Assessing progress towards implementation of the ILUC Directive

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Bibliographical data

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Preface

We very much appreciate the contributions of the following associates, who have been responsible for one or more case studies:
- Nusa Urbancic (EU overview);
- Agnieszka Markowska (Poland);
- Magnus Nilsson (Sweden, Finland and Denmark);
- Johannes von Stritzky (Spain);
- Stefano Proietti (Italy);
- Harold Meerwaldt (Germany);
- Martine Smit (France).

We would also like to thank Member State representatives for their willingness to provide insight into the current plans and intentions of their country by means of an interview and the industry stakeholders and staff of the various energy agencies for providing additional market information.

Anouk van Grinsven
Bettina Kampman

Delft, December 2015

Summary

Introduction

At the EU level, the main drivers for biofuels are the Renewable Energy Directive (RED) and the Fuel Quality Directive (FQD) (European Commission, 2009). The RED sets a binding 10% target (energy content) for renewable energy in transport in 2020, while the FQD sets a 6% reduction target for the (average) GHG intensity of transport fuels in 2020. Although sustainability criteria have been introduced, indirect land use change (ILUC) was not adequately addressed by these Directives. As a consequence, net emission reductions are not guaranteed and strong incentives for advanced biofuel production are lacking.

To address ILUC, in 2012 the European Commission proposed a Directive amending the RED and FQD which has since been adopted by the Council and Parliament and was published on 9 September 2015 (Directive 2015/1513) (European Commission, 2012); (European Commission, 2015). Member States are obliged to transpose the Directive into national legislation by 10 September 2017 and should establish the level of their national indicative sub-targets for advanced biofuels by 6 April 2017.

The FQD Implementing Directive (Directive 2015/652) prescribing the methodology to be used for calculating upstream emission reductions in the context of the FQD target was published on 20 April 2015, paving the way for Member States to further implement and enforce the FQD reduction target at the national level (European Commission, 2015).

Depending on their implementation at the national level, these policies could have a significant beneficial impact on the development of transport GHG emissions. The International Council on Clean Transportation (ICCT) therefore commissioned CE Delft to conduct an inventory of the current status of Member States' plans and intentions regarding implementation of both Directives.

Approach

To this end, ten Member States were selected as case study countries:

- Denmark
- Finland
- France
- Germany
- Italy
- Netherlands
- Poland
- Spain
- Sweden
- United Kingdom

These case studies were compiled by experts at the national level, by means of a literature survey and interviews.

Outcomes

In general, Member States are still at the start of their decision making processes since the final vote on ILUC in April 2015. The main reason for the lack of progress is clearly the relatively short time period between the decision and this study. Another reason is that Member States have a number of choices to make, which will take time to assess and decide on. Most Member States aim to take decisions on implementation of the ILUC Directive and the FQD Implementing Directive in parallel. Significant differences between Member States are anticipated regarding national implementation choices, which may further decrease the level of harmonisation.

Cap on food-based biofuels

None of the investigated Member States have yet decided on the level of the cap on food-based biofuels, but some are currently investigating various options (Denmark, Netherlands and UK). Choices on this issue are expected to be strongly linked to the current shares of food-based biofuels and so-called 'double-counting biofuels'. Only Member States with high shares of double-counting biofuels and thus relative low shares of food-based biofuels are currently considering a lower cap.

Sub-target for advanced biofuels

Regarding the sub-target for advanced biofuels, Member States are currently concerned with the following issues:

- **Developments in production capacity:** Various Member States are exploring domestic opportunities to boost national industries, although certain import levels are still also expected. Many advanced biofuel pathways are still in the R&D phase. The ILUC decision might provide a boost to scaling up these technologies, but because the ILUC Directive will only be valid between 2017 and 2020 decisions for the post-2020 period will probably provide a stronger incentive.
- **The list of feedstocks for advanced biofuels as included in the feedstock list in Part A of Annex IX:** The definitions applied in defining advanced biofuels have led to concerns and discussions in various Member States. Several Member States think that this approach does not offer sufficient flexibility, while others are concerned about the sustainability of some of the feedstocks on the list. For example, some Member States are concerned with the environmental impacts of extracting residual biomass from specific areas and are taking these risks into account in their decision making process.

FQD

Until now most Member States have focused on realisation of the RED target, with biofuel policy measures being implemented to meet the 10% RED target. Member States are finding implementation of Directive 2015/652 challenging and are still awaiting the guidelines of the EC for further clarification.
A comparison is often made with the verification systems in place for the sustainability of biofuels. Because there will be no overall EU verification system, the level of harmonization will be under pressure. The efforts required for implementation are also expected to be quite high in comparison to the expected role foreseen for upstream emission reductions (UER). UER will probably only make a small contribution to the 6% target, although in some other Member States a larger contribution might be necessary to meet the targets. On the other hand, some Member States argue that the contribution of UER should not be too high, because it can endanger realization of the 10% target.

Recommendations

Since the policy implementation process is ongoing in many Member States, it is recommended to repeat this study in the future to maintain an up-to-date overview of Member States plans and intentions. Once Member State implementation has been decided on, it is recommended to investigate the overall impacts for the EU market based on the implementation choices made. This may contribute to better estimates of the impacts and available biomass and production capacity. It is furthermore recommended to aim for a higher level of harmonisation of biofuel and upstream emission reduction policies in the EU.

1 Introduction

1.1 Introduction

Biofuel consumption in Member States is almost entirely policy-driven. At the EU level, the main drivers for biofuels are the Renewable Energy Directive (RED) and the Fuel Quality Directive (FQD). The RED sets a binding 10% target (energy content) for renewable energy in transport in 2020, while the FQD sets a 6% reduction target for the (average) GHG intensity of fuels in 2020. Both directives also define sustainability criteria that biofuels have to meet to count towards both targets, and the RED furthermore regulates that biofuels from listed waste and residues count double towards the 10% target.

Indirect land use change (ILUC) was not adequately addressed by these Directives, however, and some biofuels may consequently have little environmental benefits compared with fossil fuels, and even result in an increase of GHG emissions rather than net savings. Besides the limited GHG impacts, current directives also do not provide an effective incentive for the transition towards advanced biofuel production.

To address these issues, in 2012 the European Commission proposed a Directive amending the RED and FQD which has since been adopted by the Council and Parliament and was published on 9 September 2015 (EU, 2015). Member States are obliged to transpose the Directive into national legislation by 10 September 2017, and should establish the level of their national indicative sub-targets for advanced biofuels by 6 April 2017.

The FQD Implementing Directive (Directive 2015/652) prescribing the methodology to be used for calculating upstream emission reductions in the context of the FQD target was published on 20 April 2015, paving the way for Member States to further implement and enforce the FQD reduction target at the national level.

Depending on their implementation at the national level, these policies could have a significant beneficial impact on the development of transport GHG emissions. The International Council on Clean Transportation (ICCT) is therefore interested in the current plans and intentions of Member States regarding implementation of both Directives and commissioned CE Delft to conduct an inventory of the current status of these plans.

1.2 Objective of this study

The main objective of this study is to provide an overview of current implementation of the RED and FQD, followed by an overview of Member State positions, intentions and plans to implement the ILUC Directive and FQD target.

1.3 Approach

To this end, the current status of implementation has been investigated for ten selected case study countries. The case studies have been compiled by experts at the national level, by means of a literature survey and interviews.

Literature study

For the desktop study the following types of literature sources were identified as being relevant for this study:

- national policy documents;
- legislative documents in national languages;
- Member State progress reports;
- Eurobserv'ER Biofuel Barometer and other EU statistics;
- statistics and data of national energy agencies on each national biofuel mix;
- documents of the European Commission and Parliament;
- public consultation documents.

Interviews

The interviews conducted in this study were open-structured and were held mostly by phone. For reasons of consistency an interview format was developed, which can be found in Annex A. The interviewees were mainly policy officers or other staff at national energy agencies or biofuel industry associations (the Finnish Petroleum and Biofuels Association). These individual case studies were then brought together in an overall comparison.

1.4 Scope

The scope of this study is limited to the period up to 2020, because the ILUC Directive as well as the RED and FQD targets only apply to this date and the 2030 policy framework is still to be decided on.

Geographically the study is limited to the EU, and more specifically to the ten case study countries:

- Denmark
- Finland
- France
- Germany
- Italy
- Netherlands
- Poland
- Spain
- Sweden
- United Kingdom

These Member States were selected as representing:

- several large biofuel-producing countries, covering the various biofuel types (FAME, ethanol, HVO);
- a number of large biofuel-consuming countries, again covering the various biofuel types; the selected Member States represent 81% of total biodiesel consumption and 87% of total biopetrol consumption in the EU-28 in 2013, on average amounting to 82%[1];
- several frontrunners in terms of biofuels from waste and residues and advanced biofuel production;
- several countries of interest from a policy perspective due to past or recent policy developments;
- several countries with lower rates of biofuel consumption.

[1] Eurostat, nrg_110a.

1.5 Outline of this report

This report is structured as follows:

- the policy background of the ILUC Directive and other related legislation (Chapter 2);
- current status of biofuel consumption in the case study countries (Chapter 3);
- analysis of the case studies and comparison between the ten Member States (Chapter 4; the complete case studies can be found in Annex B);
- conclusions and recommendations (Chapter 5).

2 Policy background

2.1 Introduction

As explained in the Introduction, this study investigates the plans and intentions of Member States regarding implementation of the ILUC Directive and Directive 2015/652 (FQD), which are amendments to the RED and FQD, respectively. This section briefly describes the main context and content of these Directives.

2.2 Renewable Energy Directive (RED)

20% target

The RED sets a 20% overall binding target for renewable energy use by 2020 for the EU and individual targets for the various Member States. Besides this target, the RED also regulates various issues concerning the use of renewable energy in the electricity, heating and cooling and transport sectors.

Article 3(4)

The Articles most relevant for the transport sector are Articles 3(4) and 17-21. According to Article 3(4), each Member State shall ensure that the share of energy from renewable sources in all forms of transport in 2020 is at least 10% of the final consumption of energy in transport in that Member State. This 10% target can be met by all types of renewable energy, including biofuels, biogas, electricity and hydrogen (see Figure 1). In practice, it will be met mostly by an increase in biofuel consumption and by renewable electricity in railway transport.

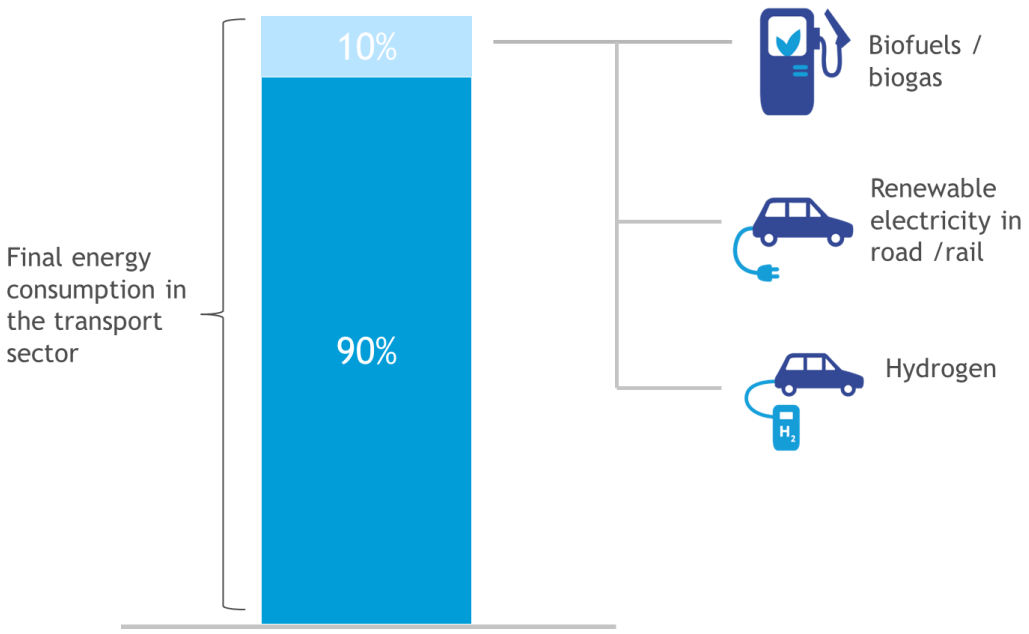
Sustainability criteria

Only biofuels that meet the sustainability criteria for biofuels and bioliquids as laid down in Article 17 of the RED may count towards the 10% target. These sustainability criteria include minimum requirements for the reduction of GHG emissions and the exclusion of environmentally vulnerable areas for biofuel production, such as areas with high biodiversity value or high carbon stocks. These criteria address direct effects caused by biomass cultivation and biofuel production. Indirect effects, such as indirect land use changes, are not covered in the original Directive of 2009. The same sustainability criteria are laid down in the Fuel Quality Directive.

Double-counting provision and multiplication factors

Article 21(2) of the RED defines that the contribution made by biofuels produced from wastes, residues, non-food cellulosic material and ligno-cellulosic material shall be considered to be twice that made by other biofuels. Furthermore, the electricity from renewable energy sources consumed by electric road vehicles shall be considered to be 2.5 times the energy content of the input of electricity from renewable energy sources (RED Article 3(4)), to account for the higher energy efficiency of electric vehicles compared with vehicles with an internal combustion engine. However, these multiplication factors have been amended by the Indirect Land Use Change (ILUC)Directive (see 2.3) from 1 to 2.5 for the energy consumed in electrified rail transport, and from 2.5 to 5 for renewable electricity use in road transport.

Figure 1 Schematic overview of the 10% transport target of the RED



2.3 ILUC Directive

The ILUC proposal of 2012

The ILUC Directive is the result of years of debate between Member States and market actors. In the RED of 2009 the Commission was obliged to submit a report to the European Parliament and the Council by 31 December 2010 reviewing the impact of indirect land use change on greenhouse gas emissions and addressing ways to minimise that impact. This report was to be accompanied, as appropriate, by a proposal on how to factor in the emissions deriving from such indirect land use changes. This proposal was delayed several times, and was eventually published on 17 October 2012.

The proposal's main elements regarding the RED were:

- a 5% cap on food-based biofuels similar to average 'current consumption' levels in the EU;
- quadruple counting for biofuels from certain wastes and residues;
- increase of the minimum greenhouse gas saving threshold for biofuels and bioliquids produced in new installations with effect from 1 July 2014;
- introduction of ILUC factors for three feedstock groups to be used in the Member State reports to the Commission, shown in Table 1.

Table 1 ILUC factors proposed in the ILUC proposal of October 2012

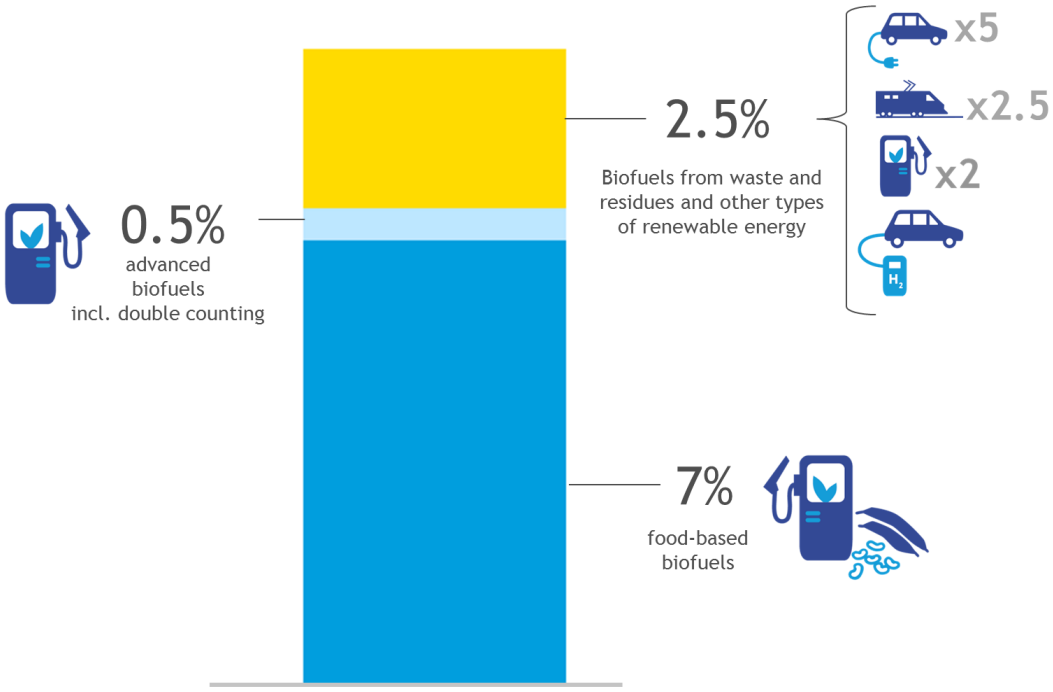
Feedstock group	Estimated indirect land use change emissions (gCO_2 eq./MJ)
Cereals and other starch-rich crops	12
Sugars	13
Oil crops	55

The ILUC Directive

After publication of the proposal in 2012, the discussion resulted in several changes to this original proposal. It took almost three years before a final vote on ILUC was taken in April 2015, with publication of the ILUC Directive following in September 2015 (EU, 2015).

Under this Directive, Member States finally agreed to introduce a cap on the contribution to the RED targets that can be made by biofuels from food crops and certain energy crops, quantified as 7% of transport energy. Member States are also required to set a target for advanced biofuels, with a reference value of 0.5%.

Figure 2 **How the 10% can be met taking the provisions of the ILUC Directive into account**



Multiplication factors

Furthermore, the multiplication factors for electricity from renewable sources were increased from 1 to 2.5 for the energy consumed in electrified rail transport and from 2.5 to 5 for renewable electricity use in road transport, as depicted below.

The various aspects addressed in the ILUC Directive are described in more detail in Table 2.

Table 2 Main aspects of the ILUC Directive

Cap on land-based biofuels in the Renewable Energy Directive	A cap has been introduced on the contribution that certain biofuels can make to targets in the Renewable Energy Directive. Biofuels and bioliquids produced from cereals and other starch-rich crops, sugars and oil crops and from certain other crops grown as main crops primarily for energy purposes on agricultural land can contribute no more than 7% to targets in the RED. Member States may decide on setting a lower limit in their national implementation of the RED. They may also choose to apply this cap to the Fuel Quality Directive target.
Support for advanced biofuels and definition of advanced biofuels	Advanced biofuels are fuels produced from a defined list of feedstocks and feedstock categories, including cellulosic energy crops, algae and cellulosic wastes and residues. A sub-target for advanced biofuels with a reference value of 0.5% has been introduced. Advanced biofuels and other waste biofuels (e.g. those made from used cooking oil) are double-counted towards the 10% target for renewable energy in transport in 2020 (a feature which already applied in the RED). Member States are to report on their progress towards their national sub-target in 2020, to assess the effectiveness of the measures introduced by the Directive.
ILUC emissions	Fuel suppliers and the European Commission are to report on emissions deriving from ILUC, but these are not included in the sustainability criteria for the biofuels or the GHG calculation methodology of the RED and FQD. If appropriate, the Commission shall submit legislative proposals by 31 December 2017 for introducing adjusted estimated ILUC emissions factors into the appropriate sustainability criteria of Directive 2009/28/EC.
Use and value of ILUC factors	Provisional estimated ILUC emission factors are provided, distinguishing between three categories of feedstock: cereals and other starch-rich crops, sugars and oil crops. These can be revised in later years to take account of technical and scientific progress.
Low-ILUC conventional biofuels	The Commission shall report, by 31 December 2017, on the possibility of setting out criteria for the identification and certification of biofuels and bioliquids with a low-ILUC risk, supplied through schemes that achieve productivity increases beyond business-as-usual, for example.
Post-2020 support for sustainable biofuels	If appropriate, the Commission shall submit legislative proposals by 31 December 2017 for promoting sustainable biofuels after 2020 in a technology-neutral manner, in the context of the Horizon 2030 framework for climate and energy policies.
Changes in the methodology for calculating the contribution from other renewable energy sources	The electricity from renewable energy sources consumed by electrified rail transport shall be considered to be 2.5 times the energy content of the input of electricity from renewable energy sources when accounting towards targets in the RED. The electricity from renewable energy sources consumed by electric road vehicles shall be considered to be five times the energy content of the input of electricity from renewable energy sources when accounting towards targets in the RED. In the RED, these multiplication factors were 1 and 2.5, respectively.

Source: CE Delft, drafted for the study 'Impact of higher levels of bio components in transport fuels in the context of the Direction 98/70/EC of the European Parliament and of the Council of 13 October 1998, relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC', to be published.

Implementation by Member States

To what extent these provisions will result in a shift from food-based to advanced biofuels depends on their implementation by Member States. Because Member States have various implementation options, in practice significant differences may arise. For example, as Member States are allowed to set a lower cap on land-based biofuels, they may also choose to apply this target to the FQD. They may also set a sub-target for advanced biofuels lower or higher than the reference value, although reasoning must be provided. They could also decide to lower their biofuels incentives (e.g. lower the levels of the biofuel obligation) in response to the higher multiplication values for renewable electricity, but they may also aim for a higher level of renewable energy sources in transport than the 10% target.

2.4 Fuel Quality Directive (FQD)

Two objectives

The FQD has a double role in relation to the consumption of biofuels in the transport sector: Article 7a of the FQD provides an incentive for biofuel consumption by means of a GHG reduction target, but, on the other hand, Article 3 and 4 limit the maximum biofuel content of diesel and petrol. Although this may seem contradictory, standardised fuel specifications benefit the level of harmonisation across Member States.

Scope

This Directive applies to the fuels used by road vehicles, non-road mobile machinery (including inland waterway vessels when not at sea), agricultural and forestry tractors and recreational craft when not at sea. This definition differs slightly from the scope of energy consumption applied in the Renewable Energy Directive.

Obligation for fuel suppliers

Concerning the GHG reduction target, the FQD requires fuel suppliers to gradually reduce the average life cycle GHG emissions of the transport fuels they market in the EU (Article 7a (2)). 'Suppliers' are, in most cases, defined as the entities responsible for passing fuel or energy through an excise duty point.

The 6% target

Member States must oblige fuel suppliers to reduce the life cycle GHG emissions per unit of energy of their supplied fuels by up to 10% compared with the fuel baseline (of 2010). This 10% consists of:

- a 6% mandatory target;
- a voluntary 4%, which can be met by the use of carbon capture and storage (2%) and credits purchased through the Clean Development Mechanism of the Kyoto Protocol (2%), for reductions in the fuel supply sector; note that it is considered unlikely that this voluntary 4% will be implemented.

Calculation methodology

The targets were set in the Directive of 2009, but at that time no decision had been taken regarding the methodology to be used for calculating the contribution of fossil fuels and potential upstream GHG mitigation measures towards the target. This methodology was only defined for biofuels (and equivalent to the calculation methodology laid down in the RED, thus also without ILUC emissions), but not for the upstream emission reductions in the fossil fuel chain.

Implementing rules in Directive 2015/652

Directive 2015/652, adopted in April 2015, also includes implementing rules for the fossil fuel reductions. Member States are required to implement this amendment to the FQD by 21 April 2017 (Department for Transport, 2015). These implementing rules give fuel suppliers the option to count the contribution of emission reductions occurring prior to the crude oil entering a refinery towards the 6% target (the so-called upstream emission reductions, UERs). Examples of these kinds of emission reductions are the reduction of flaring and venting emissions.

Although this Directive has been adopted, there are still provisions that require clarification. To further clarify these implementing rules, the European Commission is to publish non-legislative guidelines in the coming months.

Link between the FQD target and the ILUC Directive

The ILUC Directive applies to both the RED and FQD, but the changes to the FQD are relatively limited. The changes to the RED may, however, increase the relative importance of the 6% target. In theory, if the average GHG intensity of biofuels decreases as result of the ILUC Directive, the FQD target could also be met more easily. However, the higher multiplication factor for renewable electricity in rail and road transport and the increasing use of double-counting biofuels reduces the biofuel volume required to meet the 10% RED target. This may effectively reduce the contribution of the RED policy measures towards meeting the FQD target (where double-counting does not apply), and additional efforts are likely to be required to achieve the 6% GHG intensity reduction in 2020.

In this context, it should also be noted that there is a difference between implementation of the ILUC Directive, the RED and the FQD: the RED obliges Member States to take responsibility directly for meeting targets, while the FQD requires Member States to oblige fuel suppliers to meet the FQD target. This means that a Member State that had implemented the FQD in an appropriate way would not be held accountable if targets were nevertheless missed.

3 Current status

3.1 Introduction

To put the plans and intentions of Member States in their proper perspective requires a good understanding of the current status of biofuel consumption and production. As this chapter will show, the plans and intentions of Member States are strongly linked to their current biofuel consumption levels and biofuel production capacity.

This section provides an overview of the current shares of renewable energy in transport (Section 3.2), current biofuel consumption (Section 3.3) and the current shares of biofuels from waste and residues (Section 3.4).

3.2 Current shares of renewable energy in transport (RES-T)

There are large differences between the shares of renewable energy in transport (RES-T) in the various Member States. According to the RED, a RES-T share of 10% should be realised by 2020. Table 3 reports the shares of RES-T, starting with the EU-28 average and followed by the ten case study countries (from high to low). The Scandinavian countries Sweden and Finland have the highest shares, while the RES-T share in Spain is limited to 0.4%. Note that the RES-T shares in this table are calculated in line with the RED methodology, i.e. including double-counting of biofuels from wastes and residues. The drop in RES-T shares in 2011 (especially in case of Finland, Spain and France) can be explained by the fact that as of 2011, Member States only report biofuels and bioliquids compliant with the sustainability criteria. Since that time Member States gradually improved the compliance and respective reporting of their biofuels. Therefore RES-T shares rose again. (Keep on Track, 2015)

Table 3 **Trends in RES-T shares in the ten case study countries in the period 2004-2013**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	1.0%	1.4%	2.1%	2.8%	3.5%	4.3%	4.8%	3.4%	5.1%	5.4%
Sweden	3.8%	3.9%	4.7%	5.7%	6.3%	6.9%	7.2%	9.5%	12.9%	16.7%
Finland	0.5%	0.4%	0.4%	0.4%	2.4%	4.0%	3.8%	0.4%	0.4%	9.9%
France	1.1%	1.7%	2.0%	3.6%	5.8%	6.2%	6.1%	0.5%	7.1%	7.2%
Germany	1.9%	3.7%	6.4%	7.4%	6.0%	5.5%	6.0%	5.9%	6.9%	6.3%
Poland	0.7%	1.0%	1.2%	1.2%	3.6%	5.1%	6.3%	6.5%	6.1%	6.0%
Denmark	0.2%	0.2%	0.3%	0.3%	0.3%	0.4%	0.9%	3.3%	5.5%	5.7%
Italy	1.0%	0.8%	0.9%	0.8%	2.3%	3.7%	4.6%	4.7%	5.8%	5.0%
Netherlands	0.2%	0.2%	0.5%	2.9%	2.7%	4.3%	3.1%	4.6%	5.0%	5.0%
UK	0.2%	0.3%	0.6%	1.0%	2.1%	2.7%	3.1%	2.7%	3.7%	4.4%
Spain	0.8%	1.0%	0.7%	1.2%	1.9%	3.5%	4.7%	0.4%	0.4%	0.4%

Source: Eurostat, 2015, SHARES database.

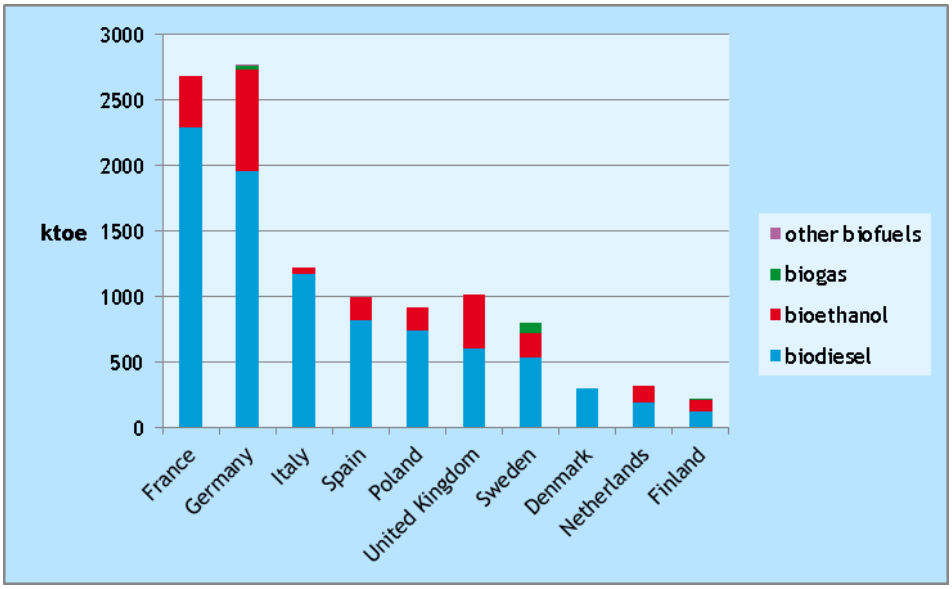
For lack of data, progress towards the 6% GHG reduction target of the FQD cannot be shown in a similar way, as GHG intensity data are not yet monitored and reported at the EU level. The calculation methodology for determining the GHG intensity of fossil fuels and other types of renewable energy and fuels

other than biofuels has only recently been decided on (Council Directive 2015/652) and the GHG intensity reporting obligation that is included in Article 7a of the FQD was put on hold during the decision making process.

3.3 Biofuel consumption

The RES-T shares represent all types of renewable energy in transport and include double-counting, but in Figure 3 only biofuel consumption is depicted in absolute terms (ktoe, ranked from left to right according to the level of biodiesel consumption). France and Germany are the largest biofuel consumers among the Member States investigated in this study. Note that no difference is made between compliant and non-compliant biofuels.

Figure 3 **Biofuel consumption (2013) (Eur'Observer, 2014)**



To increase the level of biofuel consumption, most Member States have introduced a renewable energy mandate obliging fuel suppliers to include a specific share of biofuels (or other types of renewable energy) in their total fuel sales. These mandates will help ensure consumption of the higher biofuel volumes required to meet the 10% RED target in 2020 and at the same time contribute to the 6% FQD reduction target.

Table 4 presents the mandates laid down by the Member States investigated in this study. Among the EU-28 countries, only Latvia, and Estonia did not have a mandate in place in 2014 according to Keep on Track (Keep on Track!, 2015) (Keep on Track! Project, 2015). According to Keep on Track!, the only instrument for the promotion of renewable energy sources in the transport sector currently available in Latvia is a tax regulation mechanism. For Estonia Keep on Track! states that Estonia's domestic legislation does not oblige fuel distributors to mix diesel nor petrol with biofuels. The (v) behind Sweden and the United Kingdom stands for the mandate being defined in volumetric units at the national level. The actual shares in biofuel volume may be lower in practice because of the administrative contribution of biofuels from waste and residues (in line with Art. 21(2) of the RED).

The biodiesel quota of France and Sweden exceed the blending limit of 7%, but note that the quotas can also be reached partly administratively by double-counting biofuels and/or by the use of drop-in biofuels, like HVO. France has introduced B8 on the market since the start of 2015, but the actual use of B8 is very limited. This is because it is heavily debated to what extent B8 is allowed under the Fuel Quality Directive (SquareCommodities, 2015).

More detailed information on the background of these mandates can be found in the case studies provided in the Annexes.

Table 4 **Blending quota/renewable energy mandates per Member State in 2014, in energy content**

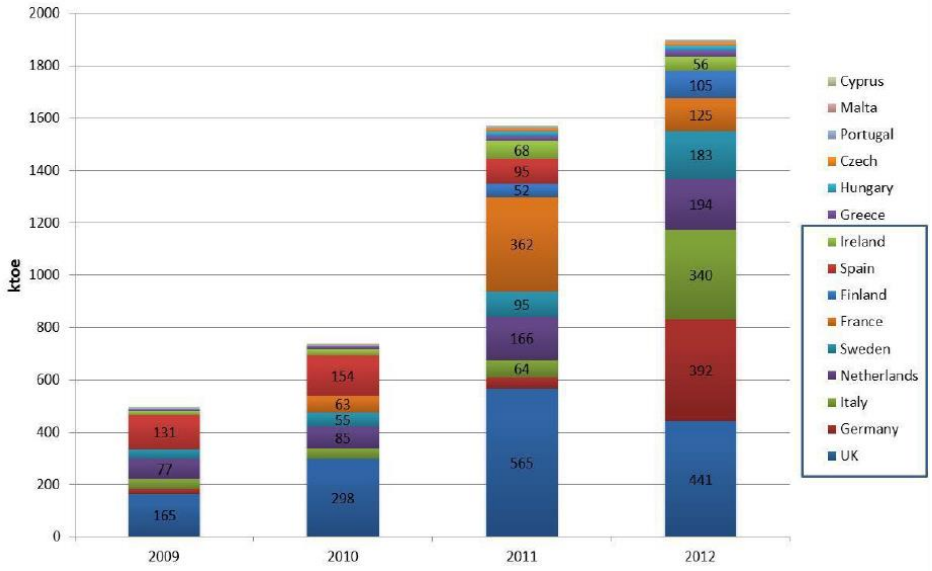
	Overall	Petrol	Diesel
EU average	5.15%	3.58%	5.81%
Denmark	5.57%		
Finland	6.00%		
France	7.57%	7.0%	7.7%
Germany	6.25%	2.80%	
Italy	4.5%		
Netherlands	5.5%	3.50%	3.50%
Poland	7.10%		
Spain	4.10%	3.90%	4.10%
Sweden (v)	6.41%	3.20%	8.78%
United Kingdom (v)	3.9%		

Source: (Eur'Observer, 2014).

3.4 Shares of double-counting biofuels

Based on the RED progress reports of Member States, (Pelkmans, et al., 2014) made an overview of the consumption of double-counting biofuels (i.e. biofuels from waste and residues) in the various Member States, as shown in Figure 4.
Four Member States: the Netherlands, Italy, the UK and Germany, have been mainly responsible for the consumption of double-counting biofuels. In 2012 they represented 70% of total consumption of these biofuels, mainly produced from UCO and animal fat. These shares result in an EU average of 15% in 2012 (1.4% in 2010).

Figure 4 **Consumption of double-counting biofuels in EU Member States**



Source: Pelkmans, 2014.

Since a high share of double-counting biofuels results in a relatively limited share of food-based biofuels, implementing a 7% cap in these countries would allow a further significant growth of food-based biofuels in the coming years.

More recent EU data on the use of double-counting biofuels are unavailable, but the current shares of such biofuels have been determined as part of the case studies in this report. The result, current shares of double-counting biofuels (from waste and residues) in total biofuel, biodiesel and ethanol consumption, is shown in Table 5. Note that the share of FAME in Sweden is not produced from waste and residues. HVO is produced from slaughter waste, vegetable and animal waste oil, crude tall oil and animal fat. Biogas is produced from waste from sewage treatment plants, households & restaurant, food industry and trade, slaughter waste and manure. (see also Annex J)

Table 5 **Share of biofuels from waste and residues (in line with Article 21(2)) in total biofuel consumption (most recent figures based on interview outcomes)**

	Share of total biofuel consumption	Share of biodiesel consumption	Share of ethanol consumption
Denmark	9.8%	12.4%	0%
Finland	75.2%	99.6%	33.7%
France	-	-	-
Germany	16.9	24.7%	2.4%
Italy	9.1%	9.7%	1%
Netherlands	52%	-	-
Poland	0.5%	-	-
Spain	3.5%	4.71%	0%
Sweden	42% (33% HVO, 9% biogas)	45%	<1%
United Kingdom	50%	-	-

3.5 Member State positions during the ILUC debate

The Commission was to propose legislation to address emissions from ILUC by December 2010. However, this was delayed due to ongoing political discussions and internal controversy. At the time, it became clear that there are several groups of Member States with very different positions:

- There was a group of progressive Member States, which included the UK, the Netherlands, Denmark, Belgium and later Luxembourg. This group was in favour of ILUC factors that would lead to a lower uptake of biofuels with high GHG emissions (incl. ILUC).
- There was a group of Member States that was averse to action and was not particularly engaged in the debate before the proposal was published. This group, mostly Baltic states and most Central and Eastern European states, did not generally respond to public consultations and remained relatively inactive until the proposal was published.
- Finally, there was a group of Member States with strong farming interests that was relatively opposed to any significant limitations on first-generation biofuels and strongly opposed to ILUC accounting and tried to weaken the reporting. This group included countries like France, Spain, Poland and Portugal.

Member States' positions were thus very far apart, resulting in a failure to reach an agreement by the Lithuanian presidency in December 2013. The more progressive Member States (Denmark, Italy, Belgium and the Netherlands) were not happy with any weakening of the Commission's proposal, while the more conservative Member States (Poland and Hungary) thought the proposal was already going too far by limiting first-generation biofuels.

In the second round of negotiations, positions remained relatively unchanged, but most of the debate focused on how advanced biofuels can be promoted. A key step that ensured compromise was the fact that the proposal for a binding sub-target introduced by the European Parliament was changed into a non-binding target by the European Council and that extension of multipliers to the overall renewable energy target was omitted (after the negotiations with the Parliament).

4 Comparison of Member States

4.1 Introduction

The ILUC Directive and FQD Implementing Directive of 2015 offer Member States several implementation options to decide on at the national level. As a result, there are both differences and similarities between the intentions and plans of the Member States investigated in this study. This chapter aims to provide more insight into how these Directives will be implemented in practice in the various Member States and to identify the main approaches taken and the considerations behind these choices.

The chapter starts with a description of the general findings of our case studies and a summary per Member State (Section 4.2). Next, the main provisions of the ILUC Directive, the cap on food-based biofuels, the sub-target for advanced biofuels and other provisions are described in more detail (Sections 4.3, 4.4 and 4.5), followed by a detailed description of the intentions and plans in relation to implementation of the FQD Implementing Directive (Section 4.6).

The complete case studies can be found in Annex B.

4.2 General findings

Now that the ILUC Directive has been decided on, Member States are considering the various implementation options. In general, Member States expect to need the entire implementation period to reach a final decision. Owing to the interrelationship between RED-related biofuel policies and the FQD Implementing Directive, most Member States are aiming to decide on the ILUC Directive and the FQD Implementing Directive in parallel.

On average, Member States are still at the start of their decision making processes since publication of the ILUC Directive, but there are large differences between the Member States in terms of action taken so far. These differences can be explained mainly by the different circumstances at each national level. The first political decision will probably be made in the Netherlands (expected in December 2015/January 2016).

For certain Member States, the reason for not prioritising implementation of the ILUC and FQD Implementing Directives is that such implementation will have little impact on biofuel developments in their country. This holds for Sweden and Finland, both of which have a high share of biofuel, due mainly to a favourable tax system and well-developed domestic biofuel production. These Member States already meet the 10% target of the RED, with a relatively high share of double-counting biofuels. Owing to their high shares of biofuels, upstream emission reductions are not required to meet the 6% target of the FQD. For example, Finland has a share of 75% double-counting biofuels and aims to reach a 20% share of renewable energy in transport by 2020. Sweden has already realised an 18.7% share of renewable energy, including 42% of biofuels counting double towards the target.

Other Member States are not prioritising implementation, but for different reasons, not having yet realised the RED and FQD targets. Of the Member States investigated in this study, Spain and Poland meet this description.

The remaining six Member States assessed in this study - Denmark, France, Germany, Italy, the Netherlands and the United Kingdom - are still working towards securing the 10% RED target by 2020, but are more actively investigating options to implement the Directives and achieve the targets. These Member States explicitly aim to realise a high level of sustainability or already have a relatively high share of double-counting biofuels caused by early implementation of the double-counting provision of the RED. Three of these Member States - the UK, the Netherlands and Denmark – are already investigating the impacts of the ILUC provisions on overall realisation of the target.

Below, a short summary of the situation in each Member State is presented. A more detailed assessment of the positions and plans regarding specific implementation choices is provided in the following sections, while the complete case studies can be found in Annex B.

Denmark

An analysis of the country's entire legislation on biofuels was recently started by Energistyrelsen, the Danish Energy Agency. This review is part of a multi-party energy policy agreement already made in 2012. It will include an analysis not only of how the 10% RED target is to be met, but also of (full) implementation of Article 7a of the FQD as well as of the new ILUC directive. The work has only recently started and there is thus far no indication of the final outcome.

Finland

As a result of the biofuels mandate and the favourable taxation of double-counted biofuels, Finland already has a high share of biofuels and a high share of double-counting/advanced biofuels. For this reason, further implementation of the ILUC Directive and Article 7a is considered less relevant. The intention is to develop the Article 7a legislation in parallel with implementation of the ILUC directive.

France

France has not yet started the implementation process. Because of other political obligations, the start of the process has been postponed until the beginning of 2016.

Germany

A decision on ILUC as well as further implementation of the FQD is expected at the beginning of 2017. Before taking a decision on the level of the sub-target for advanced biofuels, Germany aims to specifically investigate the sustainability risks associated with the biomass fractions identified for producing advanced biofuels.

Italy

In autumn 2014 Italy introduced a revised Decree for the trajectory of biofuels, including a sub-target for advanced biofuels from 2018 onwards. This sub-target ranges from 0.6% in 2018 to 1% in 2022. Italy will have to revise the definitions applied in line with the definitions laid down in the ILUC Directive. With respect to the height of the cap, no decision has yet been taken; this is expected in 2016.

The Netherlands

The Dutch Ministry of Infrastructure and Environment has carried out two separate impact assessment studies in order to assess various options for both the sub-target and the cap on food-based biofuels. At the time of writing, these publications were not yet publicly available. A political decision is expected to be taken by the end of 2015 or at the beginning of 2016.

Spain

Spain is still recovering from the economic crisis, and all types of incentives or more ambitious targets are considered to be additional barriers to economic recovery. Spain is expected to transpose the provisions of the ILUC and FQD Implementing Directives in national legislation, but owing to the focus on economic recovery Spain is less likely to introduce very strong policy incentives for advanced biofuel production.

Sweden

No decisions or even initiatives have yet been taken. The perception of the Ministry of Environment and Energy, responsible for biofuels and FQD policies, is that the directive will have limited consequences for Sweden. One reason for the (current) inaction is that the actual share of advanced fuels is already considerably above the 0.5% target. While additional measures to support advanced biofuels may be introduced, this will not be driven by the ILUC directive.

United Kingdom

The UK is planning to have a public consultation on policy options in summer 2016, which will include issues like the cap, the sub-target and FQD implementation. Various options are currently being investigated, as well as the definition of advanced biofuels to be used in the UK's support policy. This process is expected to lead to policy implementation in line with the timeline required by the ILUC and FQD Implementing Directives.

4.3 Cap on food-based biofuels

The position of the various Member States during the negotiation process varied: some Member States were in favour of a lower cap and could accept the earlier proposed 5% cap, while others opposed the cap. A summary of Member State positions is presented below in Table 6.

Table 6 Member State positions during ILUC debate

Country	Cap on conventional biofuels
Denmark	Was in favour of a lower cap of 4% and to be included in FQD as well.
Finland	Accepted the 5% cap.
France	Supported principle of the cap, but at 7%.
Germany	Initially supported the 5% cap and extension to FQD as well as to all other types of support. Was in favour of support for 1st generation biofuels until 2030. Later on, Germany became less stringent about the cap level and focused on supporting the 'principle'.
Italy	In favour of a 6% cap.
Netherlands	Accepted the 5% cap, but favoured extending the cap to all legislation (RED and FQD).
Poland	First opposed the cap, later pushed for 8%.
Spain	First opposed the cap, later pushed for 8%.
Sweden	Expressed its wish to cap biodiesel or provide another way to differentiate between biodiesel and bioethanol. Later seemed to accept the overall cap.
UK	Supported the 5% cap in all legislation.

Current plans and intentions regarding the cap

Table 7 presents the current plans and intentions regarding the cap. None of the Member States investigated in this study has yet decided on the level of the cap. Based on the intentions expressed in the interviews and the policy documents studied in the case studies, the following conclusions can be drawn.

Member States that opposed the cap during the negotiations are likely to implement the cap at 7%. Several other Member States - the UK, Denmark and the Netherlands - are currently investigating various cap levels in relation to realisation of the 10% and overall renewable energy target of the RED and the FQD target.

In general, Member State preferences seem to be closely tied to their current level of food-based biofuels, with Member States with relatively low shares of these biofuels more often opting for lower caps. In the United Kingdom, for example, the cap of 7% is certainly under investigation, while other options, like a lower cap more close to the country's current share of food-based biofuels, might also be an option.

In the Netherlands, Members of the Dutch Parliament asked the government to consider a 5% cap before a decision at the EU level was taken. This decision was postponed at the time, awaiting the EU decision. The Netherlands recently finalised an impact assessment of various cap levels. In view of this Parliament resolution, the 5% level is very likely to be part of this impact assessment, although this has not been confirmed by the Dutch ministry.

Although France has not yet started the decision making process, it has already implemented a provision comparable to a cap in the national biofuel mandate: the current biofuel mandate prescribes a share of 7.7% biodiesel, of which at least 0.7% should consist of double-counting biofuels.

Use of the cap under the FQD

Only a few of the investigated Member States are considering implementation of the cap under the FQD as well. Because Germany has introduced a GHG quota based on the GHG emission reduction target of the FQD from January 2015 onwards, it is also likely to apply the cap under the FQD. However, the unit of the cap will be part of the decision making process and is as yet unclear.

After the final vote on ILUC, the Dutch Ministry of Infrastructure and Environment reflected on the outcome in a letter to the Dutch Parliament. In this letter the State Secretary expressed her disappointment about the decision not including implementation under the FQD as a mandatory requirement as well.

Based on the findings of the case study, the United Kingdom is unlikely to implement the cap under the FQD, too. Although there is quite a gap between the contribution of biofuels under the RED and the 6% target, fuel suppliers are not expected to go beyond the cap to bridge this gap. Upstream emission reduction measures are expected instead.

Table 7 Current plans and intentions regarding implementation of the cap on food-based biofuels

Country	Cap on conventional biofuels	Use under RED and/or FQD
Denmark	Not yet decided; will depend on the outcome of the Energy Agency study.	To be decided.
Finland	Not yet decided, but probably a lower cap considering the current share of double-counting biofuels and position during the ILUC debate.	To be decided.
France	To be decided.	To be decided.
Germany	To be decided.	Solely FQD owing to GHG quota.
Italy	Probably 7%.	To be decided.
Netherlands	Not yet decided. An impact assessment investigating various options has been carried out. Results are not public (yet). A 5% cap has been requested by members of the Dutch parliament. Therefore this 5% is likely to be part of this impact assessment.	To be decided, but based on the position during the debate use under the FQD is likely.
Poland	Likely to be 7%.	Probably RED only.
Spain	Likely to be 7%.	Probably RED only.
Sweden	To be decided.	To be decided.
UK	To be decided, but probably a lower cap will be implemented: an earlier Task Force study has investigated options of 5% and 1.5% (current share of food-based biofuels).	Probably RED only.

4.4 Sub-target for advanced biofuels

The positions of the ten Member States regarding the sub-target for advanced biofuels are summarised in Table 8. The main points of concerns have been:

- the flexibility of the list defining the advanced biofuels to be counted towards this sub-target;
- concerns related to the sustainability impacts of the feedstocks to be used for production of advanced biofuels;
- the use of multipliers;
- worries about fraud with regards to used cooking oil (UCO).

Table 8 Country positions on the sub-target for advanced biofuels during the ILUC debate

Country	Advanced biofuels
Denmark	Would like to see more to support advanced biofuels (specific sub-target).
Finland	Concerned about having a list, held to be too prescriptive. Would prefer more general guidelines from the Commission and allow MS to choose.
France	Opposed the specific binding target for advanced biofuels, worried about fraud with UCO.
Germany	Opposed specific sub-target. Wanted further assessment of impacts of these types of feedstocks.
Italy	Was in favour of a binding sub-target of 2.5%, later 2%. Emphasis on ligno-cellulosic materials.
Netherlands	In favour of a specific sub-target.

Country	Advanced biofuels
Poland	Concerned about the list, where feedstocks have other uses. Concerned about fraud with UCO.
Spain	Opposed a sub-target for advanced biofuels.
Sweden	Wanted a broader, more flexible list, with scope for revision and more freedom for Member States to decide what to include on the list.
UK	Opposed to a binding sub-target.

Italy is the only Member State with a sub-target currently in place (from 2018 onwards, though the political decision was taken in 2014) and, based on the case studies, seems to be the only Member State opting for a higher sub-target than the indicative 0.5%. The other Member States have not yet made a decision.

Sweden and Finland are likely to have reached the sub-target already. However, there may be differences between the advanced biofuels in their national biofuel mixes and the advanced biofuels as defined in the ILUC Directive (feedstock list in Part A of Annex IX).

The Member States that aim to study the potential impacts of a sub-target are focusing on development of the advanced biofuel industry and the extent to which sufficient production capacity will be available (e.g. the Netherlands and the UK). Other issues being addressed relate to alternative uses of the feedstocks in question and competition between these different applications. Germany is concerned about the potential environmental impacts of extraction of waste and residues from specific areas.

Following the ILUC Decision, Member States have not yet introduced new policy incentives or revised their (additional) support to advanced biofuels. Several Member States have indicated that this can only be done after a decision on the level of the sub-target has been taken.

Table 9 Current status of implementation of the sub-target for advanced biofuels

Country	Sub-target	Strategy
Denmark	To be decided; part of analysis carried out by Energy Agency.	To be decided.
Finland	To be decided.	To be decided.
France	To be decided.	To be decided.
Germany	To be decided, concerns on sustainability risks associated with extraction of waste and residues from specific areas.	To be decided.
Italy	0.8% in 2020.	Revision of current CIC system in 2016.
Netherlands	As for the cap, an impact assessment has been carried out assessing options for sub-target level. Political decision to be taken after stakeholder consultation.	Additional policy measures will only be considered after a decision on the sub-target level has been taken.
Poland	Probably 0.5%.	Will probably make use of subsidies, grants, preferential loans and EU co-funding to provide incentives to advanced biofuel production.

Country	Sub-target	Strategy
Spain	To be decided.	Probably no implementation of a specific strategy.
Sweden	To be decided.	To be decided.
UK	Definition of advanced biofuels is being assessed, as well as different sub-target levels.	To be decided.

Market expectations

Completely new pathways are unlikely to arise before 2020, or at least will not become available on a commercial scale. Most Member States refer to the current advanced biofuel production activities in their countries when asked for market expectations in the coming years. This will be mainly ligno-cellulosic ethanol, ethanol from waste and biomethane. Although the ethanol pathways are in a further development phase, the UK pointed out the need for advanced biodiesel and biokerosene in the long term, when sustainable biofuels are needed mainly for aviation and HDV and other modes will be electrified.

Table 10 Market expectations for advanced biofuels

Country	Type of advanced biofuels	Developments in biofuel production	Domestic production versus imports
Denmark	Not known.	Marginal.	Probably mainly domestic.
Finland	Not known.	Biofuel production is expanding rapidly.	Probably mainly domestic.
France	Not known.	Not known.	Not known.
Germany	Different pathways available, but not sure which pathways will see breakthrough.	Not known (see type of advanced biofuels).	Both import/export.
Italy	2nd generation biomethane, ligno-cellulosic biomass.	Mainly developments in biomethane production.	Domestic production is stimulated.
Netherlands	Not known.	Several companies producing advanced biofuels on a small scale.	Part of impact assessment.
Poland	Cellulose-based, wood from energy plantations.	Marginal.	Reluctant to use import.
Spain	Not known, probably very low role of advanced biofuels.	Not known, probably very low role of advanced biofuels.	No export or import, but solely domestic.
Sweden	HVO, ethanol from waste.	Continuous developments comparable to recent years.	Wood-based biofuels, so mainly domestic.
UK	Long term should be taken into account: mainly biodiesel and biokerosine.	Competition of advanced biofuels.	Not known.

Domestic/import

All Member States are looking for domestic opportunities to boost their national markets, but most investigations on biofuel production capacity also look at a certain level of import.

Policy measures

Member States have not yet revised their advanced biofuel support strategies. An example of how domestic advanced biofuel production can be incentivised is the use of a competition system in the UK, which recently awarded grants in an Advanced Biofuels Demonstration Competition, to a total of £ 25 million of three years. Grants were awarded to three companies (UK Department for Transport, 2015). Other Member States referred to EU funding as a source to boost advanced biofuel production. It can, however, be argued that any fiscal or financial incentives for advanced biofuel production will come too late to pay off before 2020: the delay in arriving at a decision on ILUC meant that investment certainty for the biofuel industry has been very low in recent years and not many investments have been made. The ILUC decision might provide a boost to scale up these technologies, but because the ILUC Directive will only be valid between 2017 and 2020 and many advanced biofuel pathways are still in the R&D phase, Member States are more likely to benefit from these investments in the post-2020 period rather than in the period before 2020.

4.5 Other provisions

The Netherlands is especially concerned about the changes in the double-counting provision and the multiplication factors for renewable electricity in relation to the 10% target and overall target. The Netherlands expect an additional incentive for advanced biofuels if advanced biofuels would also be allowed to count double towards the overall RED target. If this double-counting towards the overall RED target is not allowed, additional actions are required to realise the overall target.

4.6 Fuel Quality Directive

In many Member States the realisation of the FQD target is strongly supported by the RED-related renewable energy mandates. Current policy measures specifically related to Art. 7a of the FQD often only require reporting by fuel suppliers on the GHG intensity of their fuels without having reduction obligations in place. Germany is the only Member State with a GHG quota. Owing to the change from a renewable energy mandate to a GHG quota, Germany is the only country where the FQD target is leading. Note that this GHG quota only covers the biofuel-related aspects of Article 7a and not the upstream emission reduction option. Like other Member States, Germany must also investigate these implementation options. This policy shift towards a GHG quota has impacted the biofuel mix and trade flows, but no definitive conclusions can yet be drawn, because the statistics on biofuels brought onto the market in 2015 will only become available in summer 2016.

Table 11 **Intentions and plans to implement Art. 7a of the FQD and expected role of upstream emission reductions (UER)**

Country	FQD Art. 7a implementation	Role of UER
Denmark	To be decided; part of analysis carried out by Energy Agency.	Unclear.
Finland	To be decided; currently the FQD target is strongly supported by the biofuels mandate.	Unclear.
France	To be decided.	Unclear.
Germany	GHG quota in place. UER will require new policy instrument to be implemented.	Contribution from UER expected to be about 1%. Government aims to seek a balance between biofuel and UER. High contribution from UER might endanger realization of the RED target.
Italy	To be decided.	Limited role of UER.
Netherlands	To be decided.	Not clear yet, but probably limited role of UER.
Poland	To be decided.	Limited role of UER. Possible interest if there are tradable UER credits.
Spain	To be decided.	Spain is likely to transpose the FQD Implementing Directive in national legislation without taking any further measures in practice.
Sweden	To be decided. Full implementation delayed until publication of Directive.	Probably very limited role, because fuel suppliers already comply.as result of the high shares of biofuels.
UK	To be decided.	UER required to meet target.

Role of upstream emission reductions

Many Member States describe the expected role of upstream emission reductions as 'limited'. However, it can be questioned to what extent this will indeed be limited in practice.

Both the UK and Germany have provided a quantitative estimate of the expected contribution from UER: 2 and 1%, respectively. This is about 25% of the FQD and therefore a significant contribution to FQD compliance.

In the UK, the Transport Energy Task Force concluded that it is unlikely the country will be able to meet the 6% reduction in the carbon intensity of fuels by 2020, as mandated by the FQD, using biofuels alone. A number of scenarios have been assessed (with varying sub-targets for advanced biofuels), which all fall short of the 6% target. The central scenario (0.5% sub-target), for example, provides a 4.8% fall. It is likely that the remainder will need to be made through upstream emissions credits, though it is still currently unclear precisely how these will work.

In countries like Sweden and Finland, it is expected that there is no need for a contribution from upstream emission reduction measures. For example, in Sweden the FQD has been transposed in national legislation, but has only been partially implemented: fuel suppliers only report on GHG emissions, but are not yet obliged to reduce them. Based on the reported data in Sweden, it can be concluded that on average the fuel suppliers already comply with the 6% target: in 2014 84% (GWh/GWh) of transport fuel was delivered by a supplier who already has reached the target (using the old GHG calculation-method). In case of the new GHG calculation methodology more suppliers probably have reached the target. There are, however, also a couple of suppliers which do not want to include renewables in their fuels as result of the cold climate. However, these companies could report together with another company to reach compliance. The actual situation remains to be monitored, but based on this argumentation both the Agency and the Ministry of Environment and Energy is convinced the 6% target has already been achieved, thanks to the high share of biofuels. The actual situation remains to be monitored, but both the Agency and the Ministry of Environment and Energy are convinced the 6% target has already been reached, thanks to the high biofuel share.

However, in practice, many Member States will just meet the 10% target and will not go far beyond it. In a 2012 study on sustainable alternatives for land-based biofuels for European NGOs, CE Delft has also shown the impact of multiplication factors on the realisation of both the RED and FQD target and this study has shown that higher multiplication factors (such as the higher multiplication factors for renewable electricity introduced by the ILUC Directive) endanger the realisation of the FQD target. It is therefore very likely that Member States that just meet the 10% will not be able to meet the FQD requirement by biofuel consumption alone and will therefore need UER to meet the 6% target after all.

The converse also holds: a high contribution from UER might also endanger realisation of the RED. For this reason, Germany will also investigate the option to cap the contribution from UER, because too high a share of UER might endanger realisation of the RED target. It is expected that a new policy instrument is required in addition to the GHG quota to regulate the contribution from UER.

Implementation issues

With respect to the problems that might be encountered during the implementation period, Member States refer to the certification and verification systems in place to verify the sustainability of biofuels.
More or less the same efforts are required to implement Directive 2015/652, because chains of custody are required to allow data to be shared up the chain. Most Member States are awaiting the Implementing guidelines to be published before taking any action. The European Commission convenes an informal working group on implementation, but it is unclear what level of contribution this working group will be able to make to the level of harmonisation among Member States. Because there will be no overall EU verification system, the level of harmonisation will be under pressure.

Denmark has been the only Member State referring to the two voluntary reduction measures (twice 2% through electrification and carbon credits, respectively, included in Art. 7a of the FQD as well), but this is also part of the analysis of the entire legislation on biofuels recently started by Energistyrelsen, the Danish Energy Agency.

5 Conclusions and recommendations

5.1 General conclusions

In general, it can be concluded that not much progress has been made since the final vote on ILUC in April 2015. The main reason for this lack of progress is clearly the relatively short time period between the decision and the present study. Another reason is that Member States have a number of choices to make, which will take time to assess and decide on. Most Member States aim to take decisions on implementation of the ILUC Directive and the FQD Implementing Directive in parallel.

For the ten Member States investigated in this study, no significant differences were found between the positions of Member States during the debate and their current intentions and plans. Because of the wide variety in current intentions and plans and the freedom Member States have to opt for higher or lower targets and caps, makes that large differences can be expected between the various Member States.

5.2 Cap on food-based biofuels

None of the investigated Member States have yet decided on the level of the cap on food-based biofuels, but some are currently investigating various options (Denmark, the Netherlands and the UK).

The Member States' choice of the level of the cap on food-based biofuels is expected to be strongly linked to the current shares of food-based biofuels and double-counting biofuels. Only Member States with high shares of double-counting biofuels and thus relative low shares of food-based biofuels are currently considering a lower cap.

5.3 Sub-target for advanced biofuels

Regarding the sub-target for advanced biofuels, Member States are currently concerned with two issues: developments of production capacity and the sustainability risks associated with the feedstocks to be used for producing these biofuels.

In relation to production capacity, various Member States are exploring domestic opportunities in order to boost national industries, but a certain level of imports is expected as well. The type of feedstocks to be used is hard to predict: the lack of a decision on ILUC in recent years has resulted in low investment certainty for the biofuel industry and many advanced biofuel pathways are still in the R&D phase. The ILUC decision might provide a boost to scale up these technologies, but because the ILUC Directive will only be valid between 2017 and 2020, the decisions for the post-2020 period will probably provide a stronger incentive. Besides this, investments taken in the next three years are less likely to contribute to the share of advanced biofuels until 2020.

The list of feedstocks for advanced biofuels included in the ILUC Directive has led to concerns and discussions in various Member States, for various reasons.

- several Member States feel this approach does not offer sufficient flexibility in relation to new feedstocks that may emerge in the coming years;
- others are concerned about the sustainability of some of the feedstocks on the list;
- some Member States are of the opinion that some of the feedstocks on this list are already in use for biofuels production and therefore do not need additional support.

Member States that already have policies in place to stimulate advanced biofuels (Italy and Scandinavian countries) must evaluate the extent to which these policies are in line with the EU list. Some Member States are considering using a somewhat different definition of advanced biofuels in their national policies, which may result in different national feedstock lists in future advanced biofuels policies throughout the EU.

5.4 FQD

Until now most Member States have focused on realisation of the RED target, with biofuel policy measures being put in place to meet the 10% target. As result of their strong biofuel policies, Sweden and Finland are likely to have reached the 6% target of FQD Article 7a without any additional policy measures, but other Member States will probably have to implement policy measures to realise this target, and some of these are currently investigating the various options. Although the 6% will mainly be met using biofuels, upstream emissions reduction will also be needed.

Member States find the implementation of Directive 2015/652 challenging and are still awaiting the guidelines of the EC for further clarification. Often the comparison is made with the verification systems in place for the sustainability of biofuels. Because there will be no overall EU verification system, the level of harmonisation will be under pressure. Member States expect that the efforts required for implementation will be quite high in comparison to the expected role foreseen for upstream emission reductions (UER). UER will probably only make a small contribution to the 6% target. Some Member States argue that the contribution of UER should not be too high, because it can endanger realization of the 10% target.

5.5 Recommendations

Since the policy implementation process is still ongoing in many Member States, it is recommended to repeat this study in the future, once:

- more Member States have finalised their assessments of the various options;
- the political debate in the Member States on implementation of the ILUC and FQD Implementing Directives has progressed; and
- the Commission has published the further guidelines on how to implement Article 7a of the FQD.

Because Member States will implement the Directive in various ways, the impacts on the European biofuel mix, and especially on the demand for food-based and advanced biofuels, are hard to predict.

Once Member State implementation has been decided on, it is therefore recommended to investigate the overall impacts for the EU market based on the implementation choices made. Combining the outcomes of the policy assessment studies carried out by individual Member States may contribute to better estimates of the impacts and available biomass and production capacity.

It is furthermore recommended to aim for a higher level of harmonisation of biofuel and upstream emission reduction policies in the EU.

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Annex A Interview format

A.1 Introduction

This interview is part of the project '**Assessing progress towards implementation of the ILUC Directive**', commissioned by the International Council of Clean Transportation (ICCT). The objective of this interview, and of the study as a whole, is to gain insight into current thinking and expectations about implementation of the ILUC Directive by various Member States, and their plans and intentions to reach the FQD carbon intensity reduction target.

Interview results will be used as input for a Member State comparison in the report. Neither the project team nor the ICCT will quote your answers directly in the report or any future publications.

Regarding the cap on food-based biofuels

1. The ILUC Directive requires a cap to be placed on the use of '*biofuels produced from cereal and other starch-rich crops, sugars and oil crops and from crops grown as main crops primarily for energy purposes on agricultural land*', which may be set at or below 7% by energy. Is there any expectation at this stage regarding the level that your government will set a cap at? If yes, what have been the considerations for this level? In what year is it anticipated that a cap will become active in national legislation?

2. a. In case a decision has been taken, which options have been considered? Which steps have been taken to come to this decision?

2. b. In case no decision has been taken yet, which options are being considered?
   Which steps will be taken to come to a decision? What time frame is foreseen to take this decision?

3. Member States may also choose to apply the cap to the Fuel Quality Directive target. Has this been decided on yet? If not, is it being considered, or do you expect this to be considered in the future?

4. The future growth of biofuels falling under the cap is likely to depend on the current shares of biofuels. Could you provide data on the national biofuel mix in your country in terms of single and double-counting biofuels, or, alternatively, rough estimates? Could you also give an indication of the dominant feedstocks?

…% double-counting biofuels in total biofuel consumption
…% double-counting biodiesel in total biodiesel consumption
…% double-counting ethanol in total ethanol consumption

If possible, it would be useful to have the % expressed in terms of energy content, and to indicate the year for which these data apply.

Regarding the sub-target for advanced biofuels

5. Has your government already decided on a sub-target for advanced biofuels, in line with the ILUC Directive? If yes, what is the level of the sub-target? What have been the considerations behind this choice? By what year will it be implemented?

6. a. In case a decision has been taken, which options have been considered? Which steps have been taken to come to this decision?

6. b. In case no decision has been taken yet, which options are being considered?
Which steps will be taken to come to a decision? What time frame is foreseen to take this decision?

7. Do you foresee any additional measures to realise this sub-target in practice (e.g. financial support for investment)?

8. With what type of advanced biofuels do you expect the sub-target to be met?

9. What are the expectations regarding the developments of advanced biofuel production in your Member State?

10. To what extent will the realisation of this sub-target rely on domestic production and to what extent on import? What role do you expect for the export of advanced biofuels to other Member States?

CO_2 target of the Fuel Quality Directive

11. What policy instruments are in place to implement the 6% carbon intensity reduction target of the FQD on fuel suppliers?

12. a. In the case that policy instruments have been implemented, which options were considered? Which steps were taken to come to a decision on the current approach?

12. b. If there is no policy in place for this target yet, which steps do you expect will be taken to reach the 6% target? What planning is foreseen to take this decision?

13. What role (if any) do you expect upstream emission reductions to play in meeting the target?

14. Do you foresee any changes in policy instruments and incentives between now and 2020 in order to meet the target?

Final remarks

15. Is there anything you would like to add to this interview?

Thank you very much for your time and effort to participate in this study.

Annex B Denmark

B.1 General

Article 7a of the FQD has been transposed via the Danish Sustainable Biofuels Act, Article 3a-b (as amended 17 December 2010), but the government has so far not made use of its powers to implement this article. The act requires fuel suppliers to provide information on life cycle emissions, but the design of the reporting waited for adoption of Council Directive 2015/652/EU (on 20 April 2015), thus so far no reporting has been done. The act also allows the government to introduce regulations that oblige fuel suppliers to comply not only with the mandatory 6% requirement but, if the government so decides, also with the voluntary targets of a further reduction of 2x2 % through electrification and carbon credits, respectively. This possibility has so far not been utilised by the government, but will be part of an analysis of the entire legislation on biofuels recently started by Energistyrelsen, the Danish Energy Agency. This review had already been decided in a multi-party energy policy agreement made in 2012. It will include not only an analysis of how the 10% RED target is to be secured, but also of the (full) implementation of Article 7a of the FQD and the provisions of the new ILUC Directive. The work was only recently started and there is thus far no indication of the final outcome.

Source:
- representative of the Danish Energy Agency, personal communication
- Lov om bæredygtige biobrændstoffer og om reduktion af drivhusgasser fra transport (biobrændstofloven). www.retsinformation.dk/Forms/R0710.aspx?id=141143

B.2 Current implementation of the RED and FQD

Since 2009 Denmark has had a 5.75% renewable blending mandate, included in the Sustainable Biofuels Act. This is implemented by adding 6.8% FAME to all diesel and 4.8% ethanol to all petrol, a solution further supported by the country's fuel tax legislation (see below). Fuels made from waste, etc. are double-counted towards the 5.75% requirement.

Table 12 Fuel taxes 2014

	Energy tax	CO_2 tax	Total
Diesel	2.944 DKK/l	0.443 DKK/l	3.387 DKK/l
Diesel with 6.8% biodiesel	2.612 DKK/l	0.413 DKK/l	3.025 DKK/l
Natural gas	2.845 DKK/m^3	0.377 DKK/m^3	3.222 DKK/m^3
Petrol with 4.8% ethanol	4.064 DKK/l	0.381 DKK/l	4.445 DKK/l

Source: www.ens.dk/info/tal-kort/statistik-nogletal/energipriser-afgifter/energiafgiftsatserne

So far tradable credits have not been used, nor have there been any specific efforts to reduce downstream emissions intensity.

Double-counting (2014)

Of the total biofuels consumption 9.8% is double-counted.
Of the biodiesel consumption 12.4% is double-counted.
Of the bioethanol consumption 0% is double-counted.
Source: representative of the Danish Oil Industry Association (EOF).

B.3 ILUC Directive implementation

Country position during negotiating process

Denmark has probably been one of the most progressive countries on this file, asking for strong ILUC legislation, namely:

- reduce the cap on conventional biofuels from 5 to 4% and include it in all pieces of legislation;
- introduce a mandatory sub-target for advanced biofuels at 2%, while preventing the double-counting of advanced biofuels towards the overall 20% target;
- introduce ILUC factors as soon as possible.

Denmark was disappointed about the lack of ambition of the Council's agreement in terms of its common position and has voted against the common position on both votes, stating that it will support improvements throughout the trialogue negotiations.

Table 13 Intentions regarding implementation

Cap on food-based biofuels	
Level of the cap	To be decided.
Use under RED and/or FQD	To be decided.
Sub-target for advanced biofuels	
Level of the sub-target	To be decided.
Strategy to realise this target	Action pending on the outcome of the analysis mentioned previously. If a sub-target is adopted, additional measures might be needed. Double-counted biofuels presently equal 0.45% of total transport energy use. Source: interview with a representative of the Danish Energy Agency; interview with a representative of the Danish Oil Industry Association (EOF).
Advanced biofuel expectations	
Type of advanced biofuels foreseen	To be decided.
Advanced biofuel production development	Modest.
Domestic production versus imports	Unclear, but probably all domestic.
Other provisions	
-	-

B.4 FQD implementation

Policy instruments foreseen to meet the 6% target

See under 'General'.

Expected role of different reduction measures

So far unclear. Is likely to be clarified through the Energy Agency analysis – see 'General'.

B.5 References

- Representative of the Danish Energy Agency, personal communication mid October 2015.
- Lov om bæredygtige biobrændstoffer og om reduktion af drivhusgasser fra transport (biobrændstofloven). www.retsinformation.dk/Forms/R0710.aspx?id=141143
- www.ens.dk/info/tal-kort/statistik-nogletal/energipriser-afgifter/energiafgiftsatserne
- Representative of the Danish Oil Industry Association (EOF), personal communication, mid October 2015.

Annex C Finland

C.1 General

Finland has very ambitious biofuels mandate legislation aimed at achieving a 20% share of biofuels by 2020. Distribution obligation requires that the share of biofuels in total transport fuels energy content must amount to at least

- 6% in 2011-2014;
- 8% in 2015;
- 10% in 2016;
- 12% in 2017;
- 15% in 2018;
- 20% in 2020.

The obligation rests on each individual supplier, but a group of suppliers are permitted to declare the compliance together or to trade space of compliance to each other – in fact a 'bubble'. The newly formed government has promised to raise the mandate to 40% by 2030.

In 2013 ethanol represented 4.6% of the energy content in petrol and biodiesel and 6.3% in diesel, but since then these shares have grown considerably. Since 75% of this is double-counted (see below), Finland is already likely to amply exceed the 0.5% due to the use of wood-based feedstocks and the high share of waste from food-processing. This development is supported both by the biofuels mandate and by the favourable taxation of double-counted fuels (see below). The government is not sure to what extent the current use of advanced biofuels and Annex IX completely match, especially in relation to the exact interpretation of the Annex.

Sources:

- Representative of Statistics Finland, personal communication.
- Representative of Ministry of Employment and the Economy, personal communication.
- Lag om främjande av användningen av biodrivmedel för transport. www.finlex.fi/sv/laki/ajantasa/2007/20070446
- Strategic Programme of Prime Minister Juha Sipilä's Government, 29 May 2015. http://valtioneuvosto.fi/documents/10184/1427398/Ratkaisujen+Suomi_EN_YHDISTETTY_netti.pdf/8d2e1a66-e24a-4073-8303-ee3127fbfcac

Table 14 Finnish biofuel companies and the key figures of their biofuel plants

Biofuel company	Description
st1	Produces ethanol from bio-waste. The feedstock is collected from food industry and separate waste collection. Existing facilities in Närpiö, Hämeenlinss, Lappeenranta, Labria, Vantaa and Haminsa. Products are Ethanolix and Bionolix. Sawdus-based Cellunolix facilitie planned in Kajaani with production capacity of ML/year. The company plans to extend its bioethanol network to produce 300 ML of ethanol by 2020.
Neste Oil	Two NExBTL-diesel producing facilities in Porvoo. Feedstocks used are vegetable oils and waste animal fats. The existing 380,000 tonnes biodiesel/year plant Is expected to be extended to 600 000 tonnes capacity by 2015. Plans to phase out food-based raw materials by 2020.

Biofuel company	Description
UPM	World's first wood-based biodiesel factor to be built in Lappeenrante, construction to start in 2014. Planned capacity is 1000,000 t/year. Raw material is crude tall oil which is a by-product of pulp manufacture.
Envor Group	Potential of bioethanol production in synergy with biogas and animal feed production plant in Forssa. 100,000 t ethanol output planned together with 150,000 MWh/a biogas.

If all the near-term new facilities and extensions are realized, it would add up to 700 000 tonnes of biodiesel and 337,718 tonnes of ethanol. This, at 0.94 toe for tonne of biodiesel and 0.64 toe for tonne of ethanol, would attribute to about 0.874 Mtoe. In 2013, the transport fuel consumption in Finland was 4 Mtoe in total. Of this, the 20% biofuel share would be some 0.8 Mtoe. Therefore, even with a 10% increase in transport fuel consumption, the 20% biofuel target seems a mission possible for Finland. Should all planned biofuel capacity be reached by 2020, Finland could eventually be a biofuel exporter.

Source:
Cited from 'Waste-based biofuel technologies in Finland - Current research and industrial activities', article in Pollack periodica, September 2015. www.researchgate.net/publication/282102547_Waste-based_biofuel_technologies_in_Finland__Current_research_and_industrial_activities_*

C.2 Current implementation of the RED and FQD

Compliance with the RED 10% target is secured through the biofuels mandate (see above). So far there is no legislation securing compliance with the 6% target. The intention is to develop the Article 7a legislation in parallel with implementation of the ILUC directive. New incentives might be proposed during this process. The role of upstream emission reductions is unclear.

Source:
- Representative of Ministry of Employment and the Economy.

Table 15 Fuel taxes support the use in particular of double-counted biofuels (eurocents/l)

	2015	2014	2013
Petrol	68.13	67.29	65.04
Bioethanol, non-double credit	39.61	39.06	38.32
Bioethanol, double credit	34.28	33.73	33.73
Diesel	50.61	49.56	46.95
Biodiesel, RES	37.89	37.02	35.78
Biodiesel, with paraffin, RES	34.03	33.14	31.86
Biodiesel, with paraffin, double credit	25.24	24.35	24.35

Source: Finnish Petroleum and Biofuels Association. www.oil.fi/en/statistics-1-prices-and-taxes/19-excise-taxes-principal-petroleum-products

So far tradable credits have not been used, nor have any specific efforts been made to reduce downstream emissions intensity.

Double-counting (2014)

Of the total biofuels consumption 75.2% is double-counted.
Of the biodiesel consumption 99.6% is double-counted.
Of the bioethanol consumption 33.7% is double-counted.

The background to the figures above is somewhat unclear, as is also the case with the feedstock. The figures are calculated by the Finnish Customs based on confidential figures. The confidentiality is defended by the fact that one supplier (Neste) is tremendously dominant within the biodiesel market.
The double-counted bioethanol derives mainly from food processing industry waste.

Source:

- interview representative, Finnish Customs (www.tulli.fi);
- interview representative Ministry of Employment and the Economy and representative of Statistics Finland.

C.3 ILUC Directive implementation

Country position during negotiating process

Finland is a country with a very strong forestry industry and has proven to support their interests during the negotiations. Even before the negotiations, it put in place the highest target for biofuels, namely 20% until 2020, but with an emphasis on advanced biofuels. It has never been very vocal about the cap - basically it said that it supported the Commission's aim to restrain ILUC effects from biofuels and that in the light of uncertainties around ILUC factors (and the impacts they would have on the industry) cap seems like a good option. Initially it stated that 5% and quadruple accounting are acceptable solutions. However, Finland has always remained very opposed to the concept of the list of feedstocks for advanced biofuels. It considered this to be an approach that would prevent new feedstocks being added to the list. Finland said it would prefer a more general approach, with the Directive providing only general rules, requirements and definitions and Member States being allowed to decide for themselves which feedstocks are eligible for extra support. Finland has been instrumental in making the list more readily amendable and including more feedstocks, such as more forestry residues and more land-based biofuels (the position of land using energy crops is unclear under the law – they are by default under the cap, but may then be exempted owing to inclusion of generic categories for cellulosic and ligno-cellulosic crops on the list of advanced feedstocks).

Table 16 Intentions regarding implementation

Cap on food-based biofuels	
Level of the cap	To be decided, but will probably be lower than 7% owing to Finland's previous position.
Use under RED and/or FQD	To be decided.
Sub-target for advanced biofuels	
Level of the sub-target	To be decided.
Strategy to realise this target	To be decided.
Advanced biofuel expectations	
Type of advanced biofuels foreseen	The Finnish biofuels industry is expanding rapidly, mainly using feedstocks that allow for double-counting. Efforts are concentrated on moving towards advanced fuels, in the short term utilising new feedstock like crude tall oil, sawdust, etc., but also moving towards algae, etc.
Advanced biofuel production development	See above.
Domestic production versus imports	Unclear, probably mainly domestic.
Other provisions	
-	-

C.4 FQD implementation

Policy instruments foreseen to meet the 6% target

So far there is no legislation securing compliance with the 6% target. The intention is to develop Article 7a legislation in parallel with implementation of the ILUC directive. New incentives might be proposed during this process. The role of upstream emission reductions is unclear. The 6% target is strongly supported by the biofuels mandate.
Source: representative of the Ministry of Employment and the Economy

C.5 References

- Representative of the Ministry of Employment and the Economy.
- Representative of the Finnish Customs (www.tulli.fi).
- Representative of Statistics Finland.
- Finnish Petroleum and Biofuels Association. www.oil.fi/en/statistics-1-prices-and-taxes/19-excise-taxes-principal-petroleum-products
- www.researchgate.net/publication/282102547_Waste-based_biofuel_technologies_in_Finland__Current_research_and_industrial_activities_*
- Lag om främjande av användningen av biodrivmedel för transport. www.finlex.fi/sv/laki/ajantasa/2007/20070446
- Strategic Programme of Prime Minister Juha Sipilä's Government, 29 May 2015. http://valtioneuvosto.fi/documents/10184/1427398/Ratkaisujen+Suomi_EN_YHDISTETTY_netti.pdf/8d2e1a66-e24a-4073-8303-ee3127fbfcac

Annex D France

D.1 General

The implementation of energy policy is laid down in France in the so-called Grenelle law. Law Grenelle 1 of 3 August 2009 and Law Grenelle 2 of May 2012 on the national commitment regarding promotion of development of renewable energy, which includes biofuels.

The development of the first generation of biofuels led to controversial discussions during the adoption of Law Grenelle 1, because of the potential impact of these fuels on greenhouse gas emissions. As a result, biofuel production must meet certain energy and environmental criteria, notably the impact on soils and water resources (Law Grenelle 1, Article 21). A mechanism for biofuel certification is being contemplated by France at both the national and European level.

Currently, the government priority is on research on second and third-generation biofuels (Law Grenelle 1, Article 21).

Further, the state will create conditions allowing an increase to 10%, by 2015, of the level of biofuels and other renewable fuels in the total amount of oil and diesel oil sold in the domestic transport market (Law Granelle 1, Article 48, Law of 5 January 2006).

D.2 Current implementation of the RED and FQD

To comply with the European standards of the RED and the FQD, France has developed a 'National Action Plan for Renewable Energy 2009-2020', with the stated aim of increasing the share of renewable energy in final energy consumption from 10% in 2005 to 23% in 2020, which means doubling the output of renewable energy. For the transport sector a 10.5% renewable energy target has been set for 2020.

Table 17 French renewable energy targets (2005-2020)

Year	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Objective (% PCI)*	1.2%	6.5%	6.9%	7.2%	7.5%	7.6%	7.7%	8.4%	8.8%	9.4%	10%	10.50%
Adjusted target		7%	7%	7%								
Realised target**			6.9%	7.1%								

* National Renewable Energy Action Plan 2009-2020 (2010)[2].

** Progress report (Les autorités françaises, 2013).

To accelerate and encourage the production and development of biofuels the French Prime Minister decreed that the 5.75% biofuels target (that was initially scheduled for 2010 under Directive 2003/30/EC) would be brought forward to 2008 and the target increased to 7% in 2010. This quick start slowed

[2] NB: This also includes electricity in the transport sector.

down in 2012, however, when the Agriculture minister announced a cap on the use of first-generation biofuels (a maximum of 7% for food-based biofuels) owing to an increase in cereal prices. Use of food-based biofuels would increase prices even more and compete with nutritional food crops.
The 'slowdown' in the development of biofuels was formalised in December 2013 (Assemblee Nationale, 2013).

Use of fiscal incentives (or any other financial incentives)

Tax incentive schemes have been established in France to stimulate incorporation of biofuels[3]:

1. An additional levy of the general tax on polluting activities (TGAP), designed to incentivize fuel distributors selling petrol and diesel with blending rates to meet the official objectives (Finance Act 2005, Section 32). The rate of the TGAP has been fixed at 7% since 2010 (Customs Code, Article 266n). Fuel suppliers achieving 7% bioethanol energy content in petrol and 7% biodiesel energy content in diesel pay no TGAP.
2. There is a partial exemption from the domestic consumption tax (ITC) for biodiesel and bioethanol. This benefit partially offsets the additional cost of biofuels compared with fossil fuels and is granted for biofuels produced by production units approved under a European call for candidature.
3. There is a total exemption for pure vegetable oils used as agricultural and fishing fuel. This allows producers to offset the extra cost of manufacturing biofuels compared with the original fossil fuel.
   The exemption applies only to biofuels produced by units receiving approval after a call for tender published in the Official Journal of the European Union.

The tax exemption rates (reduction in euro per hectolitre) provided until 2013 are shown in the table below and are in addition to above mentioned tax reductions and exemptions.

Table 18 Tax exemption rates through to 2013

Year	2007	2008	2009	2010	2011	2012	2013
ETBE	33	27	21	18	14	14	14
Ethanol	33	27	21	18	14	14	14
Biodiesel	25	22	15	11	8	8	8
EEHV	30	27	21	18	14	14	14
EMHA & EMHU	25	22	15	11	8	8	8

Source: www.developpement-durable.gouv.fr/La-defiscalisation-partielle-des.html

The tax exemption for biofuels will be phased out by 1 January 2016, while the reduction of the general tax on polluting activities (TGAP) will be continued.

D.3 ILUC Directive implementation

Country position during negotiating process

France's position regarding ILUC has always been rather complex.
While stating that it supports the Commission in addressing this issue, it has always emphasised uncertainties, the fact that ILUC is taken to relate to every land-based activity and that ILUC factors are uncertain. France's position has

[3] Source: www.developpement-durable.gouv.fr/La-defiscalisation-partielle-des.html

been to support the cap, but at a higher level because of the economic impacts of existing investments and achievement of the targets. It soon became clear that France supported a 7% cap, which remained the case throughout negotiations. The main argument used by France to support the cap was the increases in food prices and the need to promote use of sustainable biofuels that reduce emissions.

France also expressed reservations about quadruple counting, but at the same time stated it is in favour of the list of feedstocks for multiple counting, as this would avoid the distortions seen on the single market that have been seen with regards to used cooking oil (UCO) (because there was no strict definitions of 'waste' to be applied by all Member States). However, it asked (in one of its first positions on the proposal) for more analysis of the impact of the materials on the list on the EU market and industries that are already using these. It also asked for a definition of a 'residue'. France played an ambiguous role with regards to the sub-target, claiming that it would be impossible to ramp up advanced biofuels production to the proposed level by 2020, and thus remaining opposed.

France was never in favour of ILUC factors and is one of the countries that have been instrumental in watering them down with the introduction of the so-called ranges of uncertainty that were added to the mean value proposed by the Commission.

Table 19 Intentions regarding implementation

Cap on food-based biofuels	
Level of the cap	To be decided. Decision-making process to start in January 2016.
Use under RED and/or FQD	To be decided. Decision-making process to start in January 2016.
Sub-target for advanced biofuels	
Level of the sub-target	To be decided. Decision-making process to start in January 2016.
Strategy to realise this target	To be decided. Decision-making process to start in January 2016.
Advanced biofuel expectations	
Type of advanced biofuels foreseen	To be decided. Decision-making process to start in January 2016.
Advanced biofuel production development	Still in R&D phase[4]. There are 9 R&D programmes for advanced biofuels (including micro-algae, micro-organisms, lignocellulose)[5].
Domestic production versus imports	To be decided. Decision-making process to start in January 2016.
Other provisions	
-	-

4 www.developpement-durable.gouv.fr/IMG/pdf/Biocarburants.pdf

5 GSI, ISSD (2013). Biofuels: at what cost? A review of costs and benefits of France's biofuel policies.

D.4 FQD implementation

Policy instruments foreseen to meet the 6% target

Not known.

Expected role of different reduction measures

Not known.

D.5 References

- www.developpement-durable.gouv.fr/IMG/pdf/Biocarburants.pdf
- GSI, ISSD (2013) Biofuels: at what cost? A review of costs and benefits of France's biofuel policies.
- www.developpement-durable.gouv.fr/La-defiscalisation-partielle-des.html

Annex E Germany

E.1 General

Because Germany switched from an energy quota to a GHG quota last year, which makes Germany the Member State with the most emphasis on the realisation on the FQD target. Like some of the other Member States Germany is currently still investigating the various implementation options.

E.2 Current implementation of the RED and FQD

Use of mandates in terms of biofuels, renewable energy in transport or carbon intensity reduction

In 2006, Germany passed the Biokraftstoffquotengesetz (2006, Bundestag) specifying the minimum percentage of biofuel in diesel, petrol and in total, by energy content.

Table 20 Minimum percentage of biofuel in diesel, pterol and in total as from 2006 (by energy content)

Year	Diesel	Petrol	Total
2007	4.4%	1.2%	-
2008	4.4%	2.0%	-
2009	4.4%	2.8%	6.25%
2010	4.4%	3.6%	6.75%
2011	4.4%	3.6%	7.00%
2012	4.4%	3.6%	7.25%
2013	4.4%	3.6%	7.50%
2014	4.4%	3.6%	7.75%
>2014	4.4%	3.6%	8.00%

In 2009, the law was changed to (2009, Bundestag):

Table 21 Minimum percentage of biofuel in diesel, pterol and in total as from 2009 (by energy content)

Year	Diesel	Petrol	Total
2007	4.4%	1.2%	-
2008	4.4%	2.0%	-
2009	4.4%	2.8%	5.25%
2010	4.4%	2.8%	6.25%
2011	4.4%	2.8%	6.25%
2012	4.4%	2.8%	6.25%
2013	4.4%	2.8%	6.25%
2014	4.4%	2.8%	6.25%

Use of fiscal incentives (or any other financial incentives)

In 2004, the Mineralölsteuergesetz was changed to exclude biofuels from taxation (2012, Global Subsidies Initiative). In 2006, the Energiesteuergesetz (2006b, Bundestag) introduced a non-zero and rising tax for FAME and vegetable oils. In 2006, the Biokraftstoffquotengesetz (Bundestag, 2006) was introduced, containing the mandatory blending target; biofuels used to meet

this requirement are not eligible for tax exemption, except for second-generation biofuels (BtL, lignocellulosic ethanol, biogas and bioethanol, until 2015. No tax exemptions will be in place after this year (2006b, Bundestag).

Transferring the obligation

Mineral oil companies are allowed to meet the mandatory blending target by transferring the obligation through a contract based on private law to third parties, i.e. producers of pure biofuels who market the biofuels (Global Subsidies Initiative, 2012). When pure biofuels count towards meeting the biofuels target, the pure biofuel producers are no longer entitled to a tax exemption. (There is an exception for BtL and cellulosic ethanol, which receive a tax credit while being counted toward the quota until the end of 2015.)

Current outlook

The Biokraftstoffquotengesetz law passed in 2009 by the German Bundestag (2009, Bundestag), changed (from 2015 onwards) the requirement from a minimum percentage of biofuel by energy content to a reduction in greenhouse gas emission (GHG quota). Fuel suppliers must now reduce the GHG emission of their fuels by 3% from 2015, 4.5% from 2017 and 7% from 2020. In 2014, this law was changed (2014, Bundestag) to 3.5% from 2015, 4% from 2017, and 6% from 2020. In relation to the FQD target use of biofuels is not obligatory, since other means are expected to be approved under the terms of the FQD Implementing Directive (Directive 2015/652), but these fuels are expected to be the major means of reducing GHG emissions.

Double-counting and feedstocks currently used

Of total biofuel consumption 16.9% was double-counted in 2014,
Of biodiesel consumption 24.7% was double-counted in 2014.
Of bioethanol consumption 2.4% was double-counted in 2014.
These shares are based on energy-content.
Source: Bundesanstalt für Landwirtschaft und Ernährung (BLE), 2015.

E.3 ILUC Directive implementation

Country position during negotiating process

Germany was instrumental in publication of the Commission's proposal. The biofuels legislation was partly initiated by the Environment ministry, which back in 2011 had already circulated a non-paper on how to solve the ILUC problem, suggesting that the best solution would be 'an upper limit on conventional biofuels' that would prevent their growth beyond the consumption level in each specific Member State in 2010. Any additional biofuels in volume would have to be 'ILUC-free', a definition that would have to be adopted during a co-decision procedure. The ministry suggested that ILUC-free biofuels could be biofuels from certain wastes and residues and land-using feedstocks from new (or additional) agricultural land (with no prior history of production). This position had also been agreed with the Agriculture ministry and later communicated to the key directorates in the European Commission. The German position actually helped resolve the internal deadlock within the Commission and brought a new option on the table (an option that had not been assessed in the impact assessment), namely the cap on conventional biofuels (from food crops).

The Commission chose to set the cap at 5%, which was in fact the 2010 EU consumption level (and still enough for Member States to meet the targets

with the use of multipliers). In one of its first statements, Germany expressed explicit support for the 5% cap level, stating that this percentage is deemed appropriate because it freezes the incentives for conventional biofuels at current levels, protecting existing investments, while avoiding any further ILUC. It also asked for the level to be included for subsidies and extended to 2030. Later during the negotiations Germany's position weakened somewhat and it has stated it no longer explicitly supported the 5% level, while still supporting the principle of a cap. With regard to ILUC factors, the German government was only in favour of reporting, while generally claiming that the factors need to be based on solid science. For this reason they supported the idea of a review in 2017, but asked the Commission to examine the ranges of uncertainties. Their concern was also that introduction of ILUC factors might mean more biofuels being used in order to meet the FQD target.

For support for advanced biofuels Germany considered multiple counting an interesting proposal, but was concerned about potential unintended consequences of quadruple counting. They were also firmly against double-counting of advanced biofuels towards the overall renewable energy target, as it would set a bad precedent for post-2020 targets. In terms of feedstocks on the list, concerns were expressed that certain materials are already used in other sectors and that their use might cause sustainability issues (with respect to biodiversity, for example) that are not covered by the current directive.

Table 22 Intentions regarding implementation

Cap on food-based biofuels	
Level of the cap	To be decided, probably not before the beginning of 2017. This will include the choice regarding the unit of a cap (energy-based or CO_2-based). An energy-based cap seems to be the simplest option. Another choice to be made is whether there will be a trajectory for the cap (e.g. decreasing over time). Note that no full legislative proposal has to be made owing to the implementing power that came with the recent modifications in the context of the GHG quota. The proposal will include one option. It is a general rule that legislative proposals are also sent to stakeholders for consultation.
Use under RED and/or FQD	Because Germany no longer has an energy quota but a GHG quota, the use of food-based biofuels is limited to 7% by energy content of the fuels used to meet FQD. There is no independent RED incentive.
Sub-target for advanced biofuels	
Level of the sub-target	To be decided. There is particular concern about the sustainability of advanced biofuels in terms of direct environmental impacts. The sustainability criteria laid down in the RED and FQD are too broad to cover specific aspects that may play a role when extracting waste and residues from specific areas (e.g. biodiversity impacts). How this will be investigated is still to be decided.
Strategy to realise this target	To be determined after a decision on the level of the sub-target.
Advanced biofuel expectations	
Type of advanced biofuels foreseen	Most advanced biofuel pathways are still in the R&D phase. For this reason it is hard to predict which pathways will succeed.
Advanced biofuel production development	See above. It is hard to predict which pathways will succeed.

Domestic production versus imports	Partly domestic, but import and export will also be considered in the decision-making process (e.g.as part of the investigation of environmental impacts).
Other provisions	
-	-

E.4 FQD implementation

Policy instruments foreseen to meet the 6% target

For now, the policy instrument in place to meet the 6% target is the GHG quota. However, implementation of EU Directive 2015/652 will require legislative changes (i.e. to allow upstream emission reductions to count towards the quota).

Expected role of different reduction measures

In the coming months, the German government will search for the right balance between the different reduction measures. On the one hand, there should be a limit on the level of upstream reduction measures, because too high a contribution of such measures may not be in line with the 10% RED target. On the other hand, too low a contribution from such measures may result in a higher level of biofuel consumption. Sustainability problems (with biomass availability, for example) may arise. A contribution of approximately 1% is expected from upstream emission reduction measures.

Implementation of upstream emission reductions (as per Directive 2015/652) might be challenging, because the provisions in this Directive are highly abstract and the involvement of third countries and verification requirements make it very complicated. The level of complexity is comparable to introduction of certification systems for verification of the biofuel sustainability under the RED. Germany is part of the informal working group of the European Commission and is awaiting the publication of the specific guidelines, including information on ISO standards and additionality. The level of harmonization may be an issue of concern, because the EC will not approve specific schemes: each Member State may employ its own scheme, which may result in large differences in implementation.

E.5 References

- Bundestag, 2006. Gezets zur Einführung einer Biokraftstoffquote durch Änderung des Bundes-Immissionensschutsgesetzes und zur Änderung energie- und stromsteuerrechtlicher Vorschriften (Biokraftstoffquotengesetz – BioKraftQuG). Vom 18. Dezember 2006.
- Bundestag, 2006b. Gesetz zur Neuregelung der Besteuerung von Energieerzeugnissen und zur änderung des Stromsteuergesetzes. Vom 15. Juli 2006.
- Bundestag, 2009. Gesetz zur Änderung der Förderung von Biokraftstoffen.
- Bundestag, 2014. Zwölftes Gesetz zur Änderung des Bundes-Immissionsschutzgesetzes. Vom 20. November 2014 Interview with a representative of the Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB) (by phone, 3 November 2015).
- Bundesanstalt für Landwirtschaft und Ernährung (BLE), 2015, Evaluations- und Erfahrungsbericht für das Jahr 2014.

(http://www.ble.de/SharedDocs/Downloads/02_Kontrolle/05_Nachhaltige Biomasseerzeugung/Evaluationsbericht_2014.pdf?__blob=publicationFile)
- Global Subsidies Initiative, 2012. Biofuels – at what cost?
- Interview with a representative of the Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB) (by phone, 3 November 2015).
- Bundesanstalt für Landwirtschaft und Ernährung (BLE).
- Global Subsidies Initiative, 2012. Biofuels – at what cost?

Annex F Italy

F.1 General

Italy transposed Directives 2009/28 and 2009/30 in 2011. In 2014 (thus before completion of Directive 2015/1513), it issued rules for the promotion of biofuels, also including advanced biofuels. An important role is planned for biomethane to reach targets for RED, FQD and ILUC.

F.2 Current implementation of the RED and FQD

Use of mandates in terms of biofuels, renewable energy in transport or carbon intensity reduction

Italy transposed RED Directive by means of the Legislative Decree no. 28 of 3 March 2011, Article 3 of which states that renewable sources are to cover 17% of gross final energy consumption in 2020, at least 10% of final energy consumption in transport in the same year. Article 38 states that, with effect from 1 January 2012, biofuels used in transport will be counted for the achievement of national targets and will have access to the means of support only if they meet the sustainability criteria set out in the implementing measures of Directive 2009/30/EC of 23 April 2009.

Italy transposed Directive 2009/30/EC by means of the Legislative Decree no. 55 of 31 March 2011, which states that entities bringing fuels on the market should reduce emissions of greenhouse gases per unit of energy (intensity of emissions) produced during the entire life cycle.

The emission reduction target to be achieved by 2020 is 6% of current levels. In addition, if fossil fuels are mixed with biofuels in order to reduce emissions intensity, they must meet certain sustainability criteria (in line with those established by the EU Directive). These criteria relate to the nature of the land where the feedstock is grown; excluded, in particular, are lands with high biodiversity value, those having high carbon stocks, and those with the potential to reduce greenhouse gas emissions compared with the reference fossil fuel.

To verify compliance with the sustainability criteria, all parties involved in the production chain of the biofuel must adhere, either to:

- the National System of Certification of Sustainability (Decree of the Ministry for the Environment, Land and Sea of 23 January 2012, as amended); or
- a voluntary system endorsed by the European Commission; or
- a bilateral or multilateral agreement concluded by the European Union with third countries and recognized by the European Commission.

The SCN of biofuels and bioliquids is designed to ensure the verification of the sustainability criteria for biofuels and bioliquids through a system of traceability throughout the chain of delivery of them. To this end, starting from January 2012, the economic operators of the production chain of biofuels and bioliquids, whether they are produced in EU and in third countries, who intend to join this system, must be subject to initial and periodic audits by certification bodies accredited by the single certification body (ACCREDIA).

Following the initial review, the certification body shall issue the certificate of compliance of the company, valid for five years against which the individual operator can release, to the next operator in the chain of delivery, the declaration of conformity that contains, for each batch of raw material or intermediate product, the information that contribute to the demonstration of compliance with the sustainability criteria.

In order to develop the supply chain and increase the use of biofuels, suppliers of petrol and diesel (Obligated Parties) are obliged to enter into the national territory ('release for consumption') a minimum quota of biofuel annually. In this context, Obligated Parties are operators obliged to pay excise duties on petrol and diesel released for consumption in the country.

The share of biofuels in consumption is calculated based on the total calorific value of the petrol and diesel supplied in the previous year. In 2013 the share of release for consumption was 4.5%, which means that suppliers of petrol and diesel had to enter for consumption a quantity of biofuel with a calorific value of 4.5% of the energy contained in the petrol and diesel sold in 2012.
The percentage was set to rise to 5% by 2014.

As a tool to monitor compliance with the obligation, 'Certificates of Release for Consumption' (CICs) of biofuels have been established, issued by the Ministry of Economic Development (MISE), which makes use of the Energy Services Operator (GSE). A CIC attests to release for consumption of 10 Gcal. In fulfilling their obligation, liable parties can purchase CICs from parties with certificates surplus to their own requirements.

The release for consumption of certain types of biofuels entitles to receive a larger number of CICs for the same amount of Gcal. Stronger incentives are for biofuels that:

- are produced in plants located in EU Member States and using raw materials from cultivation in the territory of the same Member States (1 Certificate every 9 Gcal). Note that this may be WTO problematic, because it discriminates biomass from outside the EU territory;
- are released for consumption outside the distribution network of fuels, provided that the proportion of biofuel used in the mix is 25% (1 Certificate every 9 Gcal);
- are produced from waste and by-products, raw material for non-food (including cellulosic material and ligno-cellulosic materials) and algae (1 Certificate every 5 Gcal, i.e. double-counted).

On 10 October 2014, the Ministry of Economic Development (MISE) issued a Decree to update the conditions, criteria and procedures for implementing the obligation of release for consumption of biofuels, including advanced biofuels. It imposed a new obligation for Obligated Parties to provide the minimum consumption of biofuels. It is calculated based on the energy content, expressed in Gcal, of petrol and diesel supplied in the previous year, weighted according to percentages established by law (including double-counting), as follows:

- 2015: 5% biofuels;
- 2016: 5.5% biofuels;
- 2017: 6.5% biofuels;
- 2018: 7.5% biofuels, of which at least 1.2% advanced biofuels;
- 2019: 9.0% biofuels, of which at least 1.2% advanced biofuels;
- 2020: 10.0% biofuels, of which at least 1.6% advanced biofuels;
- 2021: 10.0% biofuels, of which at least 1.6% advanced biofuels;

– 2022: 10.0% biofuels, of which at least 2% advanced biofuels.

From 2015 onwards, the minimum amount is calculated on the basis of fossil fuels released for consumption in the same calendar year.

For particular types of biofuels there are specific 'rewards' that mean more Certificates are obtained for the same Gcals of biofuel entered into the system, in particular:

– Advanced biofuels (according to a list slightly different from that in Annex IX of Directive 2015/1513, for the differences please the bold text in the table below): 1 CIC for every 5 Gcal.
– Biomethane, with the number of CICs (Certificates of Release for consumption) varying according to the type of biomethane: 1 CIC every 5 Gcal (double-counting) if feedstock derives from the biodegradable fraction of municipal waste after recycling, from by-products of fuel of energy production, from algae and other non-food materials, or from other by-products; in addition, there is a 'reward' of 50% more CICs (for the first 10 years of incentives) if biomethane is released for consumption in transport by using a new filling station built by the manufacturer at its own expense, rather than of using the natural gas transmission or distribution grid.

Table 23 Intentions regarding implementation

ILUC Directive	**National legislation Italy (decree of 10 October 2014)**
Algae if cultivated on land in ponds or photo-bioreactors.	Algae grown in ponds or photo-bioreactors.
Biomass fraction of mixed municipal waste, but not separated household waste subject to recycling targets under point (a) of Article 11(2) of Directive 2008/98/EC.	Biomass fraction corresponding to mixed municipal waste.
Bio-waste as defined in Article 3(4) of Directive 2008/98/EC from private households subject to separate collection as defined in Article 3(11) of that Directive.	Organic waste from household refuse collection and subject to recycling, biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises and comparable waste from food processing plants.
Biomass fraction of industrial waste not fit for use in the food or feed chain, including material from retail and wholesale and the agro-food and fish and aquaculture industry, and excluding feedstocks listed in Part B of this Annex.	Fraction of biomass corresponding to industrial waste not suitable for use in human or animal food chain, including material from the wholesale and retail trade and the food industry, fisheries and aquaculture.
Straw.	Straw.
Animal manure and sewage sludge.	Animal manure and sewage sludge.
Palm oil mill effluent and empty palm fruit bunches.	**N.a.**
Tall oil pitch.	Tall oil pitch.
Crude glycerine.	Crude glycerine.
Bagasse.	Bagasse.
Grape marcs and wine lees.	Grape marc and wine lees.
Nut shells.	Nut shells.
Husks.	Husks.
Cobs cleaned of kernels of corn.	see other non-food cellulosic material.

ILUC Directive	National legislation Italy (decree of 10 October 2014)
Biomass fraction of wastes and residues from forestry and forest-based industries, i.e. bark, branches, pre-commercial thinnings, leaves, needles, tree tops, saw dust, cutter shavings, black liquor, brown liquor, fibre sludge, lignin and tall oil.	Fraction of biomass corresponding to waste and residues from forest industry activity, such as bark, branches, products of pre-commercial thinning, leaves, needles, foliage, sawdust, chips, black liquor, brown slurry, sludge fibres, lignin and tall oil.
Other non-food cellulosic material as defined in point (s) of the second paragraph of Article 2.	Other cellulosic materials of non-food origin, including residues of food crops and animal feed (such as straw, husks, shells, leaves, stems, stalks and corn cobs), dedicated crops with low starch content (such as Panicum virgatum, Miscanthus giganteus, Arundo donax), residues of industrial processing (such as the residues of food crops or of animal feed, obtained following extraction of vegetable oils, sugars, starches and proteins) and material from organic waste. These materials are mainly composed of cellulose and hemicellulose.
Other ligno-cellulosic material as defined in point (r) of the second paragraph of Article 2 except saw logs and veneer logs.	Other lignocellulosic materials: materials composed of lignin, cellulose and hemicellulose as residual wood biomass from forest (such as those achieved by and forest clearance and maintenance), woody energy crops, residues and waste from forestry-related industries.
Renewable liquid and gaseous transport fuels of non-biological origin.	Renewable liquid and gaseous fuels of non-biological origin.
Carbon capture and utilisation for transport purposes, if the energy source is renewable in accordance with point (a) of the second paragraph of Article 2.	**N.a.**
Bacteria, if the energy source is renewable in accordance with point (a) of the second paragraph of Article 2.	**N.a.**

To fulfil the requirement, the Obligated Parties can, therefore, enter into biofuel consumption or purchase CICs from Parties with a higher number than in their obligations. For this purpose, the GSE has created a specific platform (BIOCAR) through which operators can exchange certificates.

There are no direct incentives related to the production of biofuels, but rather penalties for those who violate their obligations, as cited above. The fine (updated by Decree of January 2015) corresponds to € 750 for each missing Certificate with respect to the minimum number expected for each Party (with respect both the targets for biofuels and advanced biofuels). The payment of the sanction referred to one year does not extinguish the requirement of entry of biofuels that generated it and the outstanding obligation is reported to the following year in addition to that resulting from the obligation relative to the same year.

There is a 'safeguard' clause for the obligations on advanced biofuels, in case the Ministry considers the availability of those biofuels in the market to be insufficient for the current year (availability below 20% of the planned obligation). All producers of advanced biofuels (within and outside the European Union) can communicate to the Ministry of Economic Development (MISE) the theoretical productive capacity and forecasts of actual production for the current year and forecasts for the following year.

Current outlook

The use of renewable sources in transport in Italy consists either in the use of biofuels (biodiesel, biomethane, bioethanol, ETBE36) pure or blended with fossil fuels. The reference variable is, therefore, the energy content of biofuels marketed annually for consumption in Italy.

The consumption of biofuels is being reconstructed for the compilation of national energy statistics (in accordance with European regulations on such statistics) and for the specific purpose of monitoring the degree of achievement of the objectives set by Directive 2009/28/EC. Table 24 reports, among other things, some of the values useful for monitoring targets, such as:

- the share of sustainable biofuels (i.e., those meeting the criteria set by Art. 17 of the Directive);
- the share of 'double-counting' biofuels.

Table 24 Biofuels released for consumption

	Fuel	2010	2011	2012	2013
Quantity (tonnes)	**Biodiesel**	1,468,086	1,455,705	1,429,137	1,332,748
	Of which sustainable	1,468,086	1,455,705	1,429,137	1,332,748
	Of which double-counting	43,000	64,797	382,011	128,806
	Bioethanol	71	428	3,173	2,274
	Of which sustainable	71	428	3,173	2,274
	Of which double-counting	-	-	-	-
	ETBE	142,035	132,322	120,255	84,904
	Of which sustainable	142,035	132,322	117,850	82,507
	Of which double-counting	-	6,493	2,313	856
	TOTAL	**1,610,192**	**1,588,455**	**1,552,565**	**1,419,926**
Energy (TJ)	**Biodiesel**	54,319	53,861	52,878	49,312
	Of which sustainable	54,319	53,861	52,852	49,311
	Of which double-counting	1,591	2,397	14,134	4,766
	Bioethanol	2	12	86	61
	Of which sustainable	2	12	85	61
	Of which double-counting	-	-	-	0,4
	ETBE	5,113	4,764	4,329	3,057
	Of which sustainable	5,113	4,764	4,243	2,970
	Of which double-counting	-	234	83	31
	TOTAL	**59,434**	**58,636**	**57,293**	**52,430**

F.3 ILUC Directive implementation

Country position during negotiating process

Italy has probably been among the principal advocates of advanced biofuels. Its position has been a 6% cap on first-generation biofuels and a 2.5% target for advanced biofuels, to be later reduced to 2%. Italy voted against the compromise proposal of the Lithuanian presidency in December 2013, because it felt that the draft directive is not a good starting point for the negotiations with the Parliament, because the cap was too high and the sub-target for advanced biofuels was too low. Italy was the country where the first commercial-scale advanced biofuels plant opened in 2014, in Crescentino, and became the first Member State to introduce a mandatory sub-target for advanced biofuels, namely 0.6% until 1 January 2018, 0.8% until 1 January 2020 and 1% from 1 January 2020.
Italy was very much in favour of a level playing field for advanced biofuels at the EU level and later conceded to accepting a lower level of the cap. Their special interest has been ligno-cellulosic biofuels and they were against quadruple counting, as it would dilute the incentive for advanced biofuels.

With respect to ILUC, Italy has never been a strong supporter, but it could accept reporting.

Table 25 Intentions regarding implementation

Cap on food-based biofuels	
Level of the cap	7%. Italy had previously proposed 6%, but no further discussions took place on this issue.
Use under RED and/or FQD	To be discussed (2016). As yet, no information on next steps.
Sub-target for advanced biofuels	
Level of the sub-target	Below mentioned shares include double-counting 2018: 7.5% biofuels, of which at least 1.2% advanced biofuels. 2019: 9.0% biofuels, of which at least 1.2% advanced biofuels. 2020: 10.0% biofuels, of which at least 1.6% advanced biofuels. 2021: 10.0% biofuels, of which at least 1.6% advanced biofuels. 2022: 10.0% biofuels, of which at least 2% advanced biofuels. Sub-targets have been determined in an in-depth assessment and evaluation, but information is not public.
Strategy to realise this target	The present strategy hinges on 'Certificates of Release for consumption' (CIC); see above. There will be revision during transposition of Directive 2015/1513 (in 2016).
Advanced biofuel expectations	
Type of advanced biofuels foreseen	Reliance mainly on (second-generation) biomethane, backed up by bioethanol from ligno-cellulosic materials.
Advanced biofuel production development	See table above. There will be other production plants, mainly for biomethane production.
Domestic production versus imports	Domestic production will be stimulated through promotion of biomethane and partly of bioethanol from ligno-cellulosic materials.
Other provisions	
-	-

F.4 FQD implementation

Policy instruments foreseen to meet the 6% target

Presently Italy plans to secure the 6% target almost exclusively through biofuels. During the discussions on transposition of Directive 2015/1513, projections and policy measures will be revised.

Expected role of different reduction measures

Biofuels

Within the family of biofuels, an important role will be played by biomethane.

Upstream reduction measures

The general orientation of Italian fuel suppliers is to follow the weighted average greenhouse gas default values only. Accordingly, the methodology currently used for determining the GHG content of the fuel, i.e. using the UER in meeting the CO_2 target of the Fuel Quality Directive, is considered as having no role.

F.5 References

- www.gse.it/it/Qualifiche%20e%20certificati/Biocarburanti/Pagine/default.aspx
- www.gse.it/it/EnergiaFacile/guide/Trasporti/Biocarburanti/Pages/default.aspx
- www.ssc.it/pdf/2011/bio_agg_normativo/Dlgs_31_marzo_2011_n_55_specifiche_carburanti_combustibili.pdf
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- www.sviluppoeconomico.gov.it/images/stories/normativa/Decreto_sostenibilita_23gennaio_2012_set.pdf

Annex G The Netherlands

G.1 General

Overall, the Netherlands is making fairly good progress on investigating the various options. In recent years, early introduction of double-counting has also resulted in a relatively high share of biofuels from waste and residues.

G.2 Current implementation of the RED and FQD

Use of mandates

The RED has been implemented by the Dutch Decree on Renewable Energy in Transport of 18 April 2011 (retroactive to 1 January 2011). First of all, this law obliges fuel suppliers bringing fuels onto the Dutch market to include a certain share of renewable energy based on energy content, with this share set to increase in the coming years. In 2015 these rules have been enforced trough Article 9.7 of the Dutch Environmental Protection Act and the Dutch Decree on Renewable Energy in Transport 2015 and the Regulation on Renewable Energy in Transport 2015. The total obligations for the years 2010-2014 can be found below. The Decree also prescribes that biofuels are only allowed to count towards the target if these meet the sustainability criteria of Article 17 of the RED and provides the possibility of double-counting biofuels from waste and residues.

Table 26 Annual renewable energy obligations for the period 2010-2014 (based on energy content)

	2010	2011	2012	2013	2014
Total obligation	4%	4.25%	4.5%	5.0%	5.5%

The FQD has been implemented in Dutch legislation in the Fuels and Air Pollution Decree of 8 April 2011, which obliges fuel suppliers to reduce the lifecycle GHG emissions of the road transport fuels they sell by 6% by 31 December 2020. The same Decree also includes a reporting obligation. Until now, the reporting obligation has been implemented in practice, while compliance with the reduction target is not checked. This is also, because fuel suppliers only have to prove compliance in 2020 without interim targets in place. This makes biofuel consumption is almost entirely driven by the RED.

The Dutch Emissions Authority is responsible for all RED- and FQD-related administration and for enforcement of the annual obligations. After collecting relevant information from the fuel suppliers, the Authority reports to the Dutch ministry of Infrastructure and Environment.

Use of fiscal incentives (or any other financial incentives)

None.

Use of tradable credits

The Netherlands have shifted from a system with tradable 'biotickets' to tradable Renewable Fuel Units (RFUs). Companies who brought renewable energy on the Dutch transport market can register these in in the Register of Energy for Transport. For each GJ of these renewable energy they get 1 Renewable Fuel Unit.

These RFU's can be used to meet the annual renewable energy target for transport. This new system towards the old one limit the risk of fraud and lower the administrative costs.

Current outlook

The Decree on Renewable Energy for Transport 2015 includes the following trajectory for the annual obligation for renewable energy to be met by fuel suppliers:

Table 27 Trajectory of annual renewable energy obligation

2015	2016	2017	2018	2019	2020
6.25%	7%	7.75%	8.5%	9.25%	10%

Double-counting

According to the publication of the Dutch Emissions Authority the share of biofuels from waste and residues within the total amount of renewable energy brought on the Dutch market to comply with the annual obligation renewable energy in transport in 2014 was 68% including the administrative contribution of the double-counting provision. Without this administrative contribution the total share of biofuels from waste and residues amounts 52%.

This 68% share of biofuels from waste and residues, counting double towards the target, has been an increase since 2013 (60%), 2012 (51%) and 2011 (40%). **Source**: NEA, 2015.

G.3 ILUC Directive implementation

Country position during negotiating process

The Netherlands has been a very progressive country in the ILUC debate and have advocated a strong combination of ILUC factors and ILUC mitigation measures. They wanted the 5% cap to be extended to all legislation. As the level of the cap was progressively increased, the Netherlands were concerned that they wouldn't be allowed to go for a lower cap at the national level, which in the end was changed, so that this possibility was made quite explicit in the final compromise with the Parliament. The Netherlands was also one of the most supportive countries for crop-specific ILUC factors, as it was arguing for an earlier review clause to introduce ILUC factors in the sustainability criteria. They were also big advocates of ILUC mitigation measures, such as increasing yields and growing biofuels on degraded land, but acknowledged that this would require further development from the side of the Commission.

Finally, on advanced biofuels it also argued for a concrete sub-target and supported the approach of a list of feedstocks that should be limited in scope. They were also supportive of adding sustainability criteria for advanced biofuels and were keen to include hydrogen and renewable electricity on the list of advanced technologies.

During the negotiations the Netherlands expressed its concerns with regards to the multipliers and referred to the decreasing contribution of transport to the overall renewable energy obligation. This decrease would result in investments in additional renewable energy sources in order to meet the overall target. The Netherlands seek for a way to avoid these additional expensive measures.

For this reason, they supported extension of multiple accounting of advanced biofuels to the overall renewable energy target (not just transport as originally intended).

Table 28 Intentions regarding implementation

Cap on food-based biofuels	
Level of the cap	To be decided. An impact assessment has been carried out to investigate the impacts of various options. The main issue assessed has been the realisation of the targets (10% and overall 16% target). The motion Van Veldhoven/Van Tongeren (Parliamentary paper 32 813, no. 97 in 2014) already proposed to implement a 5% cap on land-based biofuels. The Dutch government postponed a decision on this proposal until the final decision on ILUC has been taken. This option is therefore very likely to be part of the impact assessment, although the Dutch ministry has not yet communicated the content and outcome of this study. The impact assessment has been finalised. A next step will be to consult stakeholders on the various options. A final decision is expected to be taken in December 2015/January 2016.
Use under RED and/or FQD	During negotiations the Netherlands was positive about the option to also apply the cap under the FQD. In a letter to the Dutch Parliament the state secretary stated that the Dutch government regrets the fact that this option has not been included as a mandatory provision.
Sub-target for advanced biofuels	
Level of the sub-target	As with use of a cap, a similar impact assessment is investigating the various implementation options for the sub-target for advanced biofuels. It is not known which specific options have been investigated, although it is known that this assessment took into account development in advanced biofuel production capacity in the Netherlands as well as other European countries.
Strategy to realise this target	As yet unknown. The need for additional policy measures will be investigated after a decision has been taken on the specific level.
Advanced biofuel expectations	
Type of advanced biofuels foreseen	Some biofuel producers are already producing advanced biofuels like BTG (Syngas from pyrolysis oil).
Advanced biofuel production development	No specific biofuel production developments were discussed during the interview other than those of market actors already active on the Dutch market.
Domestic production versus imports	The role of domestic production and import from other countries has been part of the impact assessment.
Other provisions	
	The Dutch government has not been in favour of deleting the double-counting provision for advanced biofuels (Annex IX, part A of the ILUC Directive) towards the overall renewable energy target. Although the double-counting towards the 10% target remains, the Netherlands thinks the incentive could have been stronger if double-counting towards the overall target had also been permitted.

G.4 FQD implementation

Policy instruments foreseen to meet the 6% target

The Netherlands has implemented the FQD by way of the Fuels and Air Pollution Decree.

Expected role of different reduction measures

The Netherlands cannot yet quantify the expected role of UERs. UERs will probably play a role in realisation of the FQD target. There are some concerns on the verifiability of the reductions achieved and the prevention of double claiming by various Member States. The challenges associated with implementation relate mainly to enforcement rather than scientific issues (as has been the case with ILUC). Because these issues will take some time to be resolved, UERs might only play a role by 2020. Because the FQD target only requires realisation of the target in 2020 (and does not prescribe a mandatory growth path), this should not be problematic.

G.5 References

- Interview with a representative of the Ministry of Infrastructure and Environment (The Hague, 26 October 2015).
- www.emissieautoriteit.nl/documenten/publicatie/2015/09/24/totaalrapportage-hernieuwbare-energie-2014
- http://wetten.overheid.nl/BWBR0035839/geldigheidsdatum_22-10-2015
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- http://wetten.overheid.nl/BWBR0029909/geldigheidsdatum_10-11-2015
- NEa rapportage 2015 over 2014.

Annex H Poland

H.1 General

Poland's energy policy is set out by the Ministry of Economy. Regulatory functions are carried out by the Energy Regulatory Office (*Urząd Regulacji Energetyki*), whose scope of competence includes verification of the implementation of the National Indicative Target. Regulatory oversight of the production of bio-components and biofuels is shared with the Agricultural Market Agency (*Agencja Rynku Rolnego*), which maintains a registry of biofuel producers and importers and a registry of farmers producing biofuels for their own use. Biofuels and bio-components traded in Poland must be certified by an accredited certification entity that complies with Polish law on certification. Several certification units exist, all of which are listed on the registry maintained by the Agency[6].

H.2 Current implementation of the RED and FQD

Use of mandates in terms of biofuels, renewable energy in transport or carbon intensity reduction

Issues related to biofuels and bio-components, including the setting of mandatory targets for producers on biofuel content (the National Indicative Target), are regulated under the Biofuels Act, which was amended in January 2015 to bring it in line with EU legislation[7]. Fuel quality issues, including the setting of mandatory targets for fuel producers regarding GHG emission reduction from fuels (the National Reduction Target), are regulated under the Act on the System of Monitoring and Control of Fuel Quality[8].

The gradual increase of the share of bio-components and biofuels in transport to 10% by 2020 is to be achieved through an increase in the annual National Indicative Targets (NITs) – the minimum share of bio-components and other renewable fuels in all modes of transport relative to the total amount of liquid fuels and liquid biofuels used in road and rail transport in a calendar year, in terms of energy content. Entities covered by the NITs (producers and importers of fuels) are obliged to supply at least the minimum share of bio-components and other renewable fuels in proportion to the total amount of liquid fuels and liquid biofuels sold or destined for own use in a given year. The NIT level for the years 2013-2016 was 7.1%. It will increase to 7.8% in 2017, and to 8.5% in 2018. So far, the possibility of using biofuels which count double towards the NIT has not been formally established; a new ordinance regarding this issue will enter into force on 1 January 2016[9].

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6 www.arr.gov.pl/energia-odnawialna/biokomponenty-biopaliwa

7 Ustawa z dnia 25 sierpnia 2006 o biokomponentach i biopaliwach ciekłych (Act of 25 August 2006 on Bio-components and Liquid Biofuels), O.J. No. 169 item 1199 of 2006.

8 Ustawa z dnia 25 sierpnia 2006 o systemie monitorowania i kontrolowania jakości paliw (Act of 25 August 2006 on the System of Monitoring and Control of Fuel Quality), O.J. No. 169 item 1200 of 2006.

9 Interview with representative of the Ministry of Economy, Department for Renewable Energy, division of bio-components, liquid biofuels and fuel quality, 28 October 2015.

In line with the Biofuels Act, entrepreneurs can confirm compliance with the sustainability criteria only by using documents from a recognized certification system, i.e. a system guaranteeing fulfilment of the sustainability criteria set out in Article 17 of the RED.

Based on the Biofuels Act, bio-components which count towards the NIT must meet sustainability criteria, including the requirement to reduce greenhouse gas emissions. This means that the GHG emission reduction must amount to at least:

- 35% by 31 December 2016;
- 50% from 1 January 2017.

In the case of bio-components produced at facilities starting production after 31 December 2016, the required GHG savings will amount to at least 60% from 1 January 2018.

Provisions for GHG standards have been introduced into Polish law under the Act on the System of Monitoring and Control of Fuel Quality and its executive ordinances. Producers and importers of biofuels and bio-components are obliged to meet the 6% National Reduction Target (NRT) referring to GHG reduction from fuels used in transport by 2020 as compared to the level of 2010.

Currently, the share of biofuels in total transport fuel use is approximately 6% according to energy content[10]. Double-counting biofuels account for about 2% of all biofuels used in transport (see table). While this table shows the energy content of bio-components produced from raw materials that can potentially be double-counted, they could not be formally double-counted because a legal basis was lacking. A new executive order that will enter into force on 1 January 2016, will provide such a formal legal basis. According to this new legislation, up to 8% of the NIT can be met by using double-counting biofuels so there is a potential to grow.

Table 29 Estimated share of double-counting biofuels in total biofuels consumed in Poland

	2010	2011	2012	2013	2014
I. Energy content of bio-components produced from materials which qualify for double-counting [thousands GJ]	13.28	194.44	337,48	388.80	190.11
II. Energy content of bio-components used for meeting the NIT in total [thousands GJ]	39,851.96	45,889.19	37,475.02	38,762.99	39,860.36
III. Share of bio-components produced from materials which qualify for double-counting in total volume of bio-components used for meeting the NIT [%] (III = I / II * 2)	0.07%	0.85%	1.80%	2.01%	0.95%

Source: The Polish Ministry of Economy, Department for Renewable Energy, division of bio-components, liquid biofuels and fuel quality.

[10] According to the Ministry of Economy, the difference between the target set for 2013 at the level of 7.1% and the actual level is due to the methodological discrepancies between the Polish statistical office and Eurostat. According to Eurostat methodology, the NIT set for 2013 was achieved (personal communication with a representative of the Ministry of Economy, Department for Renewable Energy, division of bio-components, liquid biofuels and fuel quality, 4 December 2015).

The volume of production of methyl esters is summarised in Table 30.

Table 30 Volume of methyl esters produced

	Volume of methyl esters produced (t)				
	2010	**2011**	**2012**	**2013**	**2014**
1. Animal fats	0.00	2458.80	0.00	502.34	1006.55
2. Free fatty acids	358.82	2,796.29	3,773.50	3,458.23	3,804.72
3. Used Cooking Oil	0.00	0.00	5347.56	6547.59	326.97
Total	**358.82**	**5,255.09**	**9,121.06**	**10,508.15**	**5,138.24**

Source: Polish Ministry of Economy, Department for Renewable Energy, division of bio-components, liquid biofuels and fuel quality.

Use of fiscal incentives (or any other financial incentives)

Currently, there are no fiscal incentives for biofuels in Poland. Fiscal incentives used for biofuels and bio-components in the past included excise tax exemptions, exemption from fuel tax for bio-components used as fuel and income tax exemptions for bio-component producers. Fiscal mechanisms accompanying the 'Energy Policy of Poland until 2030' (EPP, 2030), a document adopted by the Council of Ministers in 2009, were aimed at creating favourable and stable market conditions for the development of bio-components and liquid biofuels. According to the Supreme Audit Office (2014) this goal was not achieved. Contrary to assumptions, Poland has largely become a market for bio-components produced in other countries.

In the same report (Supreme Audit Office, 2014), mandatory NITs were cited as being the most effective means of increasing the share of bio-components and biofuels in transport fuels. According to stakeholders, hefty fines for non-compliance with NITs are a good measure to ensure compliance (CE Delft et al., 2015).

Use of tradable credits

In Poland tradable credits are not used in the transport sector, but only in the power generation sector. The transport sector relies on the National Indicative Target and the National Reduction Target, as described above.

Current outlook

The country's current energy policy is defined in 'Energy Policy of Poland until 2030'. The renewable energy sector will develop in stages, with certain technologies predominating at different stages. Regarding transport, second-generation biofuels are expected to kick in after 2020. The Ministry of Economy is currently working on a draft 'Energy Policy of Poland until 2050'.

The Ministry of Economy foresees opportunities for grants and/or preferential loans for innovative investments in the area of advanced biofuels. However, lack of a clear long term EU policy in this area is creating uncertainty. The EC announced that a roadmap for biofuels will be proposed no earlier than 2018. In this situation investors are rather reluctant to undertake capital-intensive investments unless there is substantial support from the government. On the other hand, the government cannot promise substantial support because of limitations regarding public aid.

H.3 ILUC Directive implementation

Country position during negotiating process

From the outset, Poland has generally been opposed to ILUC legislation. It has questioned both the science of ILUC and the rationale of a cap. Its first position was against the cap, but then it said that it could accept a cap at 8% (a little under business-as-usual of 8.6% according to NREAPs). The main argument against the cap (and ILUC factors) was that it would increase imports of feed products, which are currently being supplied as by-products of biofuels production. Poland was also rather sceptical about second-generation biofuels. This scepticism relates to the feasibility of effective development of production of this type of biofuels before 2010. Lack of clear mechanisms of support for this production at EU level is a contributing factor here. Poland pointed to a lack of consistency and gaps in EU regulations and biofuel-related proposals, including: 1) lack of clear policy and goals related to biofuels that will be binding after 2020, and 2) lack of concrete, earmarked support for advanced biofuels (the double-counting rule is not sufficient – advanced biofuels are more expensive than, for example, esters produced from used plant oil that do not belong to the category of advanced biofuels). At the same time, Poland is in favour of development of new technologies and use of non-food feedstocks. Poland pointed out that the list should include raw materials for which technological production capacities exist and also that there is a need to coordinate action at EU level aimed at eliminating the risk of fraud related to double-counting (forged materials including plant oils sold as used cooking oil, etc.).

Poland voted against the compromise proposed by the Lithuanian presidency in December 2013, which, according to the representatives of the Ministry of Economy[11], was convergent with the position of many other Member States. It was held that introduction of a cap at a level of 5% would lead to severe market consequences in the situation whereby Poland (but also France and Germany, for example) was already using more first-generation biofuels. Poland indicated that such rules cannot be imposed retroactively, such limitations not being cited in the RED Directive of 2009. In this situation, Poland proposed a cap of 7%, which was supported by the majority of Member States.

Regarding advanced biofuels, Poland is of the opinion that lack of support mechanisms for advanced technologies will hamper their development and that too high a sub-target for advanced technologies would therefore only result in a price war among fuel producers to get these types of biofuels.

[11] Interview with representative of the Ministry of Economy, Department for Renewable Energy, division of bio-components, liquid biofuels and fuel quality, 28 October 2015.

Table 31 Intentions regarding implementation

Cap on food-based biofuels	
Level of the cap	Not less than 7% for food-based biofuels within the RED target.
Used under RED and/or FQD	RED
Sub-target for advanced biofuels	
Level of the sub-target	Indicative 0.5%
Strategy to realise this target	Support for innovative, pilot projects in this area in the form of subsidies (possibly using EU co-funding).
Advanced biofuel expectations	
Type of advanced biofuels foreseen	Cellulose-based, wood from energetic plantations.
Advanced biofuel production development	Currently marginal.
Domestic production versus imports	Reluctant to use import, will aim to rely on domestic production.
Other provisions	
-	-

H.4 FQD implementation

Poland did not choose to apply the target of the FQD to meet the overall target of the RED. The requirement to reduce GHG emissions in transport fuels is being implemented through the establishment of the NRT, as explained above.

Policy instruments foreseen to meet the 6% target

The NRT is the main policy envisaged for securing the 6% target that stems directly from the RED. Polish legislation imposes sanctions in the form of penalties for not meeting the targets: this is the main instrument for ensuring compliance. In addition, the Ministry of Economy carries out consultations with the business sector regarding the most effective and efficient measures for achieving the targets set in the legislation[12].

Expected role of different reduction measures

Bio-components are envisaged as playing the main role in securing the overall reduction target. Upstream reduction measures in relation to domestic production play only a marginal role, because Poland does not extract crude oil but rather imports it. There is an ongoing discussion about a possibility of using tradable certificates for upstream reduction of GHG; if this becomes an option, Poland might be interested.

[12] Personal communication with representative of the Ministry of Economy, Department for Renewable Energy, division of bio-components, liquid biofuels and fuel quality, 4 December 2015.

H.5 References

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- Supreme Audit Office, 2014, Stosowanie biopaliw i biokomponentów w transporcie (Use of biofuels and bio-components in transport), Warsaw: Supreme Audit Office, 2014.
- Interview with a representative of the Ministry of Economy, Department for Renewable Energy, division of bio-components, liquid biofuels and fuel quality, 28 October 2015.

Annex I Spain

I.1 General

In Spain negotiations on the proposed royal decree to implement the directives have not yet been completed. If it is successfully passed into law soon, it will be valid from 1 January 2016. In order to understand the Spanish case it is fundamental to take into account three circumstances:

a Spain is still recovering from and facing the consequences of the economic crisis, even if the macroeconomic data points to recovery. Fiscal adjustment and austerity policies still dominate the government's decision-making. All types of incentives or more ambitious targets are considered by the government to be additional burdens on the economy (or certain sectors of strategic value).

b Because of various reasons, including the economic crisis and the positions of stakeholders in conventional energy, including the oil industry and the major electricity utilities, the targets of the RES support scheme has been reduced several times. The targets for biofuels have been reduced significantly for 2013, 2014 and 2015. The exemption of biofuels from the hydrocarbon tax was cancelled in 2013.

c Due to other priorities, like the general elections of 20 December 2015, the implementation of communitarian law on biofuels is not currently a priority: the FQD, the national sustainability system or double-counting, all of which are yet to be transposed into national law.

National biofuel mix

The national biofuels mix is composed of 80% biodiesel and Hydrotreated Vegetable Oil (HVO) on the one hand and 20% bioethanol on the other hand.

In Spain there are operational 35 plants for biodiesel (according to APPA; there is no official registry) and four for bioethanol (Abengoa).

The production of biofuels is predominantly national: 72.30% of biodiesel production, 96.17% of HVO and 69.64% of bioethanol, with the majority of imports coming from Brazil (data: CNMC, 2014).

The feedstocks for biodiesel in Spain are palm oil (67.72%), soy (21.98%), rapeseed (5.06%), used cooking oil (UCO) (3.87%) and animal fat (0.84%). In the case of HVO it is palm oil (93.72%), shea butter (5.77%) and soy (0.51%). The feedstocks for bioethanol are corn (69.98%), sugar cane (24.90%), wheat seeds (1.87%), wine alcohol (1.57%), sugar beet (1.45%) and barley seeds (0.24%) (data: CNMC, 2014).

Domestic consumption of UCO is lower than production owing to a lack of incentives and Spain therefore exports to countries where double-counting is implemented. By far the main feedstock for biodiesel and HVO is imported palm oil, while in the case of bioethanol it is imported and national corn, imported sugar cane and (mostly domestic) wheat.

In the case of biodiesel 4.63% of the feedstocks derive from national production, and 16.67% in the case of bioethanol. The rest of the feedstock for biodiesel is imported mainly from Indonesia (57.06%), and to a lesser extent from Brazil (9.92%), Malaysia (9.53%), Argentine (7.11%), Paraguay (2.59%), Germany (2.25%), Portugal (2.06%) and many other countries in minor

quantities. In the case of bioethanol, feedstocks are imported from Brazil (35.60%), Ukraine (27.08%), USA (7.99%), France (3.64%), Canada (2.81%), Bulgaria (2.64%), Romania (1.99%) and several others in minor quantities. The palm oil for HVO comes almost exclusively from Indonesia (76.83%), Malaysia (16.81%) and Ghana (5.77%) (data: CNMC, 2014).

Table 32 shows the biofuel shares between 2009 and 2014. The decrease from 2012 to 2013 is due to the reduction of the targets by the government.

Table 32 Biofuel shares in Spain, 2009-2014

	Bioethanol	Biodiesel	Biofuels total
2009	1.8%	3.0%	2.8%
2010	4.2%	5.1%	4.9%
2011	4.3%	6.6%	6.2%
2012	4.1%	9.5%	8.5%
2013	3.4%	3.4%	3.4%
2014	3.7%	3.7%	3.7%

Source: CNMC.

I.2 Current implementation of the RED and FQD

In Spain implementation of the RED and FQD with regard to biofuels is characterised by no or formal transposition, which still requires further development in order to put the provision in practice. This concerns the national sustainability system and double-counting (both formally transposed under RD 1597/2011) and the 6% CO_2 reduction target (which will apparently be transposed formally under the new decree)to decide on. The European Commission has formally asked **Spain** to ensure the correct implementation of the Renewable Energy Directive (2009/28/EC), in particular as regards biofuels (DG Energy).

Spain is the only one of the larger EU countries without a national system of sustainability. According to our interview partners, it is not a technical problem, but rather political. So, in practice, voluntary systems and the European approved sustainability schemes are used.

Double-counting is not applied in Spain, which is not to say that there is no consumption of used cooking oil and animal fat for the production of biodiesel. It is expected that double-counting will not be implemented until 2017. The National Commission for Markets and Competition (CNMC) is working on a proposal. There are many challenges to face and solutions have not yet been forthcoming. The CNMC does not wish to introduce double-counting without having a reliable national sustainability verification system, because this would invite fraud. It seems very complicated to avoid fraud with mixtures of unsustainable palm oil and UCO. Establishing adequate and systematic mechanisms of control is very expensive, while there is a lack of resources in Spain.

Share of used cooking oil and animal fat in Spanish biofuel consumption:
3.47% double-counting biofuels in total biofuel consumption.
4.71% double-counting biodiesel in total biodiesel consumption.
0.00% double-counting ethanol in total ethanol consumption

Note: The only official data available is the share of UCO and animal fat in biodiesel consumption but not in absolute terms so the share cited here refers to consumption in m^3.
Source: Own calculation using data from CNMC, 2014.

Use of mandates in terms of biofuels, renewable energy in transport or carbon intensity reduction

The first target was established in 2008 at 1.9% for biodiesel and bioethanol as well as an overall target. In line with the provision of the previous government it should have risen to 6.1% in 2013, with 4.1% as a sub-target for bioethanol and biodiesel. As the government changed at the end of 2011, the new administration reduced the targets significantly in the context of the economic crisis and the Spanish banking bailout to 4.1% as an overall target, 3.9% for bioethanol and 4.1% for biodiesel, maintaining these levels until 2015.

The April 2011 increase, as depicted in the table below, was an emergency government measure in the context of the Libyan crisis and its impact on oil prices and supply. It was part of the 'Plan of urgent measures of energy saving and efficiency' (Royal Decree 459/2011).

Table 33 Trajectory of the targets

		2008	2009	2010	2011	2012	2013	2014	2015
Overall target	Old	1.9%	3.4%	5.83%	5.9%	6%	6.1%		
					6.2%	6.5%	6.5%		
	New						4.1%	4.1%	4.1%
Biodiesel target	Old	1.9%	2.5%	3.9%	3.9%	4.1%	4.1%		
					3.9%	4.1%	4.1%		
	New						3.9%	3.9%	3.9%
Bioethanol target	Old	1.9%	2.5%	3.9%	3.9%	4.1%	4.1$		
					6%	7%	7%		
	New						4.1%	4.1%	4.1%

Source: CNMC, 2015.

Use of fiscal incentives (or any other financial incentives)

The exemption for biofuels from the hydrocarbons tax on transport fuels was introduced in 2002 but abolished in 2013. The decision was justified as a necessary adaptation of national to communitarian law. The biofuels sector is still lobbying for reintroduction of the exemption, at least for fuels with a biofuel share over 5%.

Use of tradable credits

Obligated entities must demonstrate that they comply with the mandatory targets by requesting the corresponding certificates from the National Commission for Markets and Competition (CNMC). Companies not complying with the target must buy certificates (currently € 763/certificate) to compensate their deficit. In this way a so-called compensation fund is financed from which the entities with an excess of certificates are paid. Instead of receiving compensation they can also transfer up to a 30% of their expendable certificates from one year to the next. These can also be freely traded under the supervision of the CNMC, which registers transfers of certificates from one entity to another. There is no formally organised secondary market, however.

Current outlook

The draft Royal Decree provides for an 8.5% contribution of biofuels to meet the 10% RES target in transport in 2020. It defines intermediate targets of 5% for 2016 and 2017, 6% for 2018 and 7% for 2019.

Table 34 Trajectory for RES-T shares

2016	2017	2018	2019	2020
5.0%	5.0%	6.0%	7.0%	8.5%

At the same time, the proposal removes the individual targets for biodiesel and biopetrol, which have existed since 2008, and maintains only the overall target. Both decisions have been criticised by the CNMC and the biofuels sector. The pathway to 2020 is considered to be too flat at the beginning and too steep at the end. On the other hand, the share in 2020 is not found to be very ambitious, especially taking into account the overall share of 8.5% of biofuels in Spain in 2012. Furthermore, abandoning the individual targets is expected to have a major impact on investment and on development of advanced bioethanol. However, the proposal is partially considered as a rectification of the reduction of the targets in 2013.

I.3 ILUC Directive implementation

Country position during negotiating process

Spain has been essentially opposed to ILUC legislation, it being held that it might make the 10% target more difficult and expensive to secure and harm the enormous investment made by Spanish companies. In reality, most Spanish biofuels were imported either from Argentina or from Indonesia, while Spanish companies had huge over-capacity, of which only around 20% was used. During the legislative process, Spain reduced its national obligation and made sustainability criteria voluntary. However, this has not changed the country's negotiating position. It continued to argue for a higher cap, oppose ILUC factors and be against more incentives for advanced biofuels, owing mainly to their higher price, which would make it harder to achieve the target, it was held.

As nearly 100% of Spanish biofuel production and consumption derives from conventional biofuels, the government's aim during the negotiating process was to retain the cap for 'biofuels produced from cereals and other starch-rich crops, sugars and oil crops and from crops grown as main crops primarily for energy purposes on agricultural land' as high as possible and to avoid a binding target for advanced biofuels. It bargained for an 8% cap because the market share of biofuel in Spain was about 8% in 2012. A cap under 7% would have been unacceptable for the country. Spain did not want a mandatory sub-target for advanced biofuels (to avoid the additional investments that would be necessary because of practically non-existent national production, if UCO and animal fat are excluded).

Table 35 Intentions regarding implementation

Cap on food-based biofuels	
Level of the cap	The respondents expect a 7% cap to be implemented. This is what is scheduled in the proposal for a Royal Decree that may be approved before the elections in December. The cap will probably not come into force before 2020, however, at least under the present government. During the last decade conventional biofuels have been promoted as a measure for rural development because of their positive impacts on the agricultural sector and the rural economy. As the Spanish government has bargained (supported by the Spanish biofuels sector) for this cap level, it makes sense not to set it at a lower level. To achieve the 10% RES target it is considered necessary to make full use of conventional biofuel capacity. One respondent explains there is currently no concrete proposal on how the cap should be put into practice.
Use under RED and/or FQD	At the moment the cap will be applied only under the RED. In the proposal for the Royal Decree its application under the FQD is not considered. The ministry of Industry has not yet decided how to implement the FQD, and it is difficult to anticipate when this will happen. It seems the ministry does not plan to apply the cap under the FQD in the future, but only to implement the minimum, the mandatory parts of the directive. Under a new government administration this could change. Biofuel companies do not want to extend the cap to the FQD.
Sub-target for advanced biofuels	
Level of the sub-target	The proposal for a Royal Decree states that a ministerial order could establish a sub-target for advanced biofuels. The decision has not yet been taken and will not be taken before the elections in December 2015. However, the interviewed stakeholders estimate that the target will most probably be zero, or at least significantly below 0.5%, and that the decision will be delayed as long as possible. (According to the directive, the deadline is 6 April 2017) Under a new government this could change. Until now there is no 'official' justification with reference to Article 3 (4) e) i), ii) or iii), but it could be each of them (because of the subsidies for electric vehicles, because of the lack of national production, its high costs…). The biofuels sector has bargained for a 2% target.
Strategy to realise this target	It seems probable that the present Spanish administration will wait as long as possible with any decision regarding incentives for advanced biofuels (also in case of the implementation of double-counting). There are no incentives in place to promote advanced biofuels, however. Although several technology centres and companies are working on these, they have all suffered under the economic crisis and its consequences. Abengoa intended to invest and several months ago received a NER300 for a waste-to-biofuel-plant in Seville. In the end, though, the decision was delayed owing to the high costs, the company's debts and regulatory insecurity, raising doubts about the return on investment. In general there is little scope for investment up to 2020. Even for a new government it will not be prioritised at the beginning of its tenure. The directive has only just been approved, and in Spain quite a long time is usually required for implementation. At the moment there are no additional measures, incentives etc. planned. However, it is very early to foresee what will happen.

Advanced biofuel expectations	
Type of advanced biofuels foreseen	In the case of bioethanol one of the respondents suggested that the most probable route will be via cellulose from straw. Abengoa has a demonstration plant in Salamanca that works well. Furthermore, agricultural residues such as grape marc and wine lees will play an important role because these feedstocks can be processed in existing plants. Waste-to-biofuel will be another interesting option, but would need additional investments. With respect to biodiesel, both respondents deemed it more difficult to predict future developments: HVO from residual materials might be an option, while BTL was considered but discarded.
Advanced biofuel production development	The Abengoa experimental plant in Salamanca is working well producing bioethanol from straw. With regard to the waste-to-biofuel plant in Seville. The respondents are currently very sceptical about whether it will be build. The removal of the individual targets for bioethanol and biodiesel foreseen in the proposal for a Royal Decree, which at the moment is very likely to be approved, is considered a serious disincentive for future development of advanced biofuels. There will only be new incentives for investment (for example for construction of new plants for second-generation bioethanol) if these originate from the EU.
Domestic production versus imports	Priority will always be given to exploiting national feedstocks and to domestic biofuels production. According to the respondents, nobody wants a massive international biomass trade because of its inefficiency: transport costs are too high and worsen the biofuels' CO_2 balance. Furthermore, it would mean increased competition between biomass for biofuels and more efficient uses like thermal energy and electricity. The maximum feasible vertical integration is considered the most desirable option. If there is some domestic production of advanced biofuels in 2020, these will be used to meet the sub-target, as low as it might be. Exportation is not foreseen, while importation will not be necessary because the sub-target will exactly reflect domestic production capacity.
Other provisions	
-	

I.4 FQD implementation

Policy instruments foreseen to meet the 6% target

At the moment there is no policy instrument to work with in practice and, as mentioned before, transposition of Article 7 into the Royal Decree is effectively a 'copy-and-paste'. As with the sub-target, the intention is to delay additional costs, in this case for the oil industry, as long as possible. No change in policy instruments or incentives is currently anticipated. One thing that could disappear under a new government – even if the pressure to maintain it is very high – is the obligation on all petrol stations to offer 'protection grade petrol' (E95), effectively blocking the introduction of E10-petrol.

Expected role of different reduction measures

Biofuels

As the implementation of the FQD is still currently pending, it is difficult to foresee the role of biofuels in meeting the 6% CO_2 reduction target. Additionally, this depends very much on the result of the general election.

Upstream reduction measures

Neither of the interview partners has a clear vision on this issue. Indeed, both are very sceptical. Upstream reduction measures are considered risky and dangerous. It is difficult to control them adequately and fraud could therefore be a grave problem. As the oil industry is very interested in this instrument, however, there is a serious risk of a major part of the 6% target being met by using it.

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Annex J Sweden

J.1 General

In 2014 12% of the energy supply to the Swedish transport sector was renewable (including electricity to the railway system). Taking account of the double-counting in RED, the share was 18.7%. The high share is mainly explained by the high penetration of biofuels, triggered by favourable tax treatment for more than ten years.

Source:
Transportsektorns energianvändning 2014. Energimyndigheten.
https://energimyndigheten.a-w2m.se/Home.mvc?ResourceId=3057

J.2 Current implementation of the RED and FQD

The driving factor behind the high share of biofuels in Sweden is the fuel tax system (for present rates, see table). This system is under strong pressure since for several years the tax bonus for several of the biofuels has been larger than permitted under the Energy Tax Directive. In combination with recent changes in the EU State support guidelines, the possibilities for the Swedish government to further support biofuels through tax breaks are limited. It is presently (23 October 2015) still uncertain to what extent the present tax breaks can continue in 2016, and it is likely they will have to be abolished completely within 2-3 years. As a consequence, a discussion on replacing tax bonuses by some sort of mandate has started.

Table 36 Tax levels for various fuel types

	Energy tax	CO_2 tax	Total
Petrol 95, not blended	3.25 SEK/l	2.60 SEK/l	5.85 SEK/l
Diesel class I, not blended	1.833 SEK/l	3.218 SEK/l	5.051 SEK/l
Ethanol, max. 5% blending	0.68 SEK/l	0	0.68 SEK/l
Ethanol, high-blended	0	0	0
Fame, max. 5% blending	1.69 SEK/l	0	1.69 SEK/l
HVO, any blending	0	0	0
Synthetic petrol, complying with RED sustainability criteria	0	0	0
Biogas	0	0	0
Natural gas	0	2,409 SEK/ 1,000 m^3	2,409 SEK/ 1,000 m^3

Note: Owing to the tax relief, basically all petrol 95 and diesel contains 5% ethanol or FAME, but there is no mandate. On top of the FAME blending, diesel is on average blended with 12-15% HVO.

So far, tradable credits have not been used. No specific efforts have been made to reduce upstream emission intensity.

Double-counting (2014)

Of total biofuels consumption, 42% is double-counted (33% HVO, 9% biogas).
Of biodiesel consumption, 45% is double-counted.
Of bioethanol consumption, <1% is double-counted.

Source:
Energimyndigheten: Hållbara biodrivmedel och flytande biobränslen under 2014.
www.energimyndigheten.se/Global/F%C3%B6retag/H%C3%A5llbara%20br%C3%A4nslen/Nyheter/H%C3%A5llbara%20biodrivmedel%20och%20flytande%20biobr%C3%A4nslen%202014.pdf

J.3 ILUC Directive implementation

Country position during negotiating process

Sweden's position has been that the ILUC impact of biodiesel is worse than the impact of bioethanol and that for this reason an indiscriminate cap is not a good approach. Instead it suggested to either put a very restrictive cap on biodiesel (but not on ethanol) or to use the 5% overall cap, as suggested by the Commission. The latter would have been a better option for countries that have a strong biodiesel industry. It was claimed that this approach would have been more effective in limiting ILUC emissions. The position on ILUC has been that there is too much uncertainty to already introduce ILUC factors, but there were no objections to reporting. The country's position on the list of advanced biofuels was similar to that of Finland, i.e. that a more general approach is needed, which includes broader definitions of forestry and other feedstocks. It was also argued that the list should be more flexible and updated more often. The claim was that market mechanisms would take care of the rest, i.e. the fractions of the tree that have no use in the construction and pulp industry will be priced less and hence will provide the raw materials for the biofuels industry.

Intentions regarding implementation

No decisions or even initiatives have yet been taken by the government on the adoption of the ILUC directive. The perception of the Ministry of Environment and Energy, which bears responsibility, is that the Directive will have limited consequences for Sweden and that there is no hurry, since implementation is mandatory only from September 2017. One reason for the inaction is that the actual share of advanced fuels is considerably above the 0.5% target. Additional measures to support the sub-target may be introduced, but hardly because of the ILUC directive. To comply with the intention of the Directive, some sort of formal decision on a goal for advanced biofuels (without any practical significance) is likely to be taken before 10 September 2017.

At present, advanced biofuels are used mainly in the form of HVO and biogas. Use of HVO has grown dramatically in recent years and is likely to expand even further. Production and use of ethanol from waste has so far been limited. On the other hand, Sweden's significant output of biogas is based mainly on waste.

Sources:
- Interview with representative of the Ministry of Environment & Energy; and representative of the Swedish Energy Agency.

Table 37 Intentions regarding implementation

Cap on food-based biofuels	
Level of the cap	To be decided.
Use under RED and/or FQD	To be decided.
Sub-target for advanced biofuels	
Level of the sub-target	To be decided.
Strategy to realise this target	To be decided.
Advanced biofuel expectations	
Type of advanced biofuels foreseen	Much focus on HVO, some development of biogas, first plant for production of ethanol from waste recently opened.
Advanced biofuel production development	See previous item.
Domestic production versus imports	No clear policy so far, but major expectations on wood-based fuels. In general, though, development is market-driven and there is no target for the import/export balance (see tables below).
Other provisions	
	No decisions or even initiatives have been taken yet by the government on the adoption of the ILUC directive. The perception of the Ministry of Environment an Energy, which bears responsibility, is that the Directive will have limited consequences for Sweden and that there is no hurry, since implementation is mandatory only from September 2017. Source: representative of Ministry of Environment and Energy.

FEEDSTOCKS 2014

FAME

Raw material	Share, %	Land of origin of raw material, 2014	Share, %
Rapeseed	100	Denmark	20
		Australia	17
		Germany	15
		Lithuania	15
		Ukraine	8
		Russia	7
		Sweden	7
		Latvia	6
		Other	6

Ethanol

Raw material	Share, %	Land of origin of raw material, 2014	Share, %
Wheat	56	UK	26
Corn	20	Sweden	19
Sugar beet	8	France	16
Triticale (hybrid wheat x rye)	8	Ukraine	16
Sugar cane	4	Lithuania	6
Barley	4	Belgium	3
		Poland	2
		Hungary	2
		Other	10

HVO

Raw material	Share, %	Land of origin of raw material, 2014	Share, %
Slaughter waste	56	Sweden	19
Vegetable and animal waste oil	20	Germany	17
Crude tall oil	22	Netherlands	13
Palm oil	15	UK	12
Animal fat	5	Indonesia	12
		Belgium	5
		Finland	4
		France	4
		Malaysia	4
		Ireland	3
		Other	6

Biogas

Raw material	Share, %	Land of origin of raw material, 2014	Share, %
Waste from sewage treatment plants	34	Sweden	94
Waste food from households & restaurants	20	Norway	3
Waste from food industry and trade	15	Germany	3
Slaughter waste	7		
Manure	6		
Other	18		

Source: Energimyndigheten: Hållbara biodrivmedel och flytande biobränslen under 2014.

J.4 FQD implementation

Policy instruments foreseen to meet the 6% target

The Swedish Fuel Act (Drivmedelslag 2011:319), which has been in force since 1 May 2011, includes two articles implementing Article 7a of the FQD:
Article 20 requires suppliers of transport fuels to report:

- sold volumes;
- the origin of the fuel supplied;
- the life cycle carbon footprint of the fuel supplied.

Article 21 requires transport fuel suppliers to reduce the life cycle GHG emissions from its deliveries by 6%between 2010 and 2020. The legislation does not mention optional requirements in the directive to also achieve a 10% reduction.

Since no penalty has so far been linked to either of the paragraphs, Article 20 has only partially been implemented and Article 21 not at all. Full implementation has been postponed owing to the lack of EU-wide default values for fossil fuels and also rules for the declaration, a hurdle eliminated by the adoption of Council Directive 2015/652/EU 20 April 2015. Additional legislative work to fully implement the legislation is now ongoing, possibly resulting in full implementation of the legislation from 2016 or at least well in advance of the deadline of 21 April 2017.

The partial implementation of Article 20 is based on the mandatory reporting requirements resulting from the Renewable Energy Directive. Fuel suppliers provide figures for the estimated emissions from production, transport and refining of biofuels. For fossil fuels, no detailed declaration of life cycle emissions is required; instead a default value of 88.3 g CO_2/MJ is used, the figure proposed by the Commission in 2011. On the basis of these figures the Agency estimates the specific life cycle emissions (see Table 38).
The conclusion is that, on average, fuel suppliers already comply with the 6% target: in 2014 84% (GWh/GWh) of transport fuel was delivered by a supplier who already has reached the target. This was using the old GHG calculation-method. In case of the new GHG calculation methodology more suppliers probably have reached the target. There are, however, also a couple of suppliers which do not want to include renewables in their fuels as result of the cold climate. However, these companies could report together with another company to reach compliance. The actual situation remains to be monitored, but based on this argumentation both the Agency and the Ministry of Environment and Energy is convinced the 6% target has already been achieved, thanks to the high share of biofuels.

Table 38 Reported average GHG emissions in the period 2011-2013

Type of fuel	Reported average GHG emissions (g CO_2/MJ)		
	2011	2012	2013
Electricity		34.5	34.5
GNG + GBG	59.8	43.8	44.9
Biogas (GBG)	40.4	22.5	33.6
LNG/LBG		69.6	74.2
Petrol (incl. ethanol blending)	86.2	85.9	85.6
E85	50.6	41.8	38.6
Diesel class I (incl. FAME & HVO blending)	87.3	85.4	82
Diesel EU-type	88.7	88.5	89.1
FAME	57.1	50	48.2
ED95		38.7	35.5
DME		21	20.8
EO1 (equal to Diesel EU-type)	89.1	89.1	89.1
AVERAGE	*86.3*	*84.2*	*82.3*
PROVISIONAL BASELINE	88.3	88.3	88.3
Reduction	-2.3%	- 4.6%	- 6.9%
Reporting companies	22	33	35
Complying with -6% demand	2	15	19
Complying companies' share of total sales of transport fuels, %	0.40	2	83

Source: Drivmedel i Sverige 2013. Mängder, komponenter och ursprung rapporterade i enlighet med drivmedelslagen, ER 2014:15. Swedish Energy Agency 2014. www.energimyndigheten.se/Global/F%C3%B6retag/H%C3%A5llbara%20br%C3%A4nslen/2.%20DML/Rapport/140924_Drivmedel_Sverige_2013.pdf

Note: In 1991, before entering the EU, Sweden introduced the US diesel standard (Diesel Class I). EU-diesel is permitted but is taxed higher, resulting in Class I being the dominant diesel quality.

Expected role of different reduction measures

As yet unclear.

J.5 References

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Annex K United Kingdom

K.1 General

The main biofuels policy in the UK is the Renewable Transport Fuel Obligation (RTFO) Order, which regulates biofuels used for transport and non-road mobile machinery. The current obligation level is 4.75%

For the obligation year 15 April 2014 to 14 April 2015, the following key data are reported (UK Dft, 2014):

- 474 million litres of renewable fuel have been supplied, which is 3.73% of total road and non-road mobile machinery fuel. 272 million litres (57%) of this renewable fuel has so far been demonstrated to meet the sustainability requirements;
- 408 million Renewable Transport Fuel Certificates (RTFCs)[13] have been issued to fuel meeting the sustainability requirements, of which 271 million were issued to double-counting feedstocks;
- of the 272 million litres so far meeting the sustainability requirements, bioethanol comprised 51% of supply, biodiesel (FAME) 47% and biomethanol 2%. There were also small volumes of biogas and off-road biodiesel;
- 50% of the biofuel in the reporting period was made from a waste/non-agricultural residue (double-counting) feedstock;
- 23% of the fuel was sourced from UK feedstocks.

K.2 Current implementation of the RED and FQD

Use of mandates in terms of biofuels, renewable energy in transport or carbon intensity reduction

Under the RTFO, suppliers of transport and non-road mobile machinery (NRMM) fuel in the UK must be able to show that a percentage of the fuel they supply comes from renewable and sustainable sources. Fuel suppliers who supply at least 450,000 litres of fuel a year are affected. The RTFO covers biofuels used in the transport and NRMM sectors (UK DfT, 2015).

The RTFO was first established in 2007, prior to the RED and FQD legislation. The Order was then amended in December 2011 to transpose the transport elements of the EU Renewable Energy Directive (RED) 2009/28/EC. It was amended again in 2013 to implement the closely related requirements of Articles 7a-e of the EU Fuel Quality Directive 2009/30/EC (the FQD). The RTFO thus includes the sustainability requirements of the RED and FQD.

Obligated suppliers must supply a certain percentage of their road transport fuel as biofuel, or purchase RTFCs or pay in to the buy-out fund for the shortfall. Table 39 sets out the level of biofuels volume obligation of the RTFO over time. Since biofuels from waste/non-agricultural residues, non-food cellulosic material and ligno-cellulosic material are double-counted; the actual biofuel volumes are lower. In addition, the actual volumes may vary over time since suppliers may meet up to 25% of their obligation using RTFCs

[13] One RTFC is issued per litre/kg of liquid/gaseous biofuel derived from crop-based feedstocks. Biofuels produced from wastes, non-agricultural residues, non-food cellulosic material and ligno-cellulosic material are issued two RTFCs per litre/kg.

from the previous obligation period, provided the sustainability criteria of the current period are met.

Table 39 RTFO obligation level

Obligation period	Year	Percentage of biofuel
2008/09	1	2.5
2009/10	2	3.25
2010/11	3	3.5
2011/12	4	4.0
2012/13	5	4.5
2013/14 onwards	6 onwards	4.75#

From 15 April 2013 onwards the end uses covered by the RTFO have been amended to include non-road mobile machinery (including inland waterways vessels), agriculture and forestry tractors and recreational craft when not at sea. In order to keep the supply of biofuel broadly consistent the biofuel target level was changed from 5% to 4.7501% based on data supplied by industry on the volume of low-sulphur gas oil used for NRMM end uses.

The biofuels obligation of the RTFO is the only biofuel support policy at the moment in the UK, and is geared to both the RED and FQD targets.

Use of fiscal incentives (or any other financial incentives)
None.

Use of tradable credits
As mentioned above, the RTFO allows for trading of certificates, the RTFCs.

Current outlook
The government focus is now on investigating the options for implementing the 2015 ILUC and FQD Implementing Directives in the UK.

K.3 ILUC Directive implementation

Country position during negotiating process
The UK was mostly on the side of progressive Member States with regards to ILUC factors and the cap. Their first reaction to the proposal was that it failed to directly address ILUC and that the proposal to cap food-based biofuels was too general, because it did not differentiate between different biofuels. Later the position was changed to support the 5% cap in both directives.
However, this position was strongly influenced by financial considerations. The sub-target for advanced biofuels was opposed and an alternative approach proposed: to extend multiple counting to the 20% renewable energy target and the 6% FQD target. This has proven very controversial with countries like Belgium, Denmark and Germany, as it would set a bad precedent for the 2030 debate on renewables. The UK was quite engaged in the debate and in the second stage of the debate prepared different national scenarios on how their targets can be met under different multipliers, which included the cost structures.

Intentions regarding implementation
The UK government is currently assessing various policy options for implementation of the ILUC and FQD Implementing Directives. The plan is then to have a public consultation of policy options in summer 2016. This can include all the issues discussed in this study, including the cap, the sub-target

and FQD implementation. It is expected that this process and consultation will lead to policy implementation in line with the ILUC and FQD timelines.
The table below provides an overview of current ideas and options, but nothing has yet been decided. A number of key points from this table:

- The policy options that are currently being assessed, and likely to be put forward in the 2016 consultation process, include lower caps (in any case 5% and probably lower, such as 1.5%).
- It is currently not expected that the cap will also be implemented for the FQD policy in the UK, since it is not expected that fuel suppliers will go beyond the cap to meet the FQD target.
- Regarding the sub-target for advanced biofuels, the UK considers the list of feedstocks in Annex IX, Part A, of the ILUC Directive to contain a number of feedstocks that are already in use for biofuel production or in alternative applications. These should not be supported with an advanced biofuel sub-target or other support policy. Options for an improved definition of advanced biofuels are being assessed. If some feedstocks are removed from the list that is applied in the UK, it is expected that a lower sub-target for advanced biofuels will be chosen (owing to lower availability of feedstock and production processes that will then qualify as advanced biofuels).
- In the current policy assessments, two related issues play a role:
  - The wish to promote domestic production of advanced biofuels, which cannot be addressed with a sub-target (that may just as well lead to imports)[14].
  - The vision that in the long term sustainable biofuels are needed mainly for aviation and HDV, where other modes will be electrified. This means that advanced biofuel support should be aimed mainly at developing biokerosene and biodiesel.

To illustrate the ongoing process in the UK, in 2014 the Department for Transport (DfT) and the Low Carbon Vehicle Partnership (LowCVP) established the Transport Energy Task Force as a mechanism for stakeholders to help the Government examine and formulate options for policy regarding transport energy[15]. In March 2015 this Task Force published a report on 'Options for transport energy policy in 2030' (TETF, 2015), exploring issues including the potential availability, cost and emission reduction benefits of sustainable advanced biofuels, as well as policy options to support their development. Options such as including a sub-target and complementary policies such as fiscal and capital support were explored. A range of sub-targets was assessed (no sub-target, 0.5, 1 and 1.5%) as well as different levels of the cap.
The availability of advanced biofuels, which are expected to be largely waste-derived and provide considerable GHG savings, was considered limited to around 0.5% by energy in 2020, and likely to be predominantly ethanol rather than biodiesel. As the advanced biofuel industry requires considerable up-front capital investment, and such fuels are consequently more expensive than conventional biofuels, the group agreed that it will be important to provide long term investor certainty if we wish these fuels to come online.

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14 To support the development of a domestic advanced biofuel industry, the Department of Transport launched a £ 25 million Advanced Biofuels Demonstration Competition, with grants being awarded in September 2015.

15 www.lowcvp.org.uk/projects/transport-energy-task-force.htm

Table 40 Intentions regarding implementation

Cap on food-based biofuels	
Level of the cap	Different options are currently being assessed/modelled, and the 2016 consultation will also include different levels. This will certainly include the option of a 7% cap as well as a lower cap, such as 1.5%, which is close to the current level of food-based biofuels and is also assessed in TETF (2015).
Use under RED and/or FQD	Probably not under the FQD, even though the FQD is more demanding and there is quite a gap between what RED biofuels contribute and the 6% target. It is expected that fuel suppliers will not go beyond the cap for the FQD, but rather opt for upstream measures to fill the gap.
Sub-target for advanced biofuels	
Level of the sub-target	The UK is considering including a sub-target in national legislation and is currently assessing the options. However, in their opinion Annex IX Part A contains some feedstocks that still have indirect effects, via other applications, and also feedstocks are already in use in existing biofuel production and therefore do not need additional support. Therefore, options for a better definition of advanced biofuels for their national sub-target are currently being assessed. The plan is to first decide on the definition, and then on the level of the sub-target. This is likely to be lower than the indicative value, since some Part A feedstocks will not be included in the UK definition. Timeline: Again now assessment of options, then public consultation next year and decision in line with the ILUC implementation timeline.
Strategy to realise this target	Probably as an obligatory sub-target in the RTFO, but there are concerns that this will lead to import, and not so much to UK production. To support the advanced biofuels efforts in the UK, grants were recently awarded in an Advanced Biofuels Demonstration Competition[16], to a total of £ 25 million over three years. Grants were awarded to three companies. There are no concrete plans to continue this measure; this will depend on available budgets, etc. The NER300 programme is also considered a potentially interesting programme to support the UK's advanced biofuels industry.
Advanced biofuel expectations	
Type of advanced biofuels foreseen	It is important to look at both new feedstocks and new biofuels technology. The long term need is mainly for advanced biofuels for aviation (biokerosene) and HDV (biodiesel), i.e. for modes that cannot be electrified. This means the focus should be on these fuels. However, ethanol currently has the better GHG performance owing to low ILUC. The blend wall will become an issue, though. Note that this reasoning has not yet been followed through in policies, nor in the recent advanced biofuels competition, where there was at least 1 ethanol and 1 butanol winner.
Advanced biofuel production development	Nothing concrete yet, but the competition mentioned above aims to support its development. Also, British Airways are looking into sustainable aviation fuel production in the UK, but nothing concrete yet.
Domestic production versus imports	See above.
Other provisions	
-	-

16 See www.gov.uk/government/speeches/advanced-biofuels-demonstration-competition-grant-award

K.4 FQD implementation

Policy instruments foreseen to meet the 6% target

The RTFO is the only policy in place for the biofuels aspect of the FQD. In addition, a reporting requirement is included in the UK's GHG reporting obligation, which is part of the motor fuel reporting requirement (note that this legislation is in line with the previous FQD, i.e. not yet with the changes decided on in 2015). The RTFO is, however, aimed at the RED target, and it is expected that a gap of around 2% will remain between the RTFO and the FQD, which is expected to be bridged using upstream measures.

Policy options to implement the FQD target are also under investigation and will also be part of the public consultation in 2016. The main option currently being considered to ensure meeting the 6% target and implementing the 2015 FQD Implementing Directive is to extend the reporting obligation with a 6% GHG reduction obligation. Fuel suppliers can then obtain GHG credits for any fuel lower than the norm. For biofuels, they would gain both RTFO and GHG credits.

The UK intends to keep both policies in place, and has decided against changing the RTFO to a GHG credit system (as in Germany), for two reasons: the lack of ILUC effects in the GHG calculation methodology of the RED and FQD, which can result in incentivising biofuels with high ILUC risk; and it would create a risk of incentivising single-counting biofuels, which is not in line with the UK's biofuel policy objectives.

There are also policies for other alternative and low-CO_2 energy carriers, for example for electrification, which effectively reduces the RED target. However, these policies have different objectives and are not really linked to the RED or FQD.

Expected role of different reduction measures

Regarding the FQD, the UK does not expect that it will be able to meet the 6% reduction in the carbon intensity of fuels by 2020, as mandated by the FQD, using biofuels alone. A number of scenarios are assessed in TETF (2015), all of which fall short of the 6% target. The central scenario (0.5% sub-target), for example, provides a 4.8% fall of GHG emissions. It is likely that the remainder will need to be made through upstream emissions credits, provided for in the FQD, though it is still currently unclear precisely how these will work.

K.5 References

- (UK DfT, 2014) UK Department for Transport, 2014; Renewable Transport Fuel Obligation statistics: obligation period 7, 2014/15, report 1.
- (UK DfT, 2015) RTFO Guidance Documents are published on www.gov.uk/government/collections/renewable-transport-fuels-obligation-rtfo-orders#guidance
- (TETF, 2015) Transport Energy Task Force, Options for transport energy policy to 2030, March 2015.