- improving water pricing policies to better reflect the 'use pays principle';
- moving towards sustainable land use planning;
- basing policy making on a clear water hierarchy, giving priorities to water savings and water efficiency measures; and
- further integrating water issues into all sectoral policies; and improving knowledge and information.

The minimum criteria discussed above cover four main issues (with all the schemes discussed including criteria on each of these issues):

- actions to avoid wasting water;
- using the most efficient irrigation systems that are available and affordable;
- compliance with legislation on local restrictions on water use; and
- abstracting water from sustainable sources.

The minimum criteria set out in relation to the above are aimed at helping to increase sustainable water use. Hence, *efficient use* of water is an important consideration in the existing schemes' criteria.

Although records will need to be kept to demonstrate compliance with the criteria, it is difficult to see how this information would be useable for policy planning or implementation, thus, such requirements are unlikely to improve knowledge and information sufficiently. Furthermore, the GLOBALG.A.P was specifically designed *not* to be communicated to consumers and, although the Red Tractor and Rainforest Alliance do include labels intended for consumers, these cover a much wider set of criteria than just water use. As a result, the schemes cannot be used to promote water friendly products; instead, they provide opportunities to promote more (generally) sustainable products so that some progress may be made in moving towards sustainable land use within supply chains.

It is, therefore, necessary to investigate what additional criteria may be appropriate to provide information that could be useful for policy planning and implementation and/or to promote products that are more water friendly.

4.3 Going Further than Existing Minimum Criteria

4.3.1 Schemes with Criteria that go Beyond the Minimum

The GLOBALG.A.P includes recommendatory criteria that go beyond the 'must' criteria. These are given a 'yes' or 'no' answer but there is a minimum requirement to give a certain number of 'yes' answers. As a result, these recommendatory criteria go beyond the minimum criteria for sustainable water use. The criteria include:

- Irrigation/fertigation method, CB6.2:
 - Control point CB 6.2.2: is there a water management plan to optimise water usage and reduce waste?
 - Compliance criteria CB 6.2.2: written action plan aiming to optimise water usage on the farm;
 - Control point CB 6.2.3: are records of irrigation/fertigation water usage maintained?
 - Compliance criteria CB 6.2.3: records are kept showing the date and volume per water meter or irrigation units. The calculated duration of irrigation and quantity of irrigated water also need to be recorded where the producer works with irrigation programs.

As with the minimum criteria discussed above, these requirements refer to Annex CB2 and the guideline for responsible water use.

As noted earlier, the European Water Partnership (EWP) has also developed standards for sustainable water management. These standards are in the process of being finalised, including through pilot testing, after which they will be presented as a 'draft standard' to the global water roundtable process. As the EWP standards are not yet in place, they do not provide a basis for establishing existing minimum standards (EWP, 2011).

The requirements of the LEAF Marque are based on a list of questions about how a farmer manages their farming activities. For each question there is a 'control point' (or threshold) that the farm must meet in order to qualify for LEAF Marque certification (with LEAF taking as its starting point the requirements of the GLOBALG.A.P and then including additional and more demanding criteria). The water-related criteria from the LEAF Global Standard assessment guidelines include (LEAF Marque Ltd, 2008):

- 1.4: do you have a farm environmental policy?: this should include reference to optimising water efficiency;
- 1.5: have you a documented plan setting out your short and long-term environmental objectives?: this should include targets for water;
- 1.6: as part of the plan, are targets set to improve and enhance the environment?: as above, this should include targets for water;
- 4.2: have you completed a waste minimisation process on the farm?: this should include reuse of water collected from roofs;
- 5.4: have you completed a water management plan for the whole farm?: this should include water use and discharge and must identify where water is being used, a plan of how water use can be minimised and how any environmental impacts of water can be mitigated;
- 5.5: do you review your water management plan annually: this should take account of changes to farming practices and new ideas in resource management;
- 5.6: when purchasing new equipment or establishing new buildings do you look for water and energy efficient products/designs?: this should include water efficient products;
- 5.7 (new for 2009): do you measure the water efficiency of your enterprises/crops?: this includes measuring the water efficiency of all irrigated water with a requirement for a recording system; and
- 5.8 (new for 2009): do you take account and analyse your water efficiency measurements, justify any change and plan to implement practices to improve water efficiency: this includes agronomic or technological improvements that could help improve water efficiency.

The Red Tractor Farm Assurance scheme includes two recommendations that are not mandatory minimum requirements. These recommendations are (Red Tractor Assurance, 2010):

- IG.3.1. (recommendation): it is recommended that irrigation water usage records are maintained; and
- IG.3.2 (recommendation): it is recommended that consideration is given to a documented water management plan to identify opportunities for improving efficiency of water use and reducing waste, e.g. water audit, irrigating at night, maintenance to reduce leakage, storage of winter storm water, collection of rainwater from glasshouse roofs, etc.

Under the Sustainable Agriculture Network Standard, there are nine criteria for water conservation. Most relate to wastewater and wastewater management but three criteria cover water use (Sustainable Agriculture Network, 2010):

- 4.1: the farm must have a water conservation program that ensures the rational use of water resources. This includes requirements for use of best available technology and resources, and consideration for water re-circulation and reuse, maintenance of the water distribution network and minimisation of water use. The farm must record the annual water volume provided by these sources and the amount of water consumed by the farm;
- 4.2: all surface or underground water exploited by the farm for agricultural, domestic or processing purposes must have the appropriate permits; and
- 4.3: farms using irrigation must employ mechanisms to precisely determine and demonstrate that the volume of water applied and the duration of the application are not excessive or wasteful. This includes demonstrating that the water quantity and the duration of the application are based on climatic information, available soil moisture, and soil properties and characteristics.

None of these three criteria are critical and, as they are three out of a total of nine criteria, there is no requirement for any of them to be met for certification. Instead, the requirement to meet 50% of the criteria could be achieved by complying with the wastewater criteria.

4.3.2 Comparison of Additional Criteria

Table 6 presents a comparison of the criteria on water use contained within the above schemes. The table shows that there is again a lot of similarity between the coverage of the schemes. However, while they all require a water management plan to be developed, the amount of information to be included in this plan varies considerably. For example, the EWP standard requires consideration of the impact of water abstraction on the environment, as well as records on water use and plans for how to improve it.

Criterion	GLOBAL G.A.P	EWP	LEAF	Red Tractor	SAN
Water management plan in place	To optimise water usage and reduce waste	Total and net water abstraction shall be quantified and monitored by source, including description of impacts of water abstraction and a water management plan produced	For whole farm, including water use and discharge, how to minimise water use and mitigate environmental impacts; to be reviewed annually	Consideration given to documented water management plan, identifying opportunities for improving efficiency	Water conservation program must be in place
Records kept of water used for irrigation	Volume of water used and duration of irrigation	Description of impact of water use	Measure and record water efficiency, analyse and implement improvements	Irrigation water usage records	Records of annual water volume taken from water sources and must demonstrate need for water applied
Purchase water efficient products	Requires review of plan	Efficiency of water consumption to be reviewed and improved	Look for water efficient products, also reuse of water on farm	Requires best utilisation of water resources	Best available technology must be used

The additional activities required to meet the ‘more than the minimum criteria’ associated with the EWP or LEAF schemes will incur extra costs. There is therefore a trade-off between the additional activities required of the producer (or processor) and the potential usefulness of the information for policy planning and implementation. It is difficult to estimate what these additional costs might be as there is no information on the costs of meeting specific criteria under each of the schemes. In addition, the EWP has not yet been implemented, so there are no costs available for compliance with this.

The benefits of additional information from a water management plan will depend on the level of detail included in the plan, but may provide opportunities for the Commission to begin to address some of the issues and ways forward identified in ‘Addressing the Challenge: Policy Orientations for Future Action’ (CEC, 2007):

- allocating water and water-related funding more efficiently:
 - *increased emphasis on sustainable agriculture for policy debate to increase water management sustainability:* information from water level management plans would need to be collated and reviewed to allow these benefits to be realised. There may be greater benefits from water

management plans that identify impacts (such as those required under the EWP), but this is likely to significantly increase costs for producers;

- fostering water efficient technologies and practices:
 - *developing standards for water-using devices such as irrigation systems:* information on volumes of water used, irrigation methods used and identified improvements in the water management plans could be used to benchmark technologies. Again, these benefits would only be realised through a detailed review and analysis of water management plans. Standards would also have to be developed with stakeholders, so the benefits of increased knowledge from water management plans may be limited;
 - *encourage enhanced research on adaptation of economic activities to water scarcity and droughts, water efficiency and decision-making tools:* there may be opportunities for the Commission to work with organisations responsible for standards to assess if and how producers are looking to improve their efficiency and are changing their approach to water use;
- fostering the emergence of a water-saving culture in Europe:
 - *explore the possibility of launching an Alliance initiative on the efficient use of water:* some of this activity is already being undertaken through the European Water Partnership, feeding into the Alliance for Water Stewardship;
 - *encourage the inclusion of rules on water management in existing and future quality and certification schemes:* this study has identified that schemes are already including issues of water use and that this is becoming a higher profile issue. For example, the LEAF scheme recently introduced new criteria for water efficiency. In addition, the ISEAL Alliance identifies water conservation and quality as one of the ‘most important issues for societal well-being and environmental resilience at global level’. Its Impacts Code requires standards systems to choose from among the core list of social and environmental issues where the standards system intends to have an impact (ISEAL, 2010);
 - *explore the possibility of expanding existing EU labelling schemes to promote water efficient devices and water-friendly products:* the schemes discussed here focus on a wider set of issues than just water. As a result, it would be difficult to promote a labelling scheme on water from these schemes. Other schemes, such as a SmartWater Mark for water efficient devices, could provide benefits in encouraging uptake of more water-friendly products. The benefits of a labelling scheme would, therefore, be to provide additional information to producers to help reduce the costs of identifying new technologies to enable them to make continuous improvements. The requirement within the schemes assessed here for continuous improvement and use of more efficient technologies could help deliver benefits in terms of improved efficiency without the need for a new labelling scheme;

- improve knowledge and data collection:
 - *present an annual European assessment, based on agreed indicators and data provided by Member States and stakeholders:* information to inform this assessment could be collected from water management plans. This will require collection and review of the plans, with the assistance of the standards organisations and the willingness of the plan producers. The costs of collecting information from all plans may be prohibitive, but a sample could be collected from each Member States to help inform the annual assessment.

5. RECOMMENDATIONS FOR A CERTIFICATION SCHEME FOR WATER

There are a large number of agricultural certification schemes in the EU. These address a myriad of different issues (quality assurance, water stewardship, fairtrade, etc) and function at different stages of the food supply chain (B2B / B2C). Schemes currently in operation within the EU tend to be practice-based, using a range of criteria to certify that particular practices have been used when producing a particular product. With respect to water this includes schemes that focus on encouraging good stewardship of water resources. The above discussion and AWS (2011a) have identified, however, that water is currently addressed in a variable fashion in certification schemes. Few schemes treat water comprehensively and none address cumulative impacts at the watershed level. Some water using sectors, especially those downstream of agriculture in the supply chain have no credible certification systems for water use. Therefore, while there is overlap and coverage of similar or identical aspects between some schemes, there is no one scheme that currently addresses all the water issues that would need to be covered.

The growing number of measurement, certification and reporting schemes and requirements mean that it is increasingly important to ensure compatibility and accessibility of information from different sources (IISD *et al*, 2010). When asked in a survey of Quality Assurance schemes (QAS) for food supply chains, the most positive responses (67%) were received for the EC to take action to ‘regulate the mutual recognition’ of schemes. This was preferred over ‘standardise the existing QAS’ (52%) and ‘create a new “single” European scheme’ (48%) (EC, 2005).

Considerable effort is currently being put into the AWS Water Stewardship Standards Program. This has the mission ‘to promote the use of freshwater in a way that is socially beneficial, environmentally responsible and economically sustainable’. To achieve this the AWS aim to build ‘a new voluntary global water stewardship program that will recognise and reward responsible corporations, farming operations, cities and other water users for their sustainable use of water resources’ (AWS, 2011a). Although it is a voluntary (rather than regulatory) scheme, the AWS believe that the shortcomings of voluntary approaches can be overcome by having performance-based programmes with third party oversight and which include sanctions or rewards (Steelman and Rivera, 2006 in AWS, 2011a).

Given the findings of this report, it is recommended that the EC recognise the work being undertaken in the development of AWS Water Stewardship Standards. The major benefit of this for the EC is that the AWS Water Stewardship Standards Program already represents collaboration between a number of other organisations with a global perspective, but with local relevance. This collaboration includes Water Stewardship Australia (WSA), The Nature Conservancy (NTA), World Wildlife Fund (WWF), Water Witness International (WWI), European Water Partnership (EWP), Water Environment Federation (WEF), International Water Management Institute (IWMI), the Carbon Disclosure Project (CDP) and the CEO Water Mandate (CEO WM).

It is also recommended though that the EC keep a watching brief on the development of the AWS Water Stewardship Standards to ensure that they deliver outcomes in line with EC aims and objectives; this includes raising any concerns with the AWS over their requirements as Standards are developed over time to cover additional sectors. In this regard, there may be opportunities for the EC to be involved during development of the standards (Kaledin, 2010):

- through participation by providing comments on documents and process design as documents are posted onto the AWS web-site;
- through participation in a working group;
- by becoming a stakeholder in a regional initiative (for example, by becoming an Institutional Partner to the European Water Partnership); or
- by joining the Water Roundtable Global Steering Committee.

The AWS Water Stewardship Standards Program (WSSP) fits well with the key requirements summarised in Section 3.6, as shown in Table 7. This suggests that it could deliver the necessary requirements of a certification scheme for water.

Table 7: Comparison of the Key Requirements of a Scheme with the AWS Proposals	
Key Requirement	AWS WSSP (based on AWS, 2011a)
Includes outcome-based criteria	Be able to support an evaluation of the performance of a site or organisation
Covers environmental, social and economic impacts	Take account of and aim to address the impacts of an organisation's direct and indirect water use
Allows impacts to be assessed at the appropriate scale	Be global in geographic scope but aim to address impacts at a watershed level
Encourages demand along the supply chain by providing information needed by supply chain customers	Be applicable to businesses of all sectors with a significant influence on water use including agricultural producers, extractive industries, manufacturers, service sector, water service providers, etc.
Involves stakeholders in the set-up of the scheme, including the identification and agreement of criteria	Involve and engage stakeholders throughout to build consensus on which impacts to address, how to address them, and to what levels Allow anyone to participate
Reviews and, if necessary, updates criteria to keep the scheme up-to-date	Support and not diminish water regulation and policy
Looks for opportunities to deliver benefits to scheme members	Be able to deliver benefits to water users (businesses), civil society organisations and public sector agencies
Is marketed alongside key supply chain brands	Involve a collaboration of organisations focused on water stewardship and environmental protection
Avoids duplication with other schemes (or allow cross-certification)	Align with and mutually reinforce and (as far as possible) avoid duplication with complementary standards, water footprinting standards, environmental reporting standards, etc.
Avoids introducing new barriers to market	Not disadvantage small and medium-sized enterprises in comparison to larger enterprises, or enterprises in Least Developed Countries in comparison with those in More Developed Countries
Certification is undertaken by a trustworthy third-party	Conformance to be objectively verified and tangible outcomes in water management practice and performance can be independently identified

Key Requirement	AWS WSSP (based on AWS, 2011a)
Is transparent, with information available at the level needed by customers	Standards are still being developed, but the development process is intended to be transparent and inclusive
Is based on a stewardship approach but not just being focused on efficiency	Specify the combination of process and/or performance requirements considered optimal to achieve the specified objectives

Given that the AWS Standards are still in their formation, it is recommended that the EC should base its minimum criteria appropriate for ensuring sustainable water use on existing agricultural certification schemes. When considering which criteria should be recommended as being the most appropriate minimum criteria for sustainable water use, it is important to consider:

- reliability of the data used to assess compliance;
- applicability of threshold values;
- the time and resources that need to be spent ensuring and demonstrating compliance; and
- the potential usefulness of the information to the EU in policy planning and implementation.

A review of the Commission’s Communication on ‘Addressing the Challenge of Water Scarcity and Droughts in the European Union’ (CEC, 2007) suggests that the minimum requirements under the GLOBALG.A.P, Red Tractor Assurance or Rainforest Alliance Sustainable Agriculture Standard may not be sufficient to provide the information needed to address some of the policy issues. The additional requirement for water management plans could provide the Commission with information that could help it increase the knowledge base and evidence to begin addressing some policy issues.

However, the benefits of improved information to the Commission need to be balanced against the additional costs that would be incurred by those producing the plans. These costs may be minimal (over and above what might be required anyway by suppliers and retailers further down the supply chain) for the simpler water management plans. For plans, such as those required under the EWP standard, the costs could be considerably higher.

Overall, there may be benefits to the Commission (and Member States) from adding to the minimum criteria used in existing schemes a further requirement for a water management plan to form part of revised set of minimum standards. The contents required to deliver the information and knowledge benefits would need to be discussed with the standards organisations. There would also be benefit from requiring similar information to be included in plans under different standards, to improve consistency. The knowledge benefits would be greatly enhanced by requiring an assessment of impacts (such as under the EWP standard and, to some extent, LEAF) but the additional costs of requiring this of all producers aiming for certification would need to be explored in more detail.

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**ANNEX 1:
DETAILED INFORMATION ON CRITERIA AND GUIDANCE WITHIN
THE CERTIFICATION SCHEMES**

A1.1 GLOBALGAP

Annex CB.2 GLOBALG.A.P guidelines on responsible water use, set out the following risks and issues (GLOBALG.A.P, 2011):

- Physical:
 - Water scarcity: does the river basin or area face water scarcity due to the overexploitation of water resources? Can water scarcity affect the current or planned water usage by the producer? Does the producer contribute significantly to water scarcity in the river basin or area or might he do so in the future?
- Regulatory:
 - Water allocation and management scheme: is the river basin or area managed according to a plan or scheme? Has this plan or scheme been consulted with the public and interested parties and approved by the corresponding water authority? Is the plan being implemented and updated on a regular basis? Is the water usage of the producer included in the plan or scheme? If not, is the water usage of the producer coherent with the plan's allocation and management scheme? Does this plan consider adequately the environment, social and/or cultural issues?
 - Water usage permit: Does a procedure exist to hold a water usage permit? Does the producer hold a water usage permit adequate to its water usage? Does this permit interact with other (water usage) permits?
 - Non-authorized water usage: does the producer use water (partially) without the correspondent permit? Do other users use water without the corresponding permit? Can this non-authorized water usage affect the producer's water usage permit or the water usage itself? Can this non-authorized water usage affect the environment, social and/or other cultural issues?
 - Priority usage: is the usage of water prioritised in the river basin or area? What is the ranking of the producer in relation to other water users? Are specific regulations foreseen for extreme situations (drought, pollution, etc.)? Is there a risk for the producer's water usage taking into account the trend scenarios of priority water users and extreme situations? Can the permit be derogated in order to supply water to priority water users?
- Reputational:
 - Water conflict: does the river basin or groundwater area cross national, regional, local or cultural/ethical borders? Are there conflicts about water in the river basin or area? What are their reasons? Are these conflicts addressed by conflict-resolution dialogue-processes? Is the producer involved in water conflicts in this particular area or in any other geographical area he operates? Are similar water users involved in water conflicts in the river basin or area or adjacent areas?
 - Environmental issues: what is the current situation of the freshwater environment in the river basin or area? What are the environmental and biodiversity trends for the river basin or area? Can these

- environmental trends affect negatively the farm's operations? Does the farm's water usage impact significantly in direct or indirect form on the key environmental or biodiversity features? Has the producer developed a (public) environmental statement and/or plan? Does this plan respond to any water-related environmental conflicts or concerns arisen? Is this plan implemented, audited and updated on a regular basis? Is this plan publicly accessible?
- Social issues: What is the current social situation regarding water issues (access to drinking water and adequate sanitation, etc.) in the river basin or area? What are the social trends for those aspects? Can social requirements or claims affect negatively the farm's operations? Does the farm's water usage impact significantly in direct or indirect form on the access to drinking water and sanitation for the inhabitants of the river basin or area? Has the producer developed a (public) statement and/or plan in this regard? Does this plan respond to any conflicts or concerns arisen on the water usage? Is this plan implemented, audited and updated on a regular basis? Is this plan publicly accessible?
 - Cultural issues: What are the key cultural issues related to water in the river basin or area? What has been their evolution? Can cultural trends, requirements or claims affect negatively the farm's operations? Does the farm's water usage impact significantly in direct or indirect form on the cultural heritage of the river basin or area? Has the producer developed a (public) statement and/or plan in this regard? Does this plan respond to any conflicts or concerns arisen on the water usage? Is this plan implemented, audited and updated on a regular basis? Is this plan publicly accessible?
 - Farm's water management: Is the water in the farm managed according to a plan? Does this plan include registers for historical, current and future water usage? Does this plan include provisions for the sustainable and efficient water usage? Does this plan respond to any conflicts or concerns arisen regarding the farm's water management? Is this plan implemented, audited and updated on a regular basis? Is this plan publicly accessible?
- Financial:
 - Financing: Does the producer require regular or irregular external financing? Do the (current and potential) investors consider water-related criteria in their funding evaluation? Are there any specific aspects (e.g. water management plan, water usage permits) required by the investors? Do the investors establish thresholds for compliance with its water-related criteria?
 - Insurance: Does the producer subscribe insurances for its operations? Do the (current and potential) insurance operators consider water-related criteria in their evaluation? Are there any specific aspects (e.g. water management plan, water usage permits) required by the insurance operators? Do they establish risk thresholds for compliance with its water-related criteria?
 - Water pricing: Does the producer pay for the water usage? How is this price/tax/tariff fixed? Does it include operational costs and

(environmental) externalities? Is the pricing system stable, foreseeable and transparent? How likely is it that water prices will be increased on a regular or irregular basis?

A1.2 European Water Partnership

The European Water Partnership (EWP) has developed standards for sustainable water management. The standards are being finalised, including through pilot testing, after which they will be presented as a ‘draft standard’ to the global water roundtable process. As a result, the EWP standards are not yet in place, so do not provide information on minimum standards for existing schemes (EWP, 2011).

The standard is designed around four principles, each of which has criteria associated with it (EWP, 2011):

- Principle 1: achieve and maintain sustainable water abstraction in terms of water quantity:
 - 1.1: the total and the net water abstraction shall be quantified and monitored by source. This includes:
 - abstraction from self-supply sources;
 - use of alternative water resources; and
 - water supply by a public water system.
 - 1.2: the impacts of water abstraction shall be described and evaluated appropriate to the scale, the intensity of water management and the uniqueness of sensitive or significantly affected sources. This includes:
 - a list of all sources that are significantly affected by the water abstraction; and
 - a specific and, if possible, quantitative description of the impact of water abstraction on the water source itself and on referring conditions of infrastructure with special regard to environmental impacts and the socio-economic impacts, including the impact on regional population (negatively) affected downstream by water abstraction.
- Principle 2: ensure the achievement and maintenance of good status in terms of chemical quality and biological elements:
 - 2.1: the total effluent quality shall be determined, monitored and documented by:
 - an evaluation of the quality of the effluent water itself, including a list of potentially present hazardous substances (pollutants), nutrients and thermal freight in the effluent;
 - an identification of the referring pollutant data and legal requirements for all physical, biological, chemical and other pollutants that have been identified;
 - a specification of the sources of pollution; and
 - a characterisation of the potential destinations of effluent water.
 - 2.2: destinations that are affected by discharge of water shall be identified and described in detail. This includes:

- specific description of the destination: identify its characteristics and its conditions of infrastructure disclosing the link to recycling and treatment facilities;
 - an assessment of the impact on the destination according to the scale, the intensity of water management and the uniqueness of the affected systems. This assessment shall include the environmental impact and the socio-economic impact;
 - a description of the regional population negatively affected downstream by water discharge; and
 - an outline on various risk factors influencing the impact on the destination side.
 - 2.3: local issues of water quality that are potentially influenced by the water use shall be pointed out clearly in qualitative and, if possible, quantitative terms.
- Principle 3: restore and preserve water-cycle related high conservation value ecosystems
 - 3.1: the impact on changes in water status and linked ecological processes outside the natural range of variation shall be evaluated in high conservation value wetlands, lakes and riparian areas that are linked to the water cycle of the operation. This includes:
 - localisation and description of affected areas with focus on their conservation value; and
 - description and, if possible, quantification of the impact of water management by the operation on the water status of high conservation areas and possible consequences for these ecosystems.
- Principle 4: achieve equitable and transparent water governance:
 - 4.1: the water management shall ensure the compliance with all legal requirements linked to water use. Therefore, the water user shall establish, implement and maintain procedures to ensure that legal aspects and compliance of its water abstraction, reuse or discharge are entirely disclosed and kept up-to-date;
 - 4.2: water management in the supply and use chain shall be evaluated over the long-term:
 - indirect water supply shall be purchased if possible from suppliers with Sustainable Water Management. The water user shall assess its indirect water use in a step-wise process and establish, implement and maintain procedures to identify the suppliers that make the greatest contribution to its indirect water use, raise the awareness of its suppliers for Water Stewardship and ask its suppliers for transparency on their water management by certification or other approval; and
 - The water user shall evaluate the use chain of water.
 - 4.3: water management shall be planned, implemented and monitored taking the management of other resources into account;

- 4.4: the efficiency of water consumption shall be improved by stepwise and adopted reduction of losses and increase of water recycling
- 4.5: good/best management practices that are available to the specific sector of production shall be involved in management plans, established and implemented with the aim of continuous improvement;
- 4.6: transparency on operational water management shall be ensured:
 - an internal short- and long-term water management strategy appropriate to the scale and intensity of the reporting organisation shall be written, implemented and kept up-to-date;
 - the reporting organisation shall establish and implement a procedure for public communication on its Water Stewardship Policy and for internal communication for all persons working for the reporting organisation;
 - the reporting organisation shall identify training needs associated with the implementation of its water stewardship system and provide training or take other action to meet these needs and shall retain associated records;
 - the reporting organisation shall establish and maintain procedures to respond to accidents, security incidents, emergency situations, disasters and the like, as well as the adverse impacts such an occurrence may exert on the employees, local citizens and communities.
- 4.7: awareness for sustainable water management shall be raised by the water user within a defined communication strategy;
- 4.8: continuous improvement of water management in terms of sustainability at river basin level shall be initiated and supported by innovation and development of the water user's performance in the long-term;
- 4.9: transparency on economic aspects of water management shall be ensured. Capital investment, granting loans and insurance services linked to water management shall be available for evaluation.

A1.3 LEAF

The LEAF Marque is a practice-based business-to-consumer (B2C) assurance scheme aimed at promoting the principles of integrated farm management (IFM) and through this demonstrating commitment to meeting high standards of food production. It takes as its starting point the GLOBALG.A.P scheme but then includes additional and more demanding criteria. It is focused at farmers with the aim of enabling them to demonstrate their environmental credentials, but can also be joined by food processing companies and retailers to enable the LEAF logo to appear on end products placed on shelves.

The Marque is based on a list of questions about how a farmer manages their farming activities. For each question, there is a 'control point' (or threshold) that the farm must meet in order to qualify for LEAF Marque certification.

Table A1.1 sets out the water-related criteria from the LEAF Global Standard assessment guidelines. These include both criteria directly related to water use and efficiency, and criteria that regard indirect impacts on water, e.g. the impact of pollution on water quality.

Criteria	Description
1.4 Do you have a farm environmental policy?	The key to achieving sound environmental performance is about communicating to everyone involved in your business what you are trying to achieve. You must have a farm environmental policy that is communicated to all staff. It must be documented and forms the basis for the farm's objectives and targets. The policy must include references to : 3. optimising energy and water efficiency; Etc.....
1.5 Have you a documented plan setting out your short and long-term environmental objectives?	You must develop from your Environmental Policy a documented plan that sets out your short-term and long-term (1 to 5 years) environmental objectives. The plan must include aspects such as energy, water, pollution and other aspects of the business that impact on the environment. It must also include non-food enterprises that impact on the business.
1.6 As part of the plan, are targets set to improve and enhance the environment?	You must set targets, with a timescale, to improve and enhance the environment. This must include a link to your Whole Farm Conservation Plan, but must also include targets on water, soil, air and energy use. The targets must be measurable and linked to monitoring when appropriate.
4.2 Have you completed a waste minimisation process on the farm?	All farms produce some waste and by-products. Some such as slurries and manures can be recycled on the farm. Others need to be taken off-farm for disposal. By minimising the quantities of waste and by-products produced, you can save money on storage, handling, and disposal. You should identify waste minimisation opportunities, which could include: • Reducing the quantity of rainfall entering slurry/dirty water storage systems; • Re-using some water collected from roofs etc; Etc.
5.4 Have you completed a water management plan for the whole farm?	All businesses must complete a plan to show that they have considered the issue of water use and discharge. You must complete a water management plan. This must identify where water is being used and plan how water use can be minimised and the environmental impact of water use mitigated. Justification of water use and sources must be included. Also consider the following: - leakage; - collection and re-use of some waters such as clean roof water or cooling water; and - irrigation scheduling. Water abstracted from streams, rivers, canals or boreholes, etc. may require a licence from your regulatory organisation. Within the plan, also consider discharges to the environment. For guidance LEAF / NFU / EA / Defra have published <i>Waterwise on the farm</i> and this can be obtained from the LEAF

Table A1.1: LEAF Marque Criteria Related Directly to Water Use and Efficiency	
Criteria	Description
5.5 Do you review your water management plan annually?	You must review your water management plan every year to take account of changes to your farming practices and new ideas in resource management.
5.6 When purchasing new equipment or establishing new buildings do you look for water and energy efficient products / designs?	When purchasing new equipment or establishing new buildings you should look for the best available and appropriate technology. This should include water and energy efficient products / designs; you should justify your decision based on economic and environmental criteria, without forgetting animal welfare issues. Etc...
5.7 (New 2009) Do you measure the water efficiency of your enterprises /crops?	You should measure water efficiency of all irrigated water i.e. water that is either taken from the mains or from the environment and directly irrigated or stored for later use. A recording system should be implemented so that efficiency can be measured by litres (or m ³) of water per tonne of output. Data should be uploaded to LEAF via the data portal on the LEAF website.
5.8 (New 2009) Do you take account and analyse your water efficiency measurements, justify any change and plan to implement practices to improve water efficiency?	You should review your water efficiency measurements annually to justify any changes and consider any agronomic or technological practices that may help to improve water efficiency. See LEAF Audit for information on IFM and water. Develop an action plan as part of the LEAF Audit or water management plan. See additional notes for information on different practices that will improve water efficiency.
Source: LEAF Marque Ltd (2008): LEAF Marque Global Standard , Version 8.0, issued 01/10/08, downloaded from: http://www.leafuk.org/resources/000/533/676/LEAF_Marque_Global_standard_version_8_English.pdf	

A1.4 QS

The QS (Qualität unter Sicherheit GmbH) is a scheme covering production, processing and marketing of foods across all stages and organisations. Originally created for meat and meat products, the scheme was extended in 2004 to include fruit, vegetables and potatoes. The scheme's criteria and requirements are set down by advisory boards. For fruit and vegetables the requirements for irrigation are (QS, 2011):

- optimising irrigation; and
- irrigation according to need (for example, by measuring the moistness of the soil and the use of climatic water management).

This requirement is only included as a note in the guidelines, so is not a K.O. (exclusion) criteria (the minimum requirements) or information that the producer is obliged to submit.

A1.5 Red Tractor Farm Assurance

The Red Tractor Farm Assurance scheme for fresh produce sets standards for irrigation. These include:

- IG.2: to avoid excessive or insufficient water usage, scientifically recognised methods of systematically predicting the irrigation requirements must be utilised and crop irrigation must be based on identified need;
- IG.3: the most efficient and commercially practice water delivery system must be used to ensure best utilisation of water resources:
 - IG.3.1. (recommendation): it is recommended that irrigation water usage records are maintained; and
 - IG.3.2 (recommendation): it is recommended that consideration is given to a documented water management plan to identify opportunities for improving efficiency of water use and reducing waste, e.g. water audit, irrigating at night, maintenance to reduce leakage, storage of winter storm water, collection of rainwater from glasshouse roofs, etc.

To comply with this scheme, it is necessary to meet every standard (but not recommendations). Some standards are identified as Key (K). If the assessor finds major non-conformance with the key standards, then the certification is suspended until the matter is corrected. Minor non-conformance does not result in suspension provided corrections are made in an agreed timescale (usually 28 days). Although non-compliance with recommendations does not affect certification, the guidance notes that ‘recommendations are often included to introduce points that will become standards in the near future’ (Red Tractor Assurance, 2010).

A1.6 Sustainable Agriculture Standard

To obtain and maintain certification with the Sustainable Agriculture Standard (SAN), farms must comply with at least 50% of the applicable criteria of each principle and at least 80% of the total applicable criteria. There are also 15 critical criteria that must all be complied with (where applicable) to achieve certification and to allow the Rainforest Alliance mark to be applied (Sustainable Agriculture Network, 2010).

The standard comprises ten principles, of which one is water conservation. The summary of the principle notes the importance of conserving water and avoiding wastage; it also covers treatment and monitoring of wastewater to prevent contamination of surface and underground water. The criteria are (Sustainable Agriculture Network, 2010):

- 4.1: the farm must have a water conservation program that ensures the rational use of water resources. Use must be made of the best available technology and resources, and consideration must be given to water re-circulation and reuse, maintenance of the water distribution network and minimisation of water use. The farm must keep an inventory and indicate on a map the surface and underground water sources found on the property. The farm must record the

annual water volume provided by these sources and the amount of water consumed by the farm;

- 4.2: all surface or underground water exploited by the farm for agricultural, domestic or processing purposes must have the respective concessions and permits from the corresponding legal or environmental authorities;
- 4.3: farms that use irrigation must employ mechanisms to precisely determine and demonstrate that the volume of water applied and the duration of the application are not excessive or wasteful. The farm must demonstrate that the water quantity and the duration of the application are based on climatic information, available soil moisture, and soil properties and characteristics. The irrigation system must be well designed and maintained so that leakage is avoided;
- 4.4: the farm must have appropriate treatment systems for all wastewaters it generates. The treatment systems must comply with applicable national and local laws and have the respective operating permits;
- 4.5: **critical criterion:** the farm must not discharge or deposit industrial or domestic wastewater into natural water bodies without demonstrating that the discharged water complies with the respective legal minimum, and that the wastewater's physical and biochemical characteristics do not degrade the receiving water body;
- 4.6: farms that discharge wastewater continuously or periodically into the environment must establish a water quality monitoring and analysis program that takes into account potential contaminants and applicable laws;
- 4.7: **critical criterion:** the farm must not deposit into natural water bodies any organic or inorganic solids;
- 4.8: the farm must restrict the use of septic tanks to the treatment of domestic wastewater and non-industrial wastewater to prevent negative impacts on underground or surface water; and
- 4.9: if total or partial compliance with the requirements of this standard that relate directly or indirectly to the contamination of natural water bodies cannot be proven, the farm must conduct a surface water quality monitoring and analysis program.

**ANNEX 2:
CONSULTEES**

A2.1 CONSULTEES

With regard to Member State (MS) Authorities, members of the ‘Strategic Coordination Group’ were contacted, as recommended by the Commission. A total of eight questionnaire responses were received from MS:

- Cyprus: Water Development Department;
- Netherlands: Ministry of Infrastructure and Environment, Flemish Environment Agency (VMM);
- Italy: Ministry of Environment;
- Slovak Republic: Ministry of Environment;
- Spain: Dirección General del Agua;
- Estonia: Ministry of the Environment; and
- Latvia: Latvian Ministry of Environmental Protection and Regional Development.

Teleconferences were also held with the UK Environment Agency and Department for Environment Food and Rural Affairs, as well as:

- European Environment Agency;
- Smart Approved Water Mark;
- Food Ethics Council;
- Borenbond;
- Food and Drink Federation (CIAA);
- University of Warwick;
- Sveriges Konsumenter;
- Waterwise;
- CLCV;
- WBCSD;
- WWF Geneva;
- LEAF;
- COPA COGECA;
- Milieukeur; and
- European Water Partnership.

With regard to the private sector, questionnaires were sent through the WBCSD but also directly to over 30 organisations known to have undertaken WF studies or with an interest in the WF approach. In addition, teleconferences were carried out with key industry stakeholders. Respondents to the industry questionnaire and key industry stakeholders with whom consultation was undertaken via teleconference did not wish to be identified.

Email/questionnaire responses were received from the following NGOs:

- CIAA;
- Ecolife vzw;
- Quantis; and
- ISO.

The following stakeholders participated the May 3rd Workshop:

- European Commission: DG Environment, DG Trade, and DG Agriculture;
- Technische Universität Berlin (for head of ISO Working Group);
- University of Twente (by phone);
- University of Warwick;
- Water Footprint Network;
- UK Defra;
- COPA COGECA;
- WBCSD;
- WWF; and
- CIAA.

