1 Status of the tallow market

The Department for Transport (DfT) has asked Ecofys to produce a report on the current animal fat (tallow) market, to assess whether there has been any impact from allowing double counting of biodiesel produced from Category 1 tallow, as input to the December 2012 DfT stakeholder consultation on the Year 6 RTFO Guidance. This paper is intended to explain the issue, the risks, and the available data relating to the tallow market to enable DfT to set out its approach to monitoring impacts on tallow and seek stakeholder input and feedback.

1.1 Background

Double counting in the Renewable Energy Directive
Article 21(2) of the EU Renewable Energy Directive (RED) allows Member States to count biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material twice towards their 10% renewable energy in transport target for 2020. Member States have the responsibility to decide which feedstocks should count twice towards the target.

To give stakeholders certainty on which feedstocks can be counted twice, DfT defines a positive list of feedstocks that can be classed as wastes and residues.

DfT's definition of wastes and residues leads to the conclusion that biodiesel from Category 1 tallow should be double counted, but biodiesel from Categories 2 and 3 should not. Therefore from the date of UK RED implementation (15 December 2011), Category 1 tallow biodiesel has been eligible for double counting, but Categories 2 and 3 (or unknown categories) of tallow biodiesel have not. This decision was also taken in light of concerns raised by stakeholders that some categories of tallow have existing uses other than biodiesel production which would be displaced if the tallow is diverted to biodiesel production.

Note also that the European Commission proposal on addressing indirect land use change (iLUC), published on 17 October 2012, proposes to only allow biofuel from Category 1 and 2 tallow to be counted twice towards the target.

Definition of categories of tallow
Tallow is classified by degree of quality, from high to low:

- Animal fats intended for human consumption.
- Category 3: Tallow that can be used for animal feed and cosmetics. For example parts of slaughtered animals, which are fit for human consumption in accordance with EU legislation, but are not intended for human consumption for commercial reasons.
- Category 2: Tallow that can be used for soil enhancement and for technical purposes, such as oleochemical products and special chemicals. Examples of this Category include manure and digestive tract content, (parts of) animals that have died from other causes than by being slaughtered for human consumption, including animals killed to eradicate an epizootic

disease[1];

- Category 1: Tallow that presents a high risk for human health, for example animals suspected of being infected by a TSE[2] or in which the presence of a TSE has been officially confirmed; specified risk material. Tallow in this category can be used for energy purposes and is not allowed to enter the human or animal food chains.

When products of different categories are mixed, the entire mix is classified according to the lowest category in the mix (e.g. if Category 1 and 3 tallow are mixed then this is classified as Category 1).

Risk
DfT wishes to monitor any impact on the tallow market caused by allowing double counting only for Category 1 tallow biodiesel. A key risk identified by some stakeholders is that volumes of Category 3 tallow produced may decrease if it is no longer worth the cost for renderers of separating out Category 3 from Category 1 tallow.

1.2 Data reported under the RTFO

Figure 1 shows total tallow biodiesel volumes reported since the start of the RTFO. Tallow biodiesel volumes have fluctuated significantly, with particularly low volumes reported in Year 4.

Note that the current data represents only that biofuel for which RTFCs have been claimed to date and therefore the data set is not yet complete for Year 4 or 5.

- Data for Year 4b (15 December 2011 to 14 April 2012) so far represents 92% of biofuel supplied.
- Data for Year 5 Quarter 1 (15 April 2012 to 14 July 2012) so far represents 37% of biofuel supplied.

For Year 5, only data from the first quarter is available. To aid comparison, we have included an indicative low and high estimate for tallow biodiesel in Year 5. The low estimate assumes that the same volume of tallow is reported in each quarter for the remainder of the year, while the high estimate that only 37% of the tallow supplied was reported in Quarter 1. Note that these estimates should be treated with **extreme caution** as there is no data available to indicate whether the tallow reported will be representative for the rest of the year.

In the first 3 months of Year 5, from 15 April 2012 to 14 July 2012, 8.9 million litres biodiesel from Category 1 tallow were reported to DfT (all from European sources[3]). No Category 3 has been reported yet for that period. This compares to just over 280,000 litres of biodiesel from Category 1 tallow (too small to be visible in Figure 1) reported to date in the previous four months from 15

[1] Disease affecting many animals of the same species that spreads quickly within a particular geographical area, for example foot and mouth disease.
[2] Transmissible Spongiform Encephalopathy, group of diseases affecting the brain and nervous systems of animals
[3] Largest contributions (>2 ml each) from the UK, Denmark and the Netherlands, followed by (in order of largest contribution) Germany, Ireland, Austria, Czech Republic, Slovakia, Italy and Slovenia.

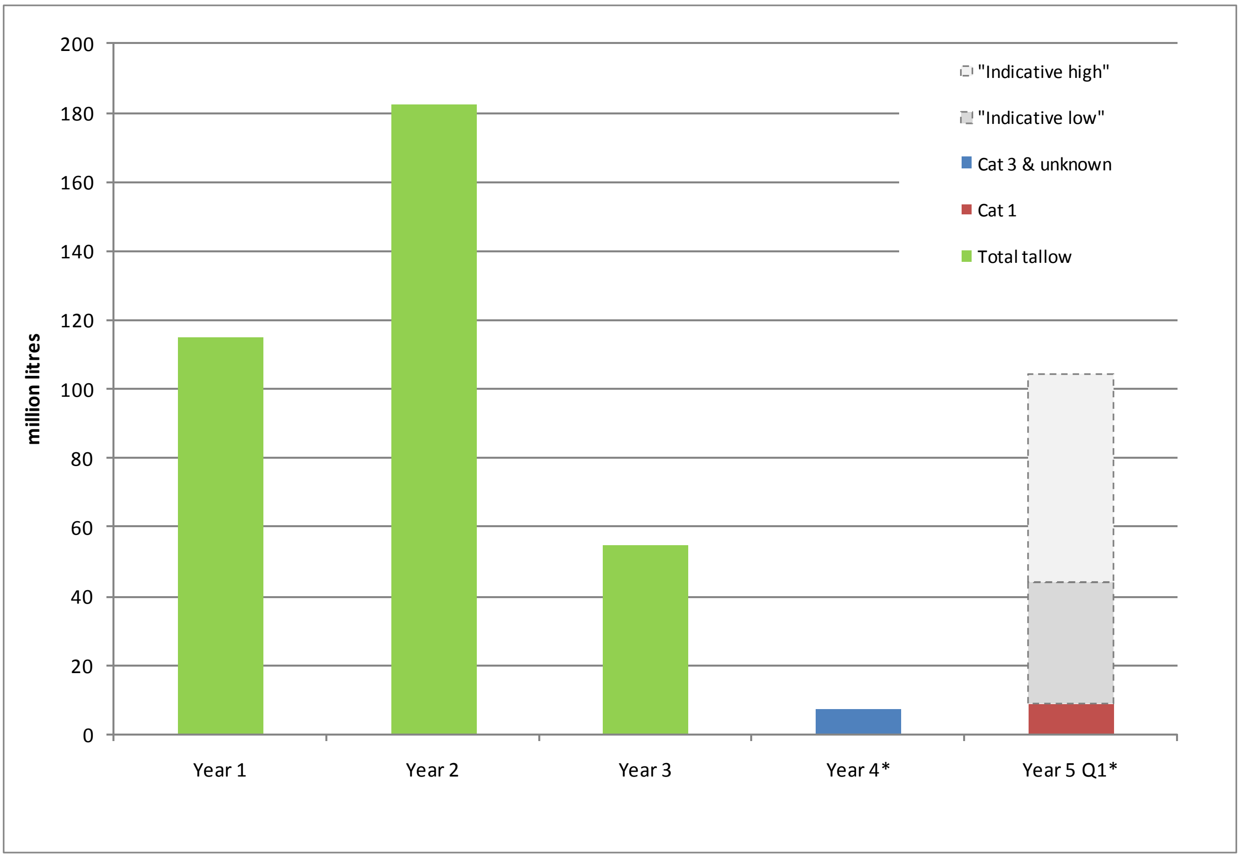
December 2011 (RED implementation) to 14 April 2012, and 2.7 million litres from Category 3 (or unknown) during that period.

Despite the most recent data sets not yet being complete, the data reported already appears to show a significant increase in Category 1 tallow biodiesel reported under the RTFO at the start of Year 5, compared to the end of Year 4, although Year 4 had very low volumes of tallow biodiesel relative to previous years.

Although small in total, more Category 1 biodiesel was also reported in the 4 months of Year 4 after RED implementation than in the 8 months prior to RED implementation, suggesting that there could have been an increase in Category 1 after double counting was introduced. This may also be explained by parties waiting to report Category 1 after double counting was introduced.

A further factor could be the removal of the duty incentive for used cooking oil (UCO) in April 2012. Prior to this the duty differential was only in place for UCO, which led to large volumes of UCO biodiesel in the UK. This could have been a factor in the low volume of tallow biodiesel in Year 4.

It is too early to conclude whether there has been a shift away from Category 3 tallow biodiesel entirely in Year 5, as the data available only represents 37% of biofuel used in the first quarter.



*Incomplete data. 92% data available for Year 4, 37% for Year 5 Q1.

Figure 1: Total tallow biodiesel reported under the RTFO in million litres. Source: DfT RTFO Biofuel Statistics

Data from EFPRA, the European Rendering Association, shows the volume of tallow biodiesel produced in Europe (20 Member States) to have doubled between 2009 and 2011. Category 3 tallow represents the highest share, although the share of Category 1 has increased each year during this period.

1.3 Tallow production volumes

UK production data for tallow is prepared by the two UK rendering associations (FABRA and UKRA) on a calendar year basis. The latest data available therefore relates to 2011. Data for 2012 is expected to be available in spring 2013.

Figure 2 shows UK tallow production since 2008. Overall there is a slight (but not significant) downward trend in tallow production from 2008 to 2011. Notably Category 3 tallow production is markedly above Category 1 tallow production in 2011. Data for 2011 show that approximately two thirds of tallow production in the UK was Category 3, and the remaining third was Category 1. There are currently no known rendering plants in the UK capable of producing Category 2.

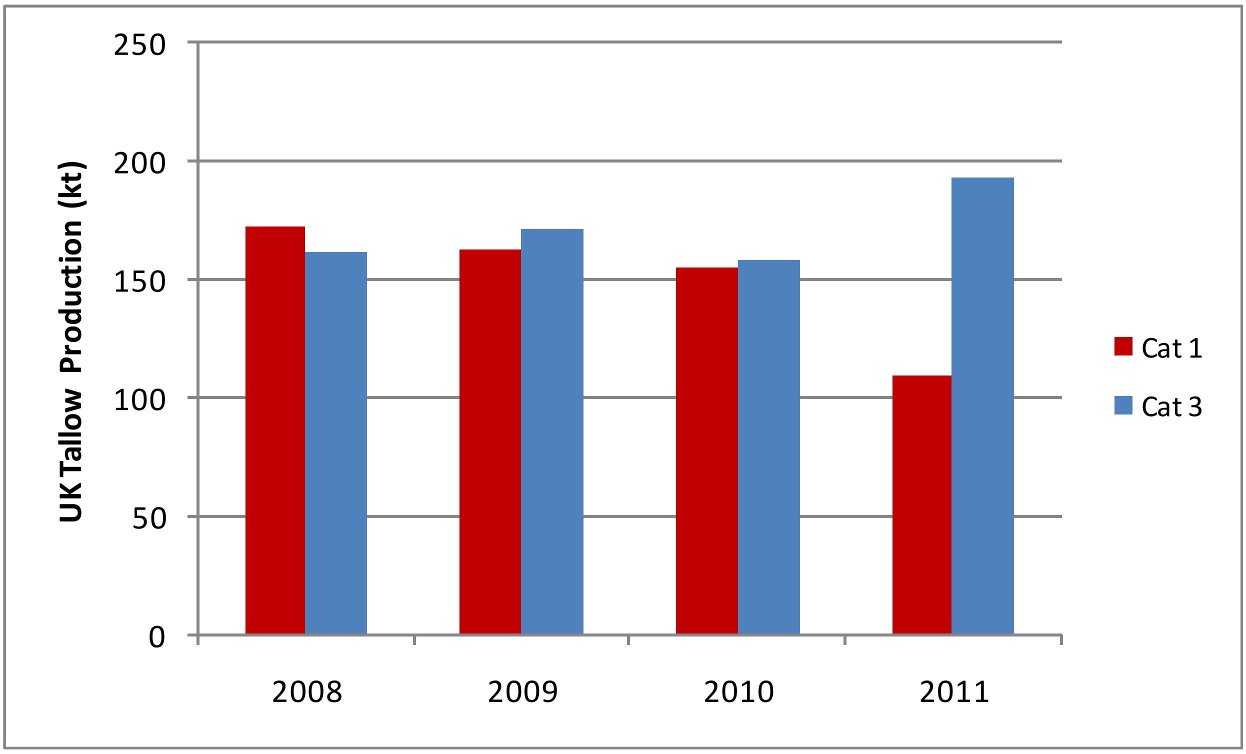


Figure 2: UK tallow production by category. Source: FABRA (personal communication, 2012)

Category 3 tallow was used for biodiesel production in the UK in 2011. However, direct communication with FABRA and UKRA suggests that Category 3 tallow is no longer being used for biodiesel production in the UK following the decision to introduce the double-counting incentive only for Category 1 and the higher relative price of Category 3 (see below). This matches with the RTFO data presented in section 1.2, although noting that it is not a complete data set. Furthermore, Category 1 tallow can only be used in licensed biodiesel plants, which has meant that, according to FABRA, some of the biodiesel producers that were using Category 3 tallow in the UK have not been able to switch to using Category 1 tallow.

As well as tallow, renderers produce protein (meals) in a relationship of around 2 to 1 (i.e. 2 tonnes of protein for every tonne of tallow).

1.4 Tallow prices

Figure 3 shows market price data available to DfT for Category 3 tallow and crude palm oil (CPO) (a potential substitute for tallow). DfT does not currently have access to price data for Category 1 tallow.

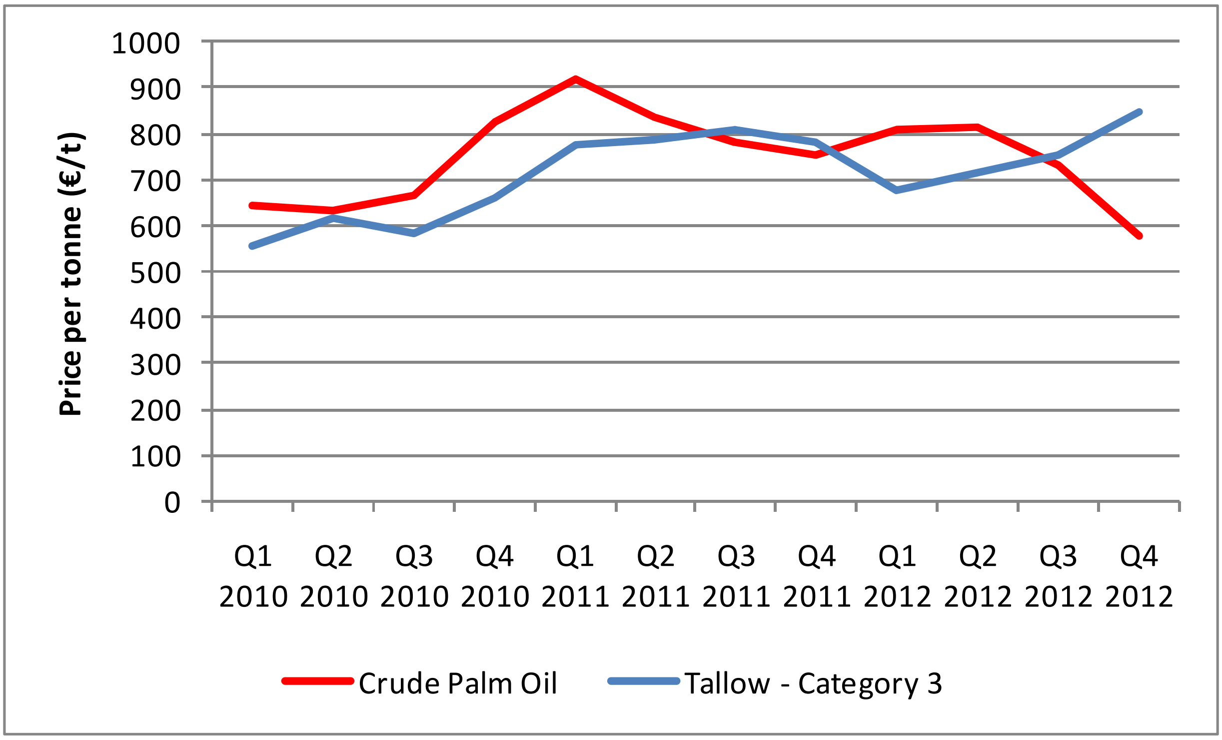


Figure 3: Quarterly average prices per tonne for Category 3 tallow and crude palm oil (€/t). Note that the crude palm oil prices have been converted from Malaysian Ringgit (MYR) to Euros using an exchange rate of 1:0.25. Note also that Q4 2012 data relates to October 2012 only. Source: DfT

The price of Category 3 tallow is seen to fluctuate on a quarterly basis, but appears in general to have been on an upward trend since 2010. This is supported by price information provided by APAG, although the APAG data does not distinguish between different categories of tallow. The CPO price in comparison increased sharply between 2010 and Q1 2011 after which it appears to be on a downward trend. There appears to be noticeable divergence in the pricing of these two feedstocks since Q2 2012. Market price data for Q4 2012 (YTD) indicates that Category 3 tallow is currently trading at a high of around €848/t, while that of CPO is trading at a low of €578/t, a spread of €270/t.

In general the price differential for Category 3 tallow over Category 1 tallow is typically upwards of £75 per tonne, but can be as high as £120-300 higher depending on the grade of Category 3 tallow. In addition, the price differential between Category 3 protein to Category1 tallow is reported to be around £300 per tonne. Indicative current prices per category of tallow from speaking to industry stakeholders are approximately £480/t for Category 1 and £600-700/t for Category 3 depending on the grade.

A trader interviewed indicated that double counting in the UK and elsewhere is leading to a price increase for Category 1 tallow, and in some cases the Category 1 price is now higher than prices for low-end Category 3, which may lead to some low grade Category 3 being sold as Category 1.

However the overall impression is that the higher price that can be achieved for, especially high end, Category 3 tallow and protein means that tallow renderers continue to choose to segregate products at the abattoir. For existing rendering plants that already have the equipment in place to segregate products, there is little additional cost to continue to segregate products.

1.5 Observations and Conclusions

Based on the above, we conclude the following:

- RTFO data reported shows tallow biodiesel volumes have fluctuated significantly, with particularly low volumes reported in Year 4. Significantly more Category 1 tallow was reported since double counting was introduced, compared to the period immediately prior, although as stated the period prior had notably low volumes of tallow overall.
- A factor in the low volume of tallow biodiesel in Year 4 could be duty differential for UCO biodiesel, which was removed in April 2012. Prior to this the duty differential was only in place for UCO, which led to large volumes of UCO biodiesel in the UK.
- On face value, the vast majority of tallow reported in Year 4 was from Category 3, and all tallow biodiesel reported so far in Year 5 has been Category 1. However total volumes in Year 4 were low and it is too early to conclude whether there has been a shift away from Category 3 tallow biodiesel entirely in Year 5, as the data available only represents 37% of biofuel used in the first quarter.
- There appears to be a higher share of tallow from outside the UK reported in Y5, although the driver for this is unclear. It is unlikely to be because the UK is early in implementing double counting, as the largest volumes were from the Netherlands and Denmark, who have both implemented double counting. Again, it may relate to low total volumes and a lack of imports in Year 4.
- Category 1 tallow can only be used in licensed biodiesel plants, which has meant that anecdotally some of the biodiesel producers that were using Category 3 tallow in the UK have not been able to switch to Category 1 tallow.
- Overall there is a slight (but not significant) downward trend in UK tallow production from 2008 to 2011. Notably Category 3 tallow production is markedly above Category 1 tallow production in 2011. Data is not yet available on UK tallow production for 2012 to effectively monitor whether there has been a change in the relative volumes of production of Category 1 and 3 since double counting of Category 1 was introduced.

- The price of tallow fluctuates but appears in general to be on an upward trend, but the differential between Category 3 tallow and Category 1 is reported to be maintained.

Overall the currently available data does not support the hypothesis that double counting of Category 1 tallow biodiesel is having a detrimental effect on the volumes of Category 3 tallow produced. In total, volumes of tallow biodiesel reported under the RTFO appear to be lower in recent years than at the start of the RTFO. In any case, we intend to continue to monitor volumes of Category 1 and Category 3 tallow produced in the UK, and reported under the RTFO.

1.6 Experts who provided input

1. Floris Ebeli (tallow trader based in the Netherlands)
2. David Green, UKRA (UK Renderers' Association)
3. Dirk Dobbelaere, EFPRA (European Renderers' Association)
4. Klaus Nottinger, APAG (European Oleochemicals and Allied Products Group)
5. Dickon Posnett, Argent Energy
6. John Reid, BACS (British Association for Chemical Specialities)
7. Steve Woodgate, FABRA (Foodchain and Biomass Renewables Association)