RECOIL

THE POWER OF USED COOKING OIL

D5.1 - Comparative analysis of the different legal frameworks

Identification of barriers and opportunities

EUROPEAN BIOMASS INDUSTRY ASSOCIATION

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RECOIL
THE POWER OF USED COOKING OIL

PROMOTION OF USED COOKING OIL RECYCLING FOR SUSTAINABLE BIODIESEL PRODUCTION (RecOil)

RecOil aims to increase sustainable biodiesel production and its local market intake by enhancing household used cooking oil collection and transformation. It assesses the "UCO to biodiesel" chain best practices, through a household survey, the industry expertise, the local authorities' cooperation, and a review of the legal and market barriers and opportunities. The information gathered will integrate an online decision-making guide: a tool to assist stakeholders in developing an UCO-to-biodiesel supply chain adjusted to local specifications. Pilot projects in promotion, collection, transformation and commercialization of UCO/biodiesel will be carried out according to the best practices identified. These projects will be living labs helping to validate the feasibility of these good practices but also showcasing and spreading the project's results in a way that the achievements can be used to promote similar initiatives in other regions and by other entities. Promotional campaigns and communication tasks will be developed to guarantee stakeholders' involvement and to increase public interest about UCO recycling, motivating a behavioral change among citizens.

RecOil is supported by the European Commission within the frame of the Intelligent Energy for Europe Programme.

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1. INTRODUCTION

The intent of this report is to identify the legal constraints hindering or supporting the used cooking oil (UCO) to biodiesel chain implementation.

This analysis is based on a detailed survey of:

- the regulatory framework for UCO collection and treatment
- the regulatory framework for biodiesel production and commercialization
- the related market data.

The information has been collected on European and national levels, for Greece, Denmark, Italy, Spain and Portugal (D4.2).

This survey has allowed to define a clear portrait of the legal environment and market perspectives of each country.

Chapter 2 of this report describes the structure and the main outcomes of the above mentioned survey. Furthermore it presents the EU Directives which have an impact on the UCO to biodiesel chain implementation.

Chapter 3 extensively presents and compares the various provisions adopted by each country. A paragraph is dedicated to every provision. Every paragraph includes:

- a short introduction
- the description of how the provision is implemented in every country
- some comments based on the comparative analysis

The last paragraph discusses the market perspective of the biodiesel sector.

Chapter 4 is a synthesis of the results of the comparative analysis, some conclusions are finally extrapolated.

Policy measures, be they financial, administrative or either regulatory, play a key role in determining the market perspectives of the biodiesel sector (1).

2. STRUCTURE AND RESULTS OF THE SURVEY – A STRATING POINT

The survey conducted by RecOil partners consortium has been structured in a way to identify the most relevant regulations related to UCO and biodiesel, on both European and national levels.
D4.2 lists all the laws stipulated by each country in order to meet the European common targets, and the additional national peculiar laws. The survey also gives some data related to the biodiesel production, production capacity and UCO share, thus providing a clear representation of the current level of development of the biodiesel market.

The following paragraphs clarify all the measures considered by the survey.

2.1. UCO regulatory framework on EU level

A few European provisions regulate the UCO collection and recovery systems. These regulations impact some aspects of the UCO management but they do not state a unique mandatory destiny.

- Waste framework Directive 2008/98/EC identifies UCO as a bio-waste, in the category "edible oil and fat" (EWC 20 01 25). According to this directive MSs shall take measures to encourage the separate collection and the treatment of bio-waste in a way that fulfils an high level of environmental protection.
- Directive 99/31/EC diverts liquid wastes (UCO included) from landfills, while Directive 2000/76/EC allows UCO to be incinerated in case it's not a vegetable waste (when used for cooking meat or fish), setting stringent criteria for plants which intend to burn UCO**.**
- The polluter-payer concept, enforced by Directive 2004/35/CE, could be the common ground to distribute responsibilities among the various actors playing a role into the UCO production/collection/recovery system. Producer responsibility schemes can be found for the recovery of some kind of wastes such as: tyres, paper/card, medicines and oils (including mineral, motor, lubricating and edible oils).
- According to the Animal By-Products Legislation 1774/2002**,** UCO can not be used as an ingredient in animal feed, as it used to be used. This measure is intended to protect both animal and human health, since some toxic compounds could affect final consumers as a result of bio-accumulation. UCO can only be used to produce biodiesel and oleochemical products.
  The EU Implementing Regulation 142/2011 defines the conditions under which UCO is a suitable starting material for biodiesel production and the process to be followed, case by case. The Regulation enables animal fats, animal oils or vegetable oils that have been in contact with animal proteins or have been extracted from foods containing ABPs and are no longer intended for human consumption, to be converted into biodiesel in an approved plant. Biodiesel plants are subjected to some requirements for transport, documentation and record-keeping. The approved biodiesel plant must additionally be approved and/or registered with the EU Feed Hygiene Regulation No 183/2005.
  EU Regulation 1069/2009 requiring residual products such as filter contents, sludge, and ash to be disposed of as animal by-products in accordance with the and the EU Implementing Regulation, was lastly amended in April 2013. The use of animal fats of all categories for oleochemical products is possible in the future.

Furthermore, several countries have established a maximum level of polar compounds of around 25% in order to limit the degradation of used frying fats and oils for human consumption.

On this common regulatory basis, every EU country develops its own rules to manage UCO as a waste or as a by-product. Consistent differences even on a regional/local level, result in an extremely fragmented landscape.

2.2. Biodiesel regulatory framework on EU level

The regulatory framework defining requirements and targets for biofuels **on European level**, is funded on two pillars:

- the Renewable Energy Directive (RED) and
- the Fuel Quality Directive (FQD).

The Renewable Energy Directive 2009/28/EC (RED) is the main driving force for the development of a well structured European market for Renewable Energies. In particular, the 10% renewable energy target for the transport sector, to be achieved by 2020, has a big influence on the biofuel sector. Furthermore, the directive defines:

- specific rules for GHG calculation
- double counting system for advanced biofuels
- comprehensive sustainability schemes for biofuels and bioliquids with compulsory monitoring and reporting requirements

Biofuels have to comply with an approved sustainability scheme to be counted against the 10% target. MSs were required to submit National Renewable Energy Action Plans (NREAP) by June 30, 2010, as roadmaps to achieve the 2020 goals.

In parallel, **the Fuel Quality Directive 2009/30/EC (FQD)** sets a 6% GHG reduction target for non-renewable fuels, compared to the average emission values of 2010, until 2020. This reduction in emissions could be achieved using any low-carbon fuel options; in particular, biofuels account for most of the targeted reductions. This directive, mirroring some of the RED's content such as the sustainability criteria, creates favourable conditions for the production of biofuels with high GHG reduction values, as they get a higher market price than biofuels with lower GHG reduction values.
The FQD and the CEN technical standards regulate both the properties and the amount of biofuels that can be blended into fossil fuel. For biodiesel, a CEN technical standard for B7 already exists. There is work in progress to set a higher blending limit for heavy and even light-duty trucks.

On October 17th 2012, the EC published a new proposal amending both the RED and the FQD in relation to sustainable biofuels and bioliquids. On Septer 10th 2013, the European Parliament confirmed this proposal, adopting the following provisions:

- capping EU-made biofuels from energy crops to 6% (cutting by half the 10% objective previously established)
- introduceing double- and quadruple-counting of some types of advanced biofuels.

These actions are finalized to reduce emissions arising from so-called indirect land-use change (ILUC).

2.3. Biodiesel regulatory framework on national level

The regulatory framework defining requirements and targets for biofuels **on national level**, includes:

- measures intended to repeal the EU Directives
- peculiar measures, developed by each country in relation to its own regulatory asset or its own market environment.

European Directives are adopted centrally by the European Commission and are binding upon all EU member states, which must then adopt national laws that conform with the provisions of the directive. Once an EU Directive is published, an **harmonization** process starts orientating the national upcoming legislation to meet the defined targets.
The emission reduction targets can be achieved through various tools of support: feed-in tariffs, feed-in premium scheme, quota systems, emissions trading scheme, tender schemes.
In order to be compliant with the GHG reduction targets, the biofuel sector can benefit of:

- Tax reliefs for biofuels,
- Mandatory incorporation targets
- Quota system for biodiesel producers

The different countries use consistently differentiated strategies to achieve their targets, as stated by their own NREAPs.

2.4. Results

The following tables summarise the data collected by the RecOil partners.

Table 1 - RecOil countries national biodiesel specifications

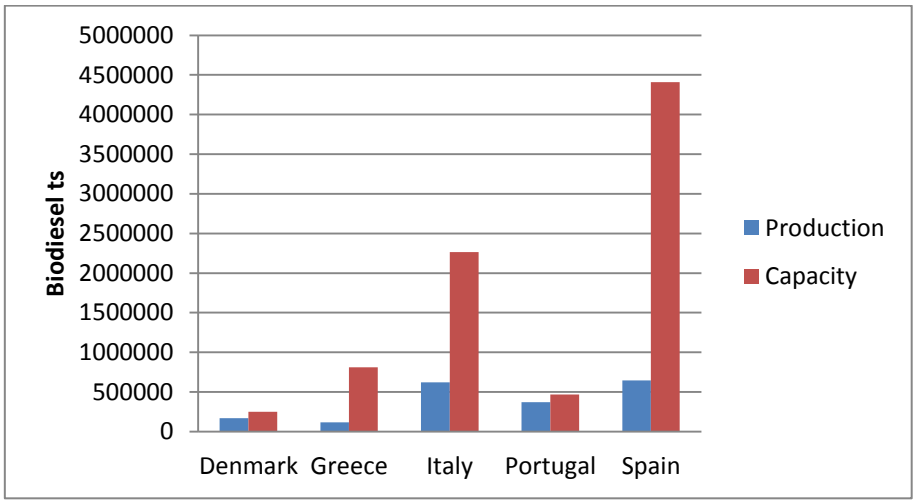
	Denmark	Greece	Italy	Portugal	Spain
Harmonization with 2009/30/EC (sustainability criteria)	Yes (since 2010)	Yes (since March 2012)	Yes (since March 2011)	Yes (since Oct. 2010)	Yes (since Nov. 2011)
Biodiesel 2020 targets (NREAP)	10%	10%	10%	10%	13,6%
Direct subsidies or tax relief quota	CO_2 tax relief, € 75/ 1,000 L (including VAT)*	No	No	Exception from ISP** tax for small producers < 3000 ts/year	No
Double counting	UCO no animal fat yes	Yes	Yes	Yes	UCO undefined animal fat yes
Quota System	No	Yes	Yes	Yes	Yes
Share of UCO to the raw materials	N/A	12%	7.3%	1.2%	14.31%
Obligatory share of biodiesel in car fuel mix	5.75%	7%	7%	5,5% (6,75% end of 2014)	7%

*When used for private heating biodiesel is completely exempted from tax, whereas use in district heating supply can be restricted.

** Tax on petroleum and energy products. Till 2010 larger producers could benefit of a tax relief was 280 Euros/1000L

Table 2 - Biodiesel Market in RecOil countries (2011)

	Denmark	Greece	Italy	Portugal	Spain
Biodiesel production, ts (source Recoil)	170,152.5	116,160.0	620,000.0	369,297.3	647,199.0
Biodiesel production capacity ts (2011 - EBB)	250,000.0	812,000.0	2,265,000.0	468,000.0	4,410,000.0
Biodiesel consumption in transport at 2011, toe (Biofuels Barometer, 2013)	4,419.0	103,396.0	1,286,711.0	306,894.0	1,443,131.0
UCO volume processed Recoil Data	5,000.0	15,865.0	45,000.0	4,470.0	90,000.0



Graf. 1 - Biodiesel production and biodiesel capacity in 2011, at RecOil countries

3. COMPARATIVE ANALYSIS

Irrespectively of peculiar socio economic status, industrial development, size of the agricultural sector and feed-stock availability, a comparison of the different legal framework and results as the biodiesel production amounts, has been performed.

3.1. UCO regulatory framework

The regulatory framework addressing UCO collection and treatment on European level (see paragraph 2.1), allows MSs to develop various policy lines.

Greece
There isn't any explicit directive which states the mandatory recycling of cooking oil used by restaurants or caterings or either by households. UCO is treated as a waste, not as a by-product, and operators must have a specific permission for transport, collection and temporary storage of edible oils (NRCS 20 01 25) in accordance with JMD 50910/2727/03 (G.G. 1909/b/22-12-2003). The Greek legislation doesn't support sufficiently UCO collection and recovery systems.

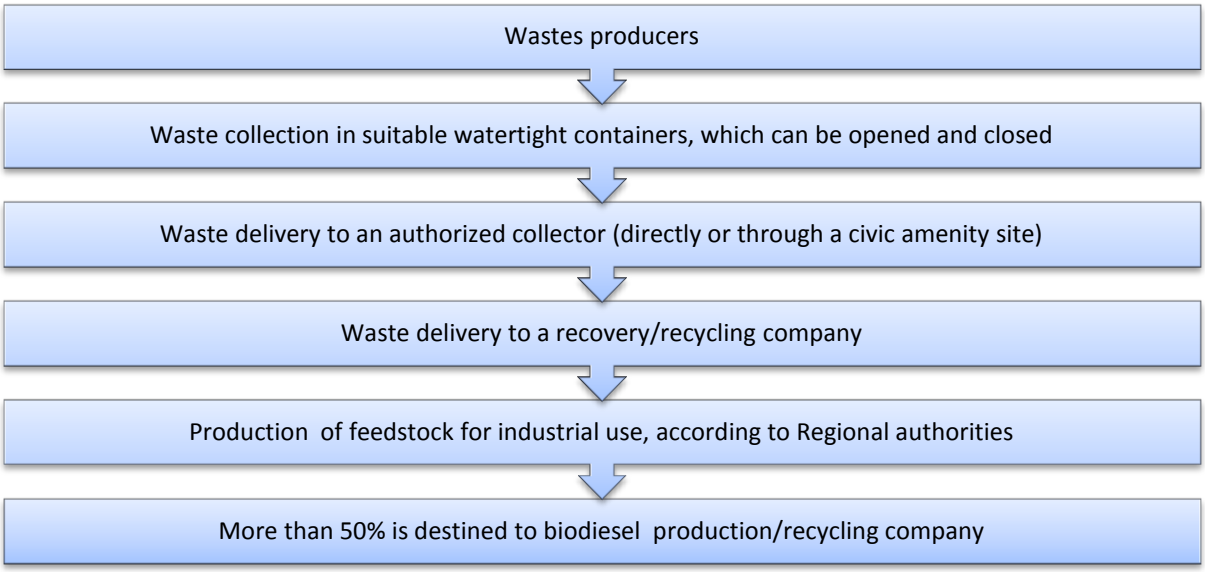
Italy
The Waste Framework Directive 98/2008/CE was repealed by Dlgs 205/2010 which introduced some modifications to the Decree 152/06. This Decree establishes a specific national consortium for the proper collection and treatment of used vegetables oils and animal fats, CONOE(2). The main objectives of the Consortium are:

- to ensure the application of the safest systems of collection, transport, storage, treatment and recovery of used oils and fats
- to ensure the safest disposal of the collected used vegetal oils and fats, in case their recovery is not possible or convenient, respecting the current provisions concerning pollution
- to promote market surveys intended to enhance, both from an economic and technical point of view, the system of collection, transport, storage, treatment end recovery of used oil and fats, reducing their dispersion and the consequent pollution

CONOE joints companies working in different sectors: production, import, storage, recycling and recovery, harvesting and transport.
The Consortium is based on the following rules:

- the waste producers must be affiliated to CONOE (possibly through the national category association)
- the waste producers are obliged to deliver the waste material to a company which is in charge of the waste collection
- this company must be affiliated to CONAE as well and
- has to deliver the waste to a third subject which is in charge of recovery/recycle
- this body must be affiliated to CONOE too

The flow diagram can clearly represent all the steps of the process:



This structure allows the consortium to monitor the wastes stream and to extrapolate some statistics of the annual trend in terms of amount of wastes and economic value. In case of non compliancy with the above mentioned requirements, a penalty system is applied.

A UNI standard containing the list of UCO requisites for energy use (biofuels for electricity and heat production) is going to be published by the CMI (Comitato Termotecnico Italiano).

Spain

In Spain also, a national UCO collectors association exists, GEREGRAS, which gathers member companies specialized in the collection of used edible oils and fats from the gastronomy sector. GEREGRAS associated collect 120,000 tons per year corresponding to 65% of the total UCO collected in Spain. This means that 184,600 tons of UCO is currently collected in Spain.

The Government considers as priority in regards to the management of municipal wastes:

- Promote the implementation of selective waste collection systems, oriented to recycling or other forms of recovery.
- Develop training and awareness campaigns to promote active participation to the selective waste collection.
- Support the technical development and marketing of products and services that allow reuse, minimize the amount of wastes or reduce their impact, promote the reduction of the use of packages.
- Promote the implementation of recovery and valorization processes.
- Establish a procurement policy oriented to the acquisition of products that incorporate recycled materials.

The environmental provisions which have an impact on UCO management are basically:

- Law 22/2011, of 28th July, on waste and contaminated soils. This law introduces the principles of European Waste Directive and new definitions for domestic waste and other. It organizes the competences of state, regional and local organisms. Regarding UCO (and other domestic wastes) it establishes a goal of 50% recycled rate for 2020. In this law Used Cooking Oil is considered as a

biowaste (biodegradable waste). As domestic waste, municipalities are responsible of its collection, transport and treatment.

- Integrated National Waste Plan 2008-2015 (PNIR). One of the goals of this Plan is the increase of home wastes recycling ratios (including used cooking oil), setting specific measures to foster the separate collection of used vegetable oils.

Additionally, regional governments and municipalities can define the UCO collection and management, setting specific methodologies in their own legislation.

The regulatory framework presents an ambiguity in the classification of the UCO as residue or by-product. At the same time, the biofuel sector is following a process of adaptation to new regulations to demonstrate compliancy with sustainability criteria. The traceability of feedstock materials is thus fundamental. In particular, it will feature the ISCC (International Sustainability and Carbon Certification) scheme, approved by the European Commission.

Denmark

The municipality is the authority which releases the permission for UCO collection. These permissions are usually accorded to the catering activities which produce big amount of UCO. The Danish Energy Agency informs that they elaborate some statistics for the share of biodiesel stemming from UCO.
The following conditions affect the collection of food waste in general, and UCO in particular:

- Following the outbreak of BSE (mad cow disease) the former law that demanded canteens and restaurants to collect food waste was annulled. It was of veterinary reasons not anymore possible to collect, mix and deliver the raw food residues like formerly. Today the most common way to dispose of food residues is to deliver it with other garbage to the municipal waste collection.
- A majority of household waste is incinerated in Denmark and around half of the heat used in district heating in Denmark stem from this. This means that any energy value in UCO's that ends up in household waste is utilized.
- Most wastewater treatment plants collect flotation fats and uses this as well as waste water sludge for biogas production or similar energy valorization.

Portugal

The licensing process of facilities was approved by the national Regulatory Decree n.º 61/2007, taking into account the 74th Article of the national Decree-Law n.º 555/99, December 16 as amended by the national Law n.º 60/2007, September 4 and the national Executive Rule n.º 216-D/2008, March 3 (Annex VII).
National Decree-Law n.º 267/2009 sets legal requirements regarding the management of the UCO produced by the industrial sector, hotels, restaurants, caterings (HORECA) and households. UCO recovery is seen as a priority, respecting the provisions concerning animal and vegetal byproducts management. These provisions are defined by Decree-Law No. 32/94, February 5, and Decree-Law No. 106/2005, of 29 June.
This legislation creates a set of rules that encourages the separate collection, safe transport, treatment and recovery of the UCO, by duly licensed operators. The traceability and quantification of UCO are required. The collection of UCO produced by households is treated in a detailed way, assigning a prominent role to the municipalities and establishing concrete objectives for the implementation of municipal separate collection networks. The municipalities or the local waste management companies, are responsible for the UCO collection from producers whose daily

production of municipal waste does not exceed 1100 litre volume. This treshold distinguishes the private households by the restaurants or catering activities.
Consistent amounts of UCO produced by catering, restaurants, or other industrial producers have to be delivered to:
a) duly licensed operators (a list is published by the Portuguese Environmental Agency)
b) municipality, through the collection points previously indicated.
The municipality or the waste management company release a certificate to the activities of the HORECA sector which collect and recover their UCO. This certificate has to be visible to the public and it is valid for one year.
Until December 31, 2011, the municipalities with more than 300 000 inhabitants had to set up at least 40 UCO collection points. In 2015, this number should be doubled. Depending on the number of inhabitants, the number of UCO collection points varies. Municipalities with less than 25 thousand inhabitants should provide eight collection points by the end of 2011 and 12 by the end of 2015.
The idea is that the used oil is collected in order to be recycled and converted into biodiesel. Currently this idea is being implemented by small local projects and small and medium-sized enterprises.
Non-compliance with the provisions of National Decree-Law n.º 267/2009, constitutes a serious or very serious environmental offence, according to the framework law of environmental offences, law No. 50/2006, of 29 August. The sanction varies when applied to a natural or legal person and depending on the degree of guilt and infringement.

Table 3 - Sanctions

Administrative offences		Negligence	Fraud
light	committed by natural persons	500 to 2500 euros	1500 to 5000 euros
	committed by a legal person	9000 to 13000 euros	16000 to 22500 euros
serious	committed by natural persons	12500 to 16000 euros	17500 to 22500 euros
	committed by a legal person	25000 to 34000 euros	42000 to 48000 euros
very serious	committed by natural persons	25000 to 30000 euros	32000 to 37500 euros
	committed by a legal person	60000 to 70000 euros	500000 to 2500000 euros

Some organisations supervise the correct application of the law concerning UCO management: the CCDR (Regional coordination and Development Commission), the ASAE (Food and economic Safety Authority), the police and other competent authorities in this matter. The inspection process is of competence of IAGOT (General Inspectorate of Environment and territorial planning and territory).

The following laws impact the UCO collection and treatment:

- National Decree-Law n.º 267/2009
- National Dispatch n. º 21295/2009 - waste fuels strategy.
- National Decree-Law n.º 178/2006, - general requirements of waste management and for waste management license (national Executive Rule n.º 50/2007, January 9).
- National Executive Rule n.º 335/97, May 16 - technical standards of the waste transportation.
- National Decree-Law n.º 147/2008, July 29 establishes the environmental accountable legal requirements.
- National Decree-Law n.º 209/2008, October 29 establishes the industrial activity scheme (REAI).

Some MSs lack (completely or partially) a well-structured legal framework addressing the UCO management. There's a big ambiguity in the definition of the UCO as a waste or as a by-product and this results in uncertain treatment pathways.

In the Danish case, the scarce regulation addressing the UCO management, is due to a scarce availability and use of vegetable oils.

The Portuguese framework is the most complete and strict one at the same time: it considers the UCO management as a weighty issue and it clearly sets the rules which have to be followed. It also establishes some objectives to be accomplished in the next future and the sanctions to be paid in case of non-compliancy. The Portuguese case, is a best case among the considered ones.

First of all, the UCO management and recovery have to be recognised as an important environmental and economic issue. Once policy makers become aware of this, a UCO regulatory framework can be defined in order to minimize the UCO environmental impact and maximise the economic value of the recycled products.
The legal framework has to identify the responsible subjects and it has to define the sanctions to be paid in case of non-compliancy with the provisions.
UCO produced by industries, by restaurants and catering or by households, all have to be framed into the regulatory system.
As in the Italian case, the institution of national consortia, can be a good solution to globally manage and control the UCO collection, on national level. Data collection is fundamental to focus the concrete situation and identify the main barriers; a central body of management can ensure a wide view of the sector.

3.2. Harmonization with RED and FQD

As stated by the RED and FQD, the EU 27 countries had to introduce into their own regulatory frameworks some laws intended to repeal the above mentioned EU directives. The paragraph here below describes the various steps of the harmonization process in the analysed countries.

Greece

Law 3423/2005 "Introduction of biofuels and other renewable into the Greek Market", with an appropriate supplement and amendment of Law 3054/2002 "Organization of the oil market and other provisions", integrated biofuels into the existing regulatory framework for petroleum products, thus repealing Directive 2003/30/EC.
The supreme chemical council decision 316/2010 established specifications in the field of petrol and diesel quality according to Directive 2009/30/EC, and especially EN 14214.
Law 4042/2012, in compliance with Directives 2008/99/EC and 2008/98/EC, introduced environmental impact regulations into the greek legal framework. This law determined substantial changes in the environmental licensing of all activities. Articles 14 to 31 of **Law 4062/2012** aligned the Greek legislation with both directives 2009/28/EC and 2009/30/EC, including their annexes.

- In art. 14-17, art. 23-27, art. 29-30 the 2009/28/EC Directive is introduced, as described in the European legislation and in specific: the NREA Plans, the share of RES energy estimation procedure, bilateral agreements, sustainability criteria, double counting system for biofuels made from waste, residues, non-food cellulosic and ligno-cellulosic material.

- In art. 18-22, art. 31 the 2009/30/EC Directive is introduced, as described in the European legislation and in specific: sustainability criteria, verification method for compliance with the sustainability criteria, rules for calculating life cycle GHG emissions from biofuels.

Italy

The EU RES and FQ Directives have been respectively transposed into the national regulatory framework through the **D.L. 3/03/2011, n. 28**. and the **D.L. 31/03/ 2011, n. 55.**

In order to be counted against the national targets, the RED requires biofuels:

- to ensure a minimum 35% emission reduction by 2012 (increasing to 50% in 2017 and 60% in 2018)
- to be compliant with the other sustainability criteria.

The energy contribution of biofuels is considered higher than the actual energy content if the following conditions are respected:

- sustainability requirements
- the production process took place in establishments situated in the EU MSs.
- crop feedstock of EU origin

or if delivered for consumption outside the fuel distribution network:

- the proportion of biofuel used is equal to 25%.

The increase to the energy contribution can be applied to consumption entries made between 1 January 2012 and December 31, 2014. According to the **D.L. 3/03/2011, n. 28,** the annual blending rate of biofuels is set by the NREAP. Biodiesel is exclusively used in blends with traditional diesel for transport or with diesel for heating. Gasoline and diesel supplier are obliged to deliver into the fuel distribution network a minimum quota of biofuels, calculated according to the total calorific value of gasoline and diesel supplied in the previous year.

Spain

The RED sustainability criteria have been transposed via the **Royal Decree 1597/2011** published on November the 5th 2011. Starting from January the 1st 2013, compliance with sustainability criteria is required for all biofuels marketed in order to be eligible to count against RED targets. Sustainability criteria are identical to those in Directive 2009/28/EC:

- In terms of land use, there are certain land categories excluded from production of biofuels raw material. In addition to that, when land category is appropriate Statutory Management Requirements and Good Agricultural and Environment Condition have to be observed.
- For greenhouse gas-emission savings default values or calculated values can be used. A GHG calculator is available in the IDAES's webpage.

Royal Decree 1597/2011 allows three mechanisms to show compliance: national systems, voluntary schemes, bi/multilateral agreements. The national system has been integrated into the current certification system for the biofuel consumption targets, managed by the CNE. A consistent part of the Spanish biofuel producers are certified by ISCC, 2BSvs and RBSA. The mutual recognition between national systems-voluntary schemes and between different voluntary schemes is still problematic.

Danemark

The **Act on Sustainable Biofuels** enforces the RED. The "**Bioenergy Handbook**" introduces sustainability criteria, in line with the minimum requirements of the EU legislation.
In accordance with the Act on Sustainable Biofuels, an importer or manufacturer of petrol or diesel has an obligation to ensure that biofuels make up at least 5.75 % of the company's total annual sale of fuel to land transport, measured according to energy content. This target has been distributed over a three year period: 0.75 % in 2010, 3.35 % in 2011 and 5.75 % in 2012. All companies whose activities are related to liquid fuels, are obliged to make an annual report to the Danish Energy Agency. They are as well obliged to contract a controller according International Standard on Assurance Engagements (ISAE 3000).

Portugal

DL n.º 117/2010, 25/10/2010 establishes the criteria for sustainable production and use of biofuels and bioliquids. It transposes:

- Paragraph 6 of Article 1 and Annex IV of Directive No. 2009/30/EC

- Articles 17 to 19 and Annexes III and V of Directive No 2009/28/EC

Article 28 states:

- the introduction of a minimum of 6.75% (by volume) biodiesel (FAME) in diesel fuel until the end of 2014 and
- reservation quotas of the biofuels entitlements emission (TdB-D) by the end of 2014.

All the examined countries aligned their regulatory framework to meet RES and FQ Directives binding targets, integrating the above mentioned directives into their own regulatory framework through various laws.

A well-coordinated and harmonised policy framework can facilitate the creation of an healthy European market for biofuels.

3.3. National Renewable Action Plans and biofuels targets

In the last years, every country elaborated a NREAP to be compliant with the 20/20/20 targets. The following paragraph focuses on biofuels related targets.

Greece

Table 4 - 2020 target and estimated trajectory of energy from renewable sources in transport

%	2005	2010	2013	2014	2015	2016	2017	2018	2019	2020
RES-Transport	0,02%	1,7%	4,8%	5,6%	6,3%	7,1%	7,8%	8,6%	9,4%	10,1%

Table 5 - Results for biofuels in tansport consumption and utilization for the three basic scenarions examined for the compilation of the Greek NREAP

	2010	2015	2020
Reference (Mtoe)	0,11	0,28	0,41
Compliance (Mtoe)	0,11	0,39	0,62
Accelerated Economic Recovery (Mtoe)	0,11	0,39	0,69

Italy

The Italian NREAP sets a target of 10% in the transport sector by 2020 while the national target for the share of renewable sources in gross final consumption of energy in 2020 is 17%. According to the **D.L. 3/03/2011, n. 28,** the annual blending rate of biofuels is set by the NREAP. Biodiesel is exclusively used in blends with traditional diesel for transport or heating purpose. Gasoline and diesel suppliers are obliged to inject a minimum quota of biofuels into the fuel distribution network, calculated according to the total calorific value of gasoline and diesel supplied in the previous year:

Table 6 - Incorporation targets - Source: Assocostieri

	2008	2009	2010	2011	2012	2014	2020
Target	2,5%			5,75%			
Obligation	2%	3%	3,5%	4%	4,5%	5%	10%

Table 7 - Spain

	RES in transport in 2020	Biodiesel
NREAP	13,6% (4.322 ktoe)	76% biodiesel
Spanish Plan for Renewable Energies 2011-2020	11,3% (3.651 ktoe)	81% biofuels, in particular: 2.313 ktoe biodiesel – 200 ktoe 2nd generation

The Spanish Renewable Energy Plan 2011-2020 introduces national technical specifications for higher biofuel blends such as B20, B30, E85, and tax exemption for all types of biofuels incorporated into diesel and gasoline until 31 December 2012.

Table 8 - Mandatory biofuels incorporation targets – Source: APPA Biocarburantes

	2011	2012	2013
Overall target*	6,2%	6,5%	6,5%
Biofuels in diesel target*	6,0%	7,0%	7,0%
Biofuels in petrol target*	3,9%	4,1%	4,1%

*In energy content

To accomplish the targets set by the Directive, Spain opted for a mandatory biofuels blending since 2009. The following table shows the amounts of biofuels for transport that must be marketed by fuel sector operators

Table 9 Source: APPA Biocarburantes

Year	Type of mandate	Overall mandate	Biodiesel specific mandate	Bioethanol specific mandate
2008	Voluntary	1,9	1,9	1.9
2009	Mandatory	3,4	2,5	2.5
2010	Mandatory	5,83/4,78	3,9	3.9
2011	Mandatory	6,2	6	3.9
2012	Mandatory	6,5	7	4.1
2013	Mandatory	6,5	7	4.1

The mandates are in energy content (toe), not in volume.

Denmark

The Danish government aims to reach a share of RES of approximately 30% in the final energy consumption in 2020 while this target rises to 100% in 2050. In accordance with the RE Act, at least 10 % renewable energy has to be reached in the transport sector by 2020. Bioenergy will play a key role in this strategy: the government will ensure the fulfilment of this target through the increased use of biofuels in the transport sector and by promoting electric vehicles. The NREAP sets out a 167 ktoe targets for biodielsel in 2020, equal to 7.0 PJ; considering that home production and import reached 6.4 PJ in 2011, the target will be easily achieved.
In the long term, the transport sector will face a radical conversion from fossil fuels to electricity and biofuels. The energy agreement of the 22nd of March in 2012 contains an overall strategy for the promotion of energy-efficient vehicles.

Portugal

The National Renewable Energy Action Plan (**NREAP**) includes the specific targets to fulfill the requirements established in Directive 2009/28/EC:

Table 10 NREAP Portugal

%	2013	2014	2015	2016	2017	2018	2019	2020
RES-T *(*)*	5,7%	5,9%	8%	8,2%	9%	9,3%	9,7%	10%
RES Biodiesel from UCO	0,08%	0,10%	0,10%	0,10%	0,12%	0,12%	0,14%	0,14%

National Strategy for 2020 Energy (**ENE 2020**) was approved by the Ministers Council n. º 29/2010, April 15.

Spain and Denmark established the most ambitious objectives in terms of share of RES. Nevertheless, the Portuguese NREAP is the only one which specifies the targets for Biodiesel issued by UCO. Considering biodiesel issued by UCO in the overall plan for reducing GHG emissions is a very good point as it shows that UCO collection and recycling are felt as crucial issues to achieve the RED targets.

3.4. Support measures

Given that the production cost of biodiesel is higher than the production cost of diesel, biodiesel would turn not competitive unless some support measure would be applied. Considering the environmental and social benefits of biodiesel as well as the need of compliancy with 2020 GHG reduction targets, biodiesel sector has to be supported by the regulatory framework.

3.4.1. Tax reliefs for biofuels

Greece

The Special Consumption Tax for biodiesel gradually increased until 2010 when it was equated with the diesel, with a coefficient of 352. Today the special consumption tax of biodiesel as transportation fuel is 412 Euro/1000liter.

Italy

During the 2007-2010 period, a quota system for biodiesel was in effect, determining a 20% reduction in the excise duty charged on diesel for a quantity equal to 250 thousand tons. This means that the excise duty amounting to 423 € per 1000 litres, was reduced to 406,17 € for 1000 litres. The allocation of quotas between producers was carried out on the basis of the volumes produced.

Since 2011, the Italian biofuel sector does not benefit from any kind of direct subsidies or tax relief quota: all excise exemptions for biodiesel have been removed.

Spain

According to law 22/2005, biofuels were exempted from the hydrocarbons tax, currently set at 0,278 €/liter for diesel and 0,371 €/liter for gasoline, until 31 December 2012.

This special rate only applied to the volume of the actual biofuel, even when it is mixed with other products. If deemed appropriate, on the basis of the relative production cost of petroleum products and biofuels, the zero rate could be replaced with a positive levy which shall not exceed the tax rate applicable to equivalent conventional fuels. Nevertheless biofuels were subject of the tax on retail sales of hydrocarbons, whose total amount varies depending on the region and a VAT of 21%. This tax exemption is not in force since 1st January 2013.

Denmark

Denmark has **no subsidization of biodiesel production**, wherefore there is no need for auctions, quotas or the like for distribution of production rights on the factories, which activities are purely commercially based. The use of biodiesel for transport in Denmark is taxed in the same way as fossil based diesel, despite from a **CO_2 tax relief**, equal to about **€ 75 per**

1,000 liters (including VAT). When used for private heating purposes biodiesel is completely exempted from tax, whereas use in district heating supply can be restricted.

Portugal

According to **Article 19 of L n.º 117/2010, 25/10/2010**, small producers of biofuels (capacity less than 3000 tons/y) can benefit of an exemption of the tax on petroleum and energy products (ISP) under the Consumption Special Taxes (CIEC).

During the last decades, the tax exemption has been necessary to increase the use of biofuels. Anyhow the emission reduction obtained through the application of this support measure, involves a cost for the Government in terms of loss of tax revenues. As the biofuels consumption increases, this loss becomes consistent (3).

All the analyzed countries have gradually abolished the tax relief for biofuels except for Denmark and Portugal. The Danish policy is the only one which recognizes the true contribution of biodiesel to GHG emissions reduction, while the Portuguese policy aims to protect the small producers, avoiding them to pay the tax on petroleum and energy products.

3.4.2. Biodiesel incorporation targets

Biofuel blending limits in the EU are set according to conventional fuel standards, designed to ensure compatibility with conventional power trains and refuelling infrastructure. Biodiesel is regulated by standard EN590/2004 allowing up to 5 % v/v blending of fatty-acid methyl ester (FAME) in diesel fuel. Biodiesel incorporation targets are currently the most popular incentive amongst EU members for the low blend market. The cost of the biofuel introduction is hereby transferred on the market actors rather than on the state. However, quotas are often not liked by the biofuel producers as they create an over regulated market that cannot grow organically. In some EU member states quotas allow for market actors to use the double counting mechanism introduced for the national reporting of the state towards the 2020 targets.

Greece

In Greece, currently the share of biodiesel is 7%. Every year, the percentage of blending biodiesel fuel mixture which must be ensured by the blending responsible (refineries) is determined by a JMD. For the calculation of that amount i) the minimum blending percentage of the biodiesel fuel mixtures and ii) the estimated consumption of diesel for transport for the next year are considered.

Italy

As regards to mandatory quotas for biofuels, the financial Law of 2007 fixed a minimum share of 2% biofuels in the final consumption of transport fuels by 2008, 3% by 2009 and 5,75% by 2010, but at the end of 2009 this target was reduced to 3,5% by 2010, 4% by 2011 and 4,5% by 2012.

The renewable energy decree of 28/2011 has further postponed the minimum share of 5% biofuels to 2014 instead of 2013.

Table 11 - Source: Assocostieri

	2008	2009	2010	2011	2012	2014	2020
Obligation	2%	3%	3,5%	4%	4,5%	5%	10%

Spain

There is no obligatory share of biodiesel in car fuel mix. Any case, according to the Royal Decree 1088/2010, in order to ensure appropriate consumer information, fuel suppliers shall display the following disclaimer concerning biodiesel blends of more than 7%: "Before using this product, please make sure it is suitable for your engine".

Denmark

The Act on Sustainable Biofuels recommends, and the sector has since 1 July 2011 implemented the 5.75% target in the way that of technical reasons petrol is mixed with 5% biofuels and diesel with 7% biofuels in Denmark.

Portugal

Table 12 Mandatory incorporation of biofuels for the years 2011 to 2020 (% in TEPs) – Source National Decree-Law n. º 117/2010, October 25:

2011 & 2012	2013 & 2014	2015 & 2016	2017 & 2018	2019 & 2020
5%	5,5%	7,5%	9%	10%

In Portugal, currently, the blending limit is 5,5%, according to the Article 11th of the national Decree-Law n. º 117/2010, October 25). The incorporators are obligated until the end of 2014 to incorporate on diesel used in the terrestrial transport sector a minimum of 6,75% in volume of biodiesel (Article 28th of the national Decree-Law n. º 117/2010, October 25).

Biodiesel incorporation targets seem to be one of the stronger support measure. In some cases, biodiesel incorporation targets are the only way of support for the biodiesel sector (e.g. Italy).
A mandatory minimum share of liquid biofuels to be blended with traditional fossil-based fuels for transport secures a market to biofuels and stabilizes the investment environment.

A progressive sub-target for advanced biofuels could be introduced in order to:

- secure a market share
- reduce investment risk
- lower competition with well established biofuel pathways (4).

Advanced biofuels would remain eligible for the rest of the blending target, once the subtarget is fulfilled. Technology neutrality is critical for this measure- no winners should be picked upfront. With this measure the market would settle the price needed to ensure sufficient production. There would therefore be no budgetary implications for the EU or its Member States.

Mandatory targets will only be effective if they are combined with high and stable, mandatory penalties for non-compliance – the proceeds of which could be returned to producers or contribute to the financing of demonstration and flagship plants.

Mandatory incorporation targets should be a side form of support to other measures (e.g. investments in vehicles and infrastructure aimed to increase biofuels share in high-level blends). Suitable incentives should encourage vehicles producers and citizens to move towards a green fuelled Europe.
Unfortunately today's rules are rather a barrier for the introduction of biofuels that require engine adaptations, such as B100.

3.4.3. Quota systems for biodiesel producers

Greece

According to the provisions of L. 3054/2002, as amended by **L.3769/2009**, biodiesel quantities blended with oil are defined on an annual basis under a quota scheme.

The quota scheme is established every year, following a relevant call for tenders and an evaluation and allocation procedure, involving all the stakeholders (producers and importers interested in taking part in this quota system). The evaluation procedure, following specific criteria and a specified formula for quota allocation, can approve or refuse the raw materials for bioenergy production. The criteria of biodiesel distribution among the producers are:

- The quantities of raw materials from areas of domestic energy crops for the production of biodiesel, through contractual agreements with farmers which are registered in the Integrated Management and Control System
- The quantities of cottonseed , national origin, intended for biodiesel production
- The quantities of used vegetable oils, UCO, and animal fats, of domestic origin, intended for the production of biodiesel
- The requested amount of biodiesel. In each case, the amount requested cannot exceed to distribution of total annual quantity verbatim biodiesel
- The cooperation of the applicant company with universities or research institutions and organizations based in Greece for research programs or projects related to biofuels, bioliquids and biogas from raw materials as defined in Article 2 of Decision D1/A/oik.10839/15.5.2012. The research programs or projects must be at least six months in effect at the closing date for applications. In each case, the applicant company must have its own contribution to the budget research program or project.

L. 3769/2009 allows the distribution of biofuel blends with refined crude oil beyond the limit of 7% v/v specified in the **Decision of the Supreme Chemical Council 460/2009**, if the other specifications of these blends lie within the limits of standard EN 14214. In case of compliance a special mark in the fuel tanks has to be displayed.
Art. 34 of L. 4062/2012 also amends L. 3054/2002: it foresees that the Minister of Environment and Climate Change Ministry states every year before the 10th of November the annual amount of biodiesel to be distributed the next year and the percentage of biodiesel blending which must be ensured by the responsible bodies (refineries). The calculation of this amount takes into account:

- the minimum blending percentage of the biodiesel fuel mixtures
- the estimated consumption of diesel for transport for the next year

According to the relevant Joint Ministerial Decrees (JMD) of the Ministry of Finance, the Ministry of Environment, Energy and Climate Change and the Ministry of Rural Development and Food, a specific quantity of pure biodiesel is allocated to beneficiaries in order to achieve the mandatory percentage of biodiesel blended in diesel. The JMDs also foresee the maximum premium to be offered by the beneficiaries, which is binding for the beneficiaries' firms sales over the course and for the whole quantity of pure biodiesel for the yearly allocation period.
If the joint ministerial decision on the distribution of biodiesel is issued with a big delay, a chaotic situation can take place.

Spain

In April 2012, shortly after Argentina announced the expropriation of 51% of YPF, a subsidiary of Repsol, Spain's largest petroleum company, the Government of Spain published a Ministerial Order to establish a biodiesel production quota system. This Ministerial Order lays down the rules to allocate biodiesel production quotas to EU based biodiesel producers whose production would be eligible to meet consumption mandates. The implementation of this quota system would ultimately restrict third countries' exports of biodiesel to Spain. Spanish biodiesel producers, who have suffered from capacity utilization rates as low as 14% in 2011, expect that the order will result in increased domestic production of biodiesel. Many of the 51 biodiesel plants had to either stop their production or go into liquidation
However, biodiesel producers in MS that are not protected by production quotas, fear that Argentinean biodiesel will be diverted to other EU markets and pose increased competition there.

The ministerial Order answers to the need of prevention of disloyal competition from third countries, including the following points:

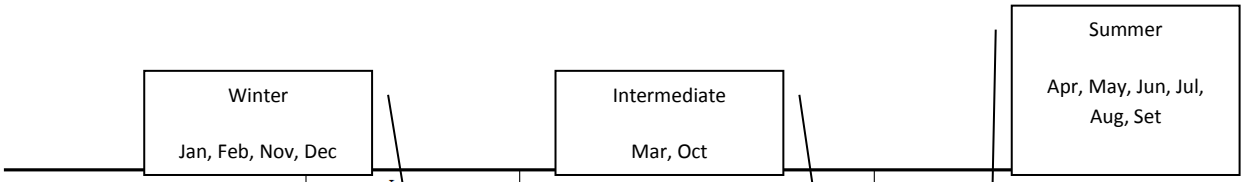
- Allocation of biodiesel quantities to approved EU production plants to achieve national objectives
- The quantities to be allocated are twice higher than the national biodiesel demand → fair competition is ensured
- The system would run for an initial period of 2 years, may be extended to 2 more

Portugal

In compliance with Articles 28th e 31th of the national Decree-Law n. º 117/2010, October 25 the formula for calculation it´s according to Executive Rule n. º 41/2011, January 19.

The Decree-Law n. º 117/2010, October 25, states in Article 28th an obligation of incorporation, by the end of 2014, a minimum of 6.75% (v/v) biodiesel in diesel fuel used in terrestrial transport sector. In order to maintain national production of biofuels with a cost that is acceptable to the end user has been published the Executive-Rule n.º 49/2011, January 19, which established a new formula for calculating the maximum selling price of biodiesel by producers of biofuels entities obliged to perform its incorporation in diesel, when accompanied by their biofuels entitlements (TdB). Formula is:

Maximum price (in Euros per cubic meter) = mix oils index + freight index + methanol index + variable production costs + other production costs:



Meses de aplicação	Inverno — Janeiro, Fevereiro, Novembro, Dezembro	Intermédio — Março, Outubro	Verão — Abril, Maio, Junho, Julho, Agosto, Setembro
Index mix óleos	0,30 * *S* + 0,70 * *C*	0,70 * *S* + 0,10 * *P* * €/USD + 0,20 * *C*	0,75 * *S* + 0,25 * *P* * €/USD
Index frete	26	0,90 * 26 + 0,10 * *Fp* * €/USD	0,75 * 26 + 0,25 * *Fp* * €/USD
Index metanol	11 % * *Me*		
Custos variáveis produção	110		
Outros custos produção	70		

Where,
*S = (quotation published in REUTERS - SOIL-NLD-GUM -P1, in €/t) * 0,91;*
*P = (quotation published in REUTERS - PALM-OLEIN -P1 in USD/t) * 0,91;*
*C = (quotation published in REUTERS - RPEO-NLEURO -P1, in €/t) * 0,91;*
*Fp = (quotation published in REUTERS - FIX-MYRDM5 -10, in USD/t) * 0,91;*
*Me = (quotation published in Reuters - MTH-CIFNWE, in €/t) * 0,792;*
€/USD = exchange rate €/USD published by the European Central Bank.

Each raw material quotation it's related to a code published in REUTERS, obtained through consultation. DGEG has direct access to REUTERS application and extract data per each raw material in a determinate period. For example:

Calculation of maximum price of February 2013 (Winter) = [0,30 * (quotation of SOIL publishes in Reuters in the period from December 20 until January 19 * 0,91) + 0,70 * (quotation of RPEO publishes in Reuters in the period from December 20 until January 19 * 0,91)] + 26 + [11%* (quotation of Metanol publishes in Reuters in the period from December 20 until January 19 * 0,792)] + 110 + 70 = 1.053,31 €/m3

The maximum selling price of biodiesel is limited to the amount obtained by applying the following formula:

Limite = GO 10 ppm * 0,845 * €/USD + 650

Where:

GO 10 ppm = quotation Northwest Europe Cargoes Mean CIF NWE/Basis ARA Diesel 10 ppm NWE, in USD/ton, published in Platts European Marketscan;

€/USD = exchange rate €/USD published by the European Central Bank.

The paragraph n. º 1 of the Article 28th of the national Decree-Law n. º 117/2010, October 25 define a specific goal to accomplish by the end of 2014, the introduction of a minimum of 6.75% (by volume) biodiesel (FAME) in diesel used in this sector.

In Spain, the quota system is a clear reaction to the third country competitiveness, which deeply lowered the national biodiesel selling.

In Greece, uncertainty deriving from the annual quota system and delay in the annual quota allocation, produced a very negative impact in the recent past.

The quota system for biodiesel producers and the biodiesel price limit, can lead to an overregulated biodiesel market. A proliferation of laws establishing the role of the different economic operators and the price of the products, can represent an obstacle to the establishment of a mature biodiesel sector.

3.5. Certification of sustainability

The RED aims to establish a "complete harmonisation of biofuel sustainability criteria in order to ensure that no criteria would be adopted individually by Member States", keeping the internal market provision as a legal basis. Sustainability criteria are mandatory and thus prevent Member States from adopting certain measures which would hinder trade in raw materials (Article 15(6)).

Certification is the only instrument to differentiate in global commodity markets, based on ecological and social standards. Schemes should serve to demonstrate compliance with requirements, but they should differentiate to create market incentives, e.g. for double or quadruple counting.

Certification of biofuels has taken off, and it shows impact on the ground. The paragraphs here below show the biofuels sustainability certification system implemented in the partners country as described in the survey.

Greece:

Art. 3 of JMD Δ1/Α/οικ.10839/15-5-2012, according to art. 21, 22 of L.4062/2012, clarifies certification issues and responsibilities:

Subject	**Responsible body**
Compliance with the sustainability regulations:	Office of Sustainability of Biofuels and Bioliquids
Quality of biodiesel:	Supreme Chemical Council (ACHS)
Application procedure:	Supervisory Commission of the Environmental and Climate Change Ministry
Data Management and Information System:	Administration of Petroleum Policy of the Environmental and Climate Change Ministry
Biofuels Distribution – License:	Administration of Management and Supervision of Petroleum Products

Italy:

The Ministerial Decree of 23 January 2012 introduced the Italian regulation for the certification of mandatory sustainability criteria for biofuels. Accredia, the National accreditation organism, is responsible for the accreditation of certification bodies. The accredited certification bodies follow the certification schemes to perform at least an initial audit and an annual audit or one every six months, to release a "Certificate of Conformity" valid for 5 years, which can be revoked in case of lack of compliance. Operators in a given supply chain, delivering their product to the next operator of the supply chain, must release a "Declaration of Conformity" for each lot of the delivered product (or in certain cases a Certificate of Sustainability). Operators can also choose to certify their products based on voluntary schemes approved by the Commission, provided that they are audited by accredited certification bodies. ISPRA, the Agency for environmental protection and technical services, is another institution responsible for monitoring sustainable criteria of biofuels. Since 1st January 2012, by January 31 of each year, ISPRA acts as intermediate between the Minister of Environment and the biofuel providers, transmitting a report (a self-certification) including:

- the total quantity of each type of fuel or energy supplied, its place of purchase and origin;
- the GHG emissions produced during the life cycle per unit of energy.

There are no Italian voluntary certification schemes but only the National certification scheme introduced by the Ministerial Decree of 23 January 2012

Spain:

The National System for Sustainability Certification, led by the Ministry of Industry, Energy and Tourism, recognizes the National Energy Commission (CNE) as responsible body for issuing and accounting biofuel consumption certificates (SICBIOS). Accredited sustainability certification entities are responsible for issuing the sustainability verification report.
Economic agents (including farmers, raw materials elevators and merchants, biofuel producers, petrol and petrol logistics companies, etc.) have to save relevant information on sustainability assurance for a 5 years period for auditing purposes.
As described in the RED, sustainability can be proved by one of these three options: voluntary schemes, national schemes or a bilateral/multilateral agreements recognized by the EU Commission. Combinations of these options are also accepted. In addition to these three paths, the Director General for Energy Policy and Mines (Spanish Ministry of Industry, Energy and Tourism) can deem appropriate to recognize other Member States national verification systems. The mutual recognition between national systems-voluntary schemes and between different voluntary schemes is still problematic.
Most Spanish biofuel producers have chosen to obtain certification from ISCC, 2BSvs and RBSA.

According to the RD 1597/2011, obliged parties must submit to the CNE the following data: batch identification, biofuel type, volume, raw materials and country of origin. As it pertains to information regarding sustainability, this should include the system chosen for sustainability certification. Also a responsible declaration or a sustainability verification reporting assuring compliance with mass balance and traceability as well as with GHG emission reduction, land use and good agricultural practices is required. Based on all this information, the CNE issues certificates in favour of each obliged party. One certificate equals one metric ton of biofuel marketed.
There are biodiesel and bioethanol specific certificates that count against each mandate. Certificates can be transferred between parties and since 2010 they can be also transferred to the following year (up to a maximum of 30%). At the end of the year CNE calculates whether the obligated parties met the mandate. Fines of 350 € are imposed per certificate that the obligated party failed to market.

Starting on January 1, 2013 sustainability will be required for all biofuel marketed (however a transitory period will be observed) in order to be eligible to count against consumption targets.

Denmark:

The Bioenergy Handbook contains the detailed provisions, which can be amended administratively by the current Government. The economic operators are obliged to make an annual report to the Danish Energy Agency. They are as well obliged to contract a controller according the International Standard on Assurance Engagements (ISAE 3000).

Portugal:

According to chapters IV and III of the national Decree-Law n. º 117/2010:

- the National Laboratory of Energy and Geology (LNEG) is responsible for the coordination of the verification process of the sustainability criteria, while
- the General Directorate of Energy and Geology (DGEG) supervises the verification procedures carried out by the LNEG, verifying the compliance with sustainability criteria. The DGEG has to be notified regarding the commercialization of biofules.

A joint order of the Government members responsible for energy, environment and agriculture areas, allows a voluntary national scheme for biofuel and bioliquid sustainability, according to the Executive Rule n. º 8/2012. This law approves the Regulation of the Operation of the Coordinating Entity for the Sustainability Criteria Compliance (ECS). The ECS duties are ensured by the LNEG.

The Commission recognised that MSs' transposition of the biofuel sustainability criteria shows some gaps and legal proceedings have begun to ensure that effective sustainability regimes are in place in all MSs.

The most controversial topics are:

- 3 month vs. 12 month mass balance period
- Multi-site mass balance vs. site specific mass balance
- Categorization of waste and residues and its control mechanism

Up to now, the Commission has approved 14 voluntary schemes for certifying the sustainability of biofuels. These certification schemes enable biofuel producers around the world to comply with high EU standards. Most MSs allow economic operators to show compliance with the sustainability criteria through multiple ways, including the land use, GHG emission savings and the mass balance chain of custody criterion.
Some parameters should be included in every certification scheme: quantity, biofuel type, feedstock, ghg-performance, country of feedstock origin, country of biofuel purchase, name of voluntary scheme, degraded land bonus, soil carbon accumulation factor, nuts 2 region and land use in january 2008. Consistency is ensured by homogeneous units and standard terminology.
The use of a standardised reporting template for economic operators is also recommended, as well as the development of electronic databases, where economic operators can report their sustainability information (see paragraph 3.6).
Non- or mal-reporting should be prevented by suitable penalty systems. The fine level of a penalty system should be calibrated taking into account the financial turnover generated by the economic operators, distinguishing small and large producers. The exclusion of economic operators from the national database of sustainable biofuel producers can be a good deterrent as well.
Verifiers have to demonstrate compliancy with requirements of independency and suitable qualification, through accreditation or through the use of the ISAE 3000 standard.

In some of the analysed countries, economic operators are required to report to several administrative bodies, while a single competent body should be designated in order to reduce the administrative burdens. For the same reason, biofuel suppliers should be the only responsible of reporting verified sustainability information to the competent administrative body instead of reporting at multiple stages along the chain.
Economic operators can provide information about the sustainability characteristics of the biofuel verified by independent auditors directly to the competent authorities through a European (national or established by another MS) system of ex-post verification in place. Recognising other Member States' voluntary schemes or national systems can be done after a check that other Member States' schemes or systems are in line with national (and indeed European Commission) requirements.

3.6. Double counting implementation

The RED recognises biofuels based on waste resources as more environment friendly than biofuels produced out of agricultural commodities. RED Art.22 encourages EU Member states to create support schemes giving additional benefits to renewable energy applications such as wastes, residues, non-food cellulosic material and cellulosic material. The possibility for certain biofuels of receiving double credit based on what feedstock are being used have so far been introduced 7 in nine Member States: Austria, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, and the U.K. The use of double counting biofuels is limited but growing, in particular the consumption of biofuels produced from waste fats.

Greece

JMD Δ1/Α/οικ.10839/15-5-2012 states that biofuels made from waste, residues, non-food cellulosic and ligno-cellulosic material can count double toward the mandate. But the double counting system hasn't been implemented yet.

Italy

On 5 July 2012, the Italian government has approved in the **Decree 83/2012** the double counting provisions for biofuels made from waste feedstock as stipulated in the RED. Starting from November 2012, animal fat category III is excluded from the double counting provisions. Additionally, the approved legislation demands that biofuel qualifying for the double counting provisions is made from EU feedstock. From 2013, obligated parties under the Italian biofuel quota can meet up to 20% of their annual quota certificate requirement with biofuel qualifying for doubling counting.

Spain

The Secretary of State for Energy adopted a definition or/and a list of eligible feedstock in 2012. The CNE is responsible for defining an adequate traceability mechanism. The Royal Decree mentions explicitly that the UCO producers are part of the chain of custody.

Denmark

The Bioenergy Handbook provides a positive list of biofuels that counts double with respect to sustainability. UCO is not on the positive list, whereas animal fast counts double.

Portugal

The table here below shows a list of raw materials sources and the respective quotas of the biofuels entitlement emission for each Tep of biofuel incorporated in the fuel consumption:

Residues or waste	2 TdB
Non-food cellulosic and ligno-cellulosic material	2 TdB
Non-food endogen origin	1,3 TdB
Agriculture endogen origin	1, 1 TdB

The status of development of the double counting system, is not homogeneous across the EU, meaning that only a few countries adopted specific provisions. Furthermore, in some cases the system is not effective despite of the formal adoption of these provisions.
The few countries which implemented double counting rules developed their national system in very different ways. Both the certification procedures and the lists of eligible material for double counting are non-harmonized across the EU-27, creating obstacles to the international market.

Table 13 Lists of materials eligible for double counting in UK, Netherlands, Germany, Danemark and Italy. Source: Meo Carbon Solutions GmbH

	UK	The Netherlands	Germany	Denmark	Italy
UCO	X	X	X		X
Animal fat Cat. I	X	X		X	X
Animal fat Cat. II	X	X		X	
Animal fat Cat. III					
Forestry residue	X	X	X		
Brown grease	X		X		
Food waste	X		X		
Tall oil pitch	X		X	X	X
Manure	X		X	X	

Some MSs protect national or European biofuel feedstock production. As we can see by the reported information, in Italy, only biofuels issued by waste with EU origin are eligible for double counting. France limits the amount of biofuels derived by wastes which can be counted against the national biofuel blending targets. The opposite can be observed in the UK where the greatest part of biofuels are produced starting from waste resources like UCO.

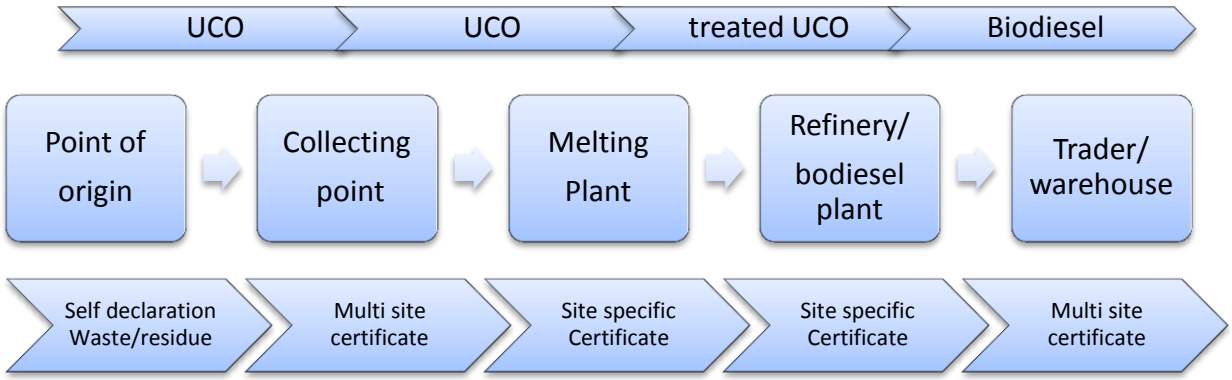
The lack of an harmonized regulatory framework related to biofuels from waste is the true obstacle hindering the double counting system affirmation. A general approval process for potential wastes is not stated yet in the RED for the entire EU and, as a result, companies have to deal with different authorities in each Member State. The sole country having a formalized approval process is the Netherlands within their NTA 8080 scheme.

Fraudulent activities in the production and trade of biodiesel from UCO are a relevant menace to the establishment of a transparent and fair market of double counting commodities. To this purpose, traceability of UCOME is a crucial issue, which can be treated following several approaches.

- In Germany, the NABISY system has been implemented as a "proof of sustainability" database, based on the mass balance principles. The aim of this database is to track trade in (and movements of) sustainable biofuels both produced by EU Member States and imported from extra EU countries.
- The Register of Biofuels Origination (RBO) aims to be a reliable reference tool for EU Member States authorities and EC Commission. It is an initiative led by the European Biodiesel Board which answers to the need of demonstrating genuine origin of biofuels substances to be considered as advanced biofuels and claimed for extra incentives and/or for double counting, according to the national definitions and listings of these products.
- The Trace your Claim database ensures that a given feedstock (biomass, waste and residue based material) is eligible for double counting according the Renewable Energy Directive and the Fuel Quality Directive. This database covers the entire supply chain from the point of waste or residue origination via further processing and conversion towards trade and final use by quota obligated parties. Interfaces will be provided to other public databases as well as databases operated by national authorities (e.g. Nabisy) and up- and download functions in order to ease data handling.

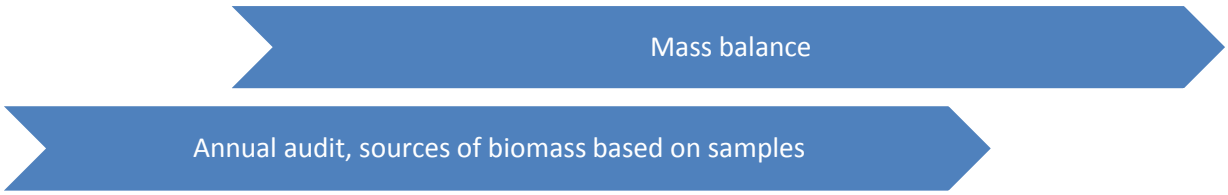
Germany has recently introduced mandatory certification system of all double-counting materials (BimschV). This means that UCO suppliers (e.g. restaurants providing UCO to collectors) are subjected to sample control procedures as well as all the other actors in the supply chain of UCO for biodiesel production. As of 1 of January 2013 they all have to be certified under one of the existing certification schemes (ISCC EU and ISCC DE). The UCOME producers selling their biodiesel in Germany (e.g. several Dutch and Belgian producers), have to guarantee that collectors of used cooking oil are certified ISCC DE.

Traceability requirements on UCO supply chain of double counting within Germany – Source Meo Carbon Solutions GmbH



Double counting

Single counting



The negative aspect is that mandatory supplier inspections further increases the respective cost of certification. The certification cost getting higher and higher could stop some waste based biofuels chains. Another discussion is the potential proof that a product is in fact UCO via testing. However, clear specifications and testing methods are currently under development but need approval still.

Once this measure is adjusted to cover adequately all advanced biofuels pathways, without offering windfall profits to some specific sectors or creating conflicts of use of feedstock, the double counting could become an excellent way to accelerate the industrialization of advanced biofuels.

3.7. Market data

Greece

Law 3423/2005 paved the way for new investments in biofuels industry and gave new inputs to the agricultural sector, which felt the need of innovation and change. Therefore, the biofuel production presented as an opportunity to exploit many uncultivated Greek lands.

From almost zero production of energy crops, in 2011 more than 1,000,000 acres of energy crops were cultivated. After 2005, the agricultural areas growing sunflower have multiplied. Compared to 2005, they doubled in 2006, tripled by 2008 and in 2010 they have increased by almost 15 times higher from the 2005 levels.

The industry sector also caught the opportunity of bioenergy business and within three years, Greece developed biodiesel factories of 802,000 tonnes annual capacity in 2011. More than 10 companies operate in the Greek biofuel market, including ELIN, EL-VI, Pettas, and Agroinvest. Other companies preparing to participate in this market include Hellenic Sugar Industry, PPC, and Biodiesel. During the last biodiesel distribution call, 36 Greek companies expressed their interest in participating in the distribution while 23 complied the distribution criteria.
During the last years, instability due to elections, restructuring changes of ministers, customs strikes, tanker trucks strikes and other problems lead to plants periodic closure and delivering problems so that more than 150,000 m^3 intact biofuel remained unsold and it was replaced by imported diesel. In parallel, the total amount of biodiesel that should enter into the Greek market annually was launched from 50,000 m^3 in 2005 to 182,000 m^3 in 2009 m^3 coming back to 132,000 m^3 in 2011.

Table 14 - Biodiesel distribution and production capacity in Greece

	2007	2008	2009	2010	2011
Biodiesel distribution, according to the JMD (.000 kL)	114	123	182	164	132
Biodiesel production capacity (.000 Tones) according to the EBB Platform	440	565	715	662	802

Table 15 - Total actual contribution from biodiesel renewable energy technology in Greece to meet the binding 2020 targets (ktoe)

	2009	2010
Biodiesel	78	128
Of which Biofuels Article 21	5	12
Of which imported	7	15

Greece was in 18th place in all 27 EU countries in 2009 (Source: www.Ebb-eu.org) with potential to slide down to 25th place in 2015 (according to the National Action Plan for Renewable Energy Sources).
Biodiesel is still the main biofuel for the Greek transport sector, but the market for pure biodiesel does not exist yet.

Production and consumption of Art.21(2) biofuels (ktoe)

Table 16 - Production and consumption of Art.21(2) biofuels (ktoe)

Article 21 (2) biofuels	2009	2010
Production – Biodiesel from waste oils	4.97	11.92
Consumption – Biodiesel from waste oils	4.97	11.92
Total production Art.21.2.biofuels	4.97	11.92
Total consumption Art.21.2. biofuels	4.97	11.92
% share of 21.2. fuels from total RES-T	6.35%	9.30%

The main biodiesel sources are energy crops (sunflower), cottonseed and cottonseed oil as well as cooking oils.

Italy

During the 2007-2010 period, a quota system for biodiesel was in effect, determining a 20% reduction in the excise duty charged on diesel for a quantity equal to 250 thousand tons. This means that the excise duty amounting to 423 € per 1000 litres, was reduced to 406,17 € for 1000 litres. The allocation of quotas between producers was carried out on the basis of the volumes produced.
Since 2011, the Italian biofuel sector does not benefit from any kind of direct subsidies or tax relief quota: all excise exemptions for biodiesel and bioethanol have been removed.

Table 17 - Italian Biodiesel Association statistics for 2011

Productive Capacity	Production	Imports	Exports	Consumption
2.395.240 TONS	620.000 TONS	1.019.000 TONS	158.000 TONS	1.456.000 TONS

- 45.000 tons UCO transformed in biodiesel (Conoe)
- 620.000 tons biodiesel produced in 2011 (Assocostieri)

→ Biodiesel from UCO: 7,3%

Only a small part of the produced biodiesel is distributed on the national market, thus determining a quite low blending level. As a consequence, Italy has to rely on imports in order to meet its European commitments, making biodiesel consumption costly while the countries whose regulatory frameworks facilitate biodiesel production are very competitive. Imports from UE (mainly Spain and the Netherlands) and extra-UE (mainly Indonesia, Argentina) countries are constantly increasing, as showed by the following table over a range of 4 years:

Table 18 - Imports from UE (mainly Spain and the Netherlands) and extra-UE (mainly Indonesia, Argentina) countries over a range of 4 years (Source: Assocostieri)

2008	2009	2010	2011
29%	36%	51%	70%

taking into account the total volumes on the market.

The biodiesel imports surge has partially offset the vegetable oil imports. Rapeseed and palm oil total imports decreased by 59% and 16% respectively over the period from January to August 2011.

The Italian biofuel industry is slowly developing to meet the EU's 2020 mandatory 10% target with regards to biofuel use in the transport sector. However, the lack of support from the government, strong competition from South America, as well as complex and vague legislative frameworks on the national and the EU level are severely hampering the industry's growth.

Spain

Table 19 - Market data (Source: APPA Biocarburantes & CORES & AEAT)

	2007	2008	2009	2010	2011
Production (mt)	148.777 (18%)	242.585 (12%)	611.271 (15%)	1.203.050 (28%)	647.199 (14%)
Capacity (mt/year)	815.190	2.070.020	4.110.400	4.371.400	4.589.400
Biodiesel imports (mt)	149.720 (51%)	369.584 (63%)	610.044 (59%)	837.915 (62%)	1.211.397 (74%)
Rest of national cons. (mt)	142.926	218.818	418.363	511.624	421.386
Exports (mt)		23.767	192.908	691.426	225.813
Consumption of B100 (mt)		100.161	41.225	40.839	25.520
blends (mt)		488.240 (83%)	987.182 (96%)	1.308.699 (97%)	1.607.263 (98%)

In 2011 sales of biodiesel amounted to 1.830.810 m^3 (77,35% of total biofuel sold in 2011). Increase sales of biodiesel (+ 17.8% vs 2010) but decreased those of bioethanol (- 5.1% vs 2010). It also increases participation in volumetric terms of biofuels out of the total of automotive fuels in 2011. That can be mixed with diesel biofuels accounted for 7.19 percent of the total of diesel fuel marketed in 2011 (5.56% in 2010 and 4.15% in 2009); Furthermore, bioethanol reached 6.34% of the gasoline for automotive (6.22% to 3.75% in 2009 and 2010). Regarding the forms of marketing, almost all of the biodiesel was marketed in 2011 mixed with fossil fuel in the form of mixtures not tagged.

Almost all of the biodiesel marketed in 2011 was mixed with fossil fuel in the form of not tagged mixtures. The number of definitive certificates corresponding to the sales in the financial year 2011 amounted to 1.737.305, of which 1.511.658 (87%) were certificates of biofuel in Diesel (in later CBD).

In relation to the type and origin of raw materials and to the country of production of biofuels consumed in Spain in 2011: the biodiesel consumed in Spain occurred mainly from Argentine soybean and seed (48%) and indonesia (35%). Total, soya and Palm have been more than 90% of the raw materials used in their manufacture (91,47%), increasing this participation with respect to 2010 (86,02%). Spain falls in 2011 both in the percentage distribution of suppliers of raw materials (4.52%) countries, as (24.47%) biodiesel producing countries. Argentina was the country with greater participation in the matrix of production (45,27%). For its part, Indonesia (24.89%) more doubling their weight over the previous year (5).

Developments, at the national level the allocation of quantities of biodiesel production and modification of the national system of verification of the sustainability of biofuels and, at the community level, to the eventual modification of directives on renewable energies and quality of fuels, affect substantial certification system elements.

Actions corresponding to perform to implement such changes likely will require conform to two main criteria: on the one hand, to achieve efficient integration into the system of certification of the different conditions that will be subordinate the annotation of certificates of biofuels (accreditation of the traceability of the biodiesel, information/accreditation of the features of the sustainability of biofuels, accreditation of the place of preparation of the mixtures with fossil fuels); and, secondly, the reinforcement of the reliability of the information concerning the raw materials used for the production of biofuels.

Table 20 - Share of all raw materials (Source: APPA Biocarburantes & CORES & AEAT):

Raw Material	Palm oil	Soya oil	UCO	Animal fats	Rapeseed oil	Sunflower oil
Share (%)	42.66	35.53	14.31	4.02	4.02	1.06

Denmark

According to the EBB platform, considering a biodiesel production of 225.000 tones for 2011, the biodiesel amounts currently produced and imported are respectively: 2,965 TJ and 3,416 TJ. UCO makes up an unknown, but in any case a marginal share of the used biodiesel.
Denmark has two main biodiesel factories. Daka Biodiesel deals with animal fats for biodiesel in Denmark (by-products wastes in Denmark, i.e. category 1, 2 and 3 waste according EU's Animal By-Products Regulation (1069/2009/EU)) while other enterprises export these materials for processing abroad.
Emmelev (http://www.emmelev.dk/) is primarily producing biodiesel on basis of rape seeds, and has a fully utilised production capacity of 100 million litres per year.
Besides that, there happens biodiesel production in a few other companies, as well as some uncontrolled small-scale production of rape seed oil, made with small screw presses. Daka Biodiesel is organizing the processing of animal fats for biodiesel in Denmark, while others exports it for processing abroad.
Denmark currently produces RME (rape methyl ester) and FAME (fatty acid methyl ester) biodiesel, most of which is exported abroad. The production of FAME biodiesel in Denmark is based on waste from slaughterhouses etc., whereas RME is based on rape seeds.
Even though prices for fossil energy carriers in the transportation market rose steadily within the last decade, biofuels cannot compete on the free market as production cost are still higher than the price for fossil fuels.
The biofuel sector is not directly supported but after the targets were implemented, a market for biofuel in Denmark has been enforced. The blend-in targets will insure a future market for biofuels. In addition, biofuels which are blend-in are CO2-tax exempted. Biofuels have been exempt from the CO2 tax imposed on ordinary petrol and diesel for transport since January 2005. This is currently the main supporting measure for biofuels. The Energy Technology Development and Demonstration Programme (ETDDP) has contributed DKK 200 million for the development and demonstration of second-generation biofuels.

Portugal

Table 21 - Biodiesel Sales M/Tons (Source: APPB PORTUGUESE BIODIESEL MARKET 2012):

	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
B5/B7	49.152	79.548	149.759	145.294	248.509	365.196	349.760
B15					9.164	3.620	2.141
B100		1.050	2.910	3.959	4.533	4.782	2.871
M/Tons	49.152	80.598	152.669	149.253	262.206	373.598	354.772

In 2011 the installed capacity for biodiesel production was about 707.428 tons/year (regarding large facilities with installed capacity over 3000 ton/year).

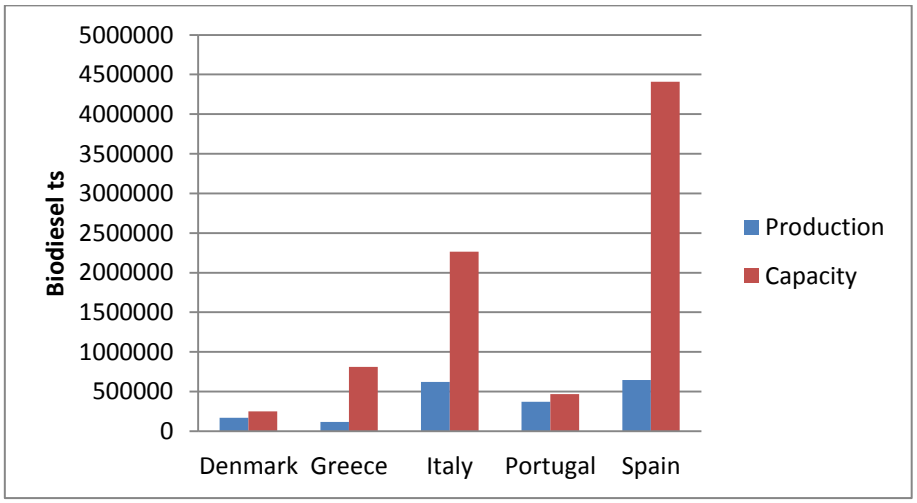
In 2011 there were 7 major producers of biodiesel and about 18 small producers of biofuels in activity.
In 2011 it is estimated that 4.967 liters of UCO were used in biofuel production, which represents about 1.2% of the raw material used in the production of biofuels.

Generally, it seems that biofuel sales and production levels have been increasing healthily from 2005 to 2010, but from 2011 onwards we can see signs of decline showing in many countries despite a continuing increase in capacity.

The annual biodiesel production and the biodiesel produced from UCO as recorded by the RecOil partners for 2011 are presented at Table 9. Fig. 2 presents also the biodiesel production capacity.

Table 22 - Biodiesel production and UCO processed UCO at the RecOil countries (2011)

Country	Biodiesel Production (ts)	UCO processed (ts)
Denmark	170,152.5	N/A
Greece	116,160.0	15,865.33
Italy	620,000.0	45,000.0
Portugal	369,297.3	4,470.3
Spain	647,199.0	90,000.0



Graf. 2 - Biodiesel production and biodiesel capacity in 2011, at RecOil countries

We can see that UCOs generally make up a marginal proportion of current biofuel production in many countries. Out of the 5 countries analysed, Spain and Greece utilise the greatest proportion of UCO in their biofuel production. In Spain UCOs make up around 13.9% of total biofuel productions, and in Greece they make up around 13.7%.

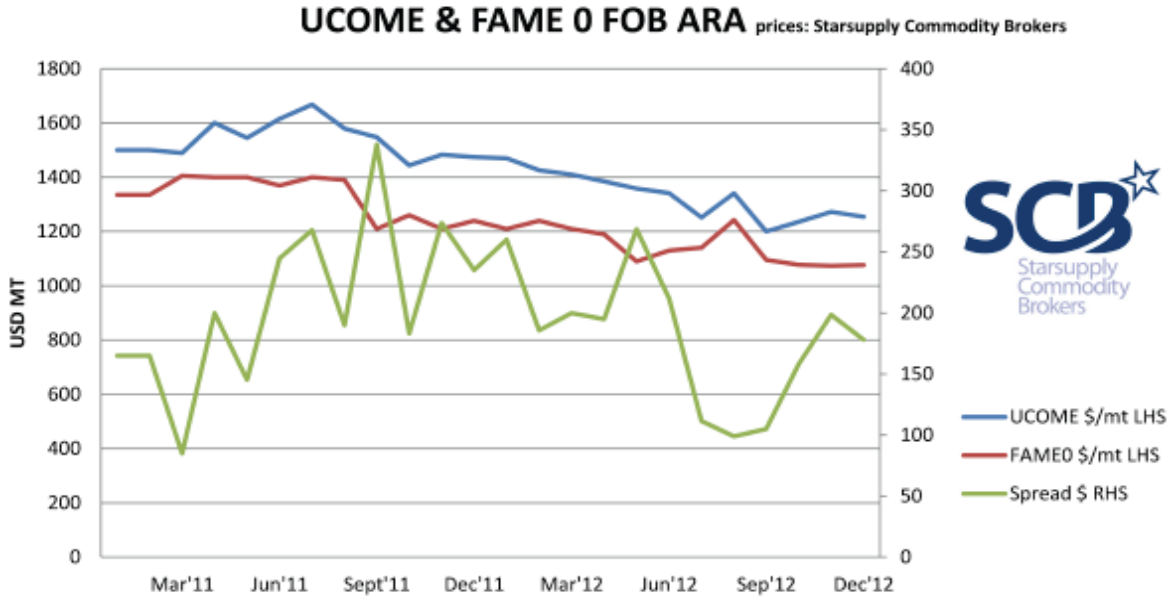
It is likely that the current decline in the industry is linked to the economic crisis that is apparent in many European countries, coupled with the fact that native markets couldn't compete with the lower price of biodiesel available for import from non-EU countries such as Argentina. In Italy and Spain, concurrency by extra EU countries damaged the internal biodiesel market during the last years, inducing a response on the legal level. The EU also is actively responding to the need of establishing an antidumping policy: an anti-subsidy proceeding concerning imports of biodiesel from Argentina and Indonesia, initiated in November 2012. Imports of biodiesel from the two countries are already subject to registration since the end of January 2013 under a separate anti-dumping investigation.

Some countries (e.g. Greece) completely lack of a pure biodiesel market. Higher blends are still rare: they are not attractive enough for consumers due to their higher price deriving from the absence of incentives for consumers and car manufacturers. Another obstacle is the poor information on the cars which could run on higher blends and on the benefits of higher blends in general. Several tools need to be established to incentivize the wider use of higher biodiesel blends:

- Mandatory use of higher blends in all public transports fleets.
- Gradual introduction of higher blends in all petrol stations.
- Incentives for vehicle manufacturers to guarantee their vehicles for the use of higher blends.
- Encourage the acquisition of these vehicles by establishing exemptions in car taxes (registration…) and direct purchase subsidies.

3.8. Market perspectives

The biodiesel sector needs large investments in research and technological uptake, which are beyond the reach of a single Member State or private actor.
Unfortunately, the current scarcity of public resources reduced quite a lot the investments in new technological solutions. In this context, integration of national public funding and research institutions as well as synergies with the EU Structural and Investments Funds, should be seen as crucial factors to facilitate progressive innovation and deployment of the biodiesel sector. Strategic policy frameworks for smart specialisation should be strengthened both on national and regional level; in parallel, support programmes focussed on innovative and transferable industrial solutions could significantly facilitate the sector affirmation.
An innovation strategy paving the way to viable energy technologies and solutions, requires a long term vision. The EU needs to be aware of the importance of driving the development of a spectrum of technologies which may only reach maturity beyond 2020. In particular, the European transport fuel mix has to be oriented to the long-term substitution of oil as energy source for all modes of transport. This requires targeted development and cost reduction of the fuels (in particular advanced biofuels) and transport application technologies.
In Europe, the biodiesel production capacity has exceeded 25 billion litres in 2011, and most of this capacity has been built to produce biodiesel mainly from food crops (5). The lately considered policy shift (see paragraph 1.2) would strongly impact the investments in the biodiesel field and render the achievement of the existing EU GHG reduction objectives more costly and challenging. Furthermore, the double counting implementation can considerably influence the biodiesel price. The graphic below shows the price premiums for UCOME.



Graf. 3 - Price premiums UCOME - Source: Starsupply Commodity Brokers, 2013

A combination of the incentives shown above is fundamental to stabilize the market and to overcome the obstacles inhibiting investments into advanced biofuel. This sector needs to scale-up and reduce the gap between research and commercialization – a necessary step to ensure future low cost and EU based production of advanced biofuels.

4. CONCLUSIONS

The UCO to biodiesel chain is not always positively influenced by legislative weakness.

The UCO side is affected by the lack of stringent regulations requiring its proper disposal through a collection infrastructure which is still non-existent in most EU-27 Member States.
Along the past years, the EU Commission financed serveral initiatives and projects intended to develop efficient UCO collection systems, though various suppor programmes. Even if some project definitly succeded, such a fragmented and discountinous effort can not produce nor homogeneous neither persistent results. There's a real need to frame consistent rules focussed on UCO collection, treatment and recycling. A UCO dedicated regulation should define responsibilities and obligations for waste producers as well as for all the other figures involved. At the same time, the legal framework should avoid any ambiguity and harmonize the EU context in order to create the proper conditions for marketing the UCO as an international commodity to be traded on global scale.
Until such market conditions aren't effective, UCO collection from households could not always be a profitable business, due to transport costs with small amounts per collection. Incentives for local collection projects would be needed to meet ever demanding recycling targets, keeping a long term view.

The categorization of UCO as feedstock for conventional biofuels as well as dedicated targets for truly advanced biofuels could push and accelerate this process.
Fraudulent activity of feedstock categorization should be carefully controlled and eliminated. For this reason, certification and traceability are crucial topics.
The certification field needs to converge towards a widely shared approach, thus keeping the respect of sustainability as a priority. International traceability systems, aimed to demonstrate the origin of feedstock accountable for double counting purposes, should be in place. On this basis, double counting systems could be implemented in a larger number of countries throughout Europe.

Several uncertainties are currently affecting the EU policy related to biofuels: the consequences of the implementation of an ILUC regulation, the public debates on whether the 2020 target for the transport sector is set to high, the legislative barriers for fossil independent technologies, as well as a lack of agreement on the FQD and the energy tax directive. The lack of a well defined policy line does not encourage national policy makers to increase their incentives for biofuel development.

EU authorities should design clearer guidelines to support the biodiesel market, considering the whole European market balance. Starting from this consideration, national protectionist measures are not recommended. The pathway we foresee is funded on cooperation and awareness of global interests, valorised by European authorities.

The biodiesel environmental benefits have to be recognised through incentive systems which take into account its CO_2 reduction power. The Danish policy regarding CO_2 tax exemption for biofuels seems to be the most appropriate one.

The lack of rules or targets for vehicles that can be run on higher biofuel blends is a barrier for the uptake of the biodiesel sector. Suitable incentives should encourage vehicles producers and citizens to move towards a green fuelled Europe.

EU biofuels can have a bright future ahead. The development rate will be significantly affected by political decisions-making.

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