BIOFUELS DEMAND FORECASTS

Issue N° 6
November 30, 2018

SQUARECO

1.0 SUMMARY

Warning

All the changes mentioned below have been made based on the integration of new data available and new market comments.

Bear in mind that we built our model to answer, for each country, the following question: what volumes of each kind of biofuels are needed to reach the blending mandate given the infrastructure constraints? We continue to work on the supply side with the medium-term objective to integrate more data about capacity and production in our models.

The volumes displayed in our publication are those shown to national institutions to prove compliance. For example, if an obligated distributor shows tickets of RME, but blend physically SME, that volume will appear in our numbers under RME. That is because it is simply impossible to track exact physical volumes due to the mass balance system. That said, we believe that when numbers are consolidated on a national level, the spread between tickets and physical reality remains small.

The type of our methodology is bottom-up: we work on national models with very specific data and then consolidate the numbers to have the global European picture.

The following comments concern the 30 European countries (as a whole) covered by our forecasts.

Main changes between June and November forecasts: 2017 numbers

- The adjustments made after the release of several key official data (including Germany, Italy, France, Spain and others) leaded to a revision of – 195 KT of Fame and +54 KT of HVO at the EU30 level
- Our numbers for 2017 are now very close to reality as our models integrate all the official data available for the big countries; only smaller markets like Austria and Eastern countries are still missing
- The two main qualities impacted by our adjustments are RME (-224 KT vs our previous forecast published in June) and PME (+163 KT), the revisions concerning France, Spain and Italy being here determinant
- The number for UCOME is confirmed at a high level of 2.42 million mt

2018 numbers

- Our adjustments concerned mainly HVO (-250 KT vs our previous forecast) as the latest numbers for the HVO100 outlet in Sweden, coupled with the lower Neste sales in the EU (-180 KT during Jan-Sep vs the same period in 2017), suggest the growth previously anticipated there will not materialize
- The HVO number was also influenced by bearish data on Norwegian imports, reported halving compared to 2017
- The total Fame demand was decreased by only 34 KT
- We revised our RME number in France, Spain and Italy, leading to a steep correction of – 426 KT
- The fast growth recorded in the UK confirm our previous UCOME number, still estimated just under 3 million mt
- It seems that the supply of UCO and UCOME, notably from Asian countries, has yet to be an issue
- Despite our forecast implies a jump by 1.2 million mt of UCOME from 2017 to 2019, we assume that the UCO origination supply will be dynamic enough to meet the challenge

2019 numbers

- The total Fame demand was decreased by a very small 9 KT as the weaker sentiment on RME (- 306 KT vs our latest forecast) and SME (- 261 KT) was compensated by the increase of PME (+423 KT) and PFAD single counted (+ 300 KT)
- The total HVO demand was cut sharply by 346 KT, mainly because the 2018 data available so far suggest that the big growth circle as been broken, invalidating our previous forecasts
- These cuts in HVO numbers concern only VVO based HVO as our expectations of waste based HVO were revised slightly up
- Still, our numbers suggest the HVO market should increase by 500 KT in 2019, helping to balance with the new capacities coming online
- The TME demand in the UK, Italy and the Netherlands should lead this segment to fill its full potential

General considerations

- We kept our SME 2018 market size at 1200 KT, a figure slightly below the total SME imports anticipated now (1400 KT) as there are still significant quantities stored in ARA and Spanish hubs
- We re-allocated some SME quantities to France and Spain as Italian data suggest the penetration of the quality is very limited there
- We choose to take the assumption for 2019 that the Commission would impose countervailing duties to biodiesel originating from Argentina
- Forecasting that outcome is however especially difficult; we considered the kind of consensus in the market that anticipates the duties despite our feeling remains extremely mixed
- Consequently, we revised our forecast for PME use in 2019 as the quality will not suffer from protectionism

1.1 FRANCE

MANDATES	2017	2018	2019
Biodiesel (e.c)	7% + 0.7% DC	7% + 0.7% DC	7% + 0.9% DC
Ethanol (e.c)	7.5% (0.6% DC)	7.5% (0.6% DC)	7.7% (0.6% DC)
Advanced biofuels DC (e.c)		-	-
(Kt)			
FUEL MARKET	**2017**	**2018**	**2019**
Diesel fossil road	31 494	32 344	32 135
Diesel fossil non-road	3 150	4 200	4 200
Fame	2 786	2 912	2 897
HVO	299	344	368
Diesel fuels under compliance	37 728	39 800	39 599
Gasoline fossil	6 600	6 854	7 113
Ethanol	748	788	837
Gasoline fuels under compliance	7 348	7 643	7 950

FEEDSTOCK MIX	2017	2018	2019
Fame single counted	2637	2755	2696
RME	2 140	1 797	2 135
PME	291	291	442
SME	185	574	26
Others (incl. SFO ME)	20	93	93
Fame double counted	149	157	201
UCOME	133	144	179
TME	16	13	22
Fame advanced	0	0	0
HVO single counted	299	344	368
HVO double counted (regular)	0	0	0
HVO advanced	0	0	0

2017

- The official Customs data were made available this summer, with little unexpected developments
- Our model worked well to predict the range of biofuels quantities used:

  Fame 2'786 KT (vs 2'815 forecasted) -> 1% deviance

  HVO 299 KT (vs 258 forecasted) -> 15% deviance
- Although we forecasted the market share loss of TME vs UCOME, we failed to anticipate the magnitude of it (TME demand down 55% to only 35 KT)
- Ethanol use increased significantly thanks to the development of E10, allowing obligated parties to decrease their penalty costs

2018

- We increased our forecast for SME penetration to 650 KT on new import data
- Other Fame feedstock include sunflower oil (85 KT) and tallow cat.3 (20 KT)
- The RME number is sharply down on these two developments, as we used to report sunflower under rapeseed; however, the supply has increased to a significant level now
- The ethanol market is also likely to increase

1.1 FRANCE

ASSUMPTIONS	2017	2018	2019
B7/B10 blend wall	2 757	2 908	2 894
E5/E10 blend wall	538	576	599
E10 market share	38%	42%	42%
Diesel fuels growth	5.8%	5.5%	-0.5%
Gasoline fuels growth	7%	4%	4%

BIO SUBSTITUTES SHARES (E.C)	2017	2018	2019
Diesel bio substitutes (VVO)	7.00%	7.02%	6.98%
Diesel bio sub. (regular wastes)	0.70%	0.70%	0.90%
Diesel bio sub. (advanced)	0.00%	0.00%	0.00%
Gasoline bio substitutes (crop)	7.44%	7.50%	7.64%
Gasoline bio sub. (advanced)	0.00%	0.00%	0.00%
Share Crop	6.97%	6.99%	6.98%

further, in line with the rebound of the gasoline sales due to the favourable taxation and the extension of the E10 outlet

2019

- In its project of the 2019 budget, the government has proposed to increase the cap applied to double counted feedstocks
- Although it will be confirmed only by year-end, we adapted our model to this proposal
- The increase of the biodiesel mandate to 7.9% e.c makes our forecasts more volatile: will blenders choose to 1) favour UCOME/TME and decrease consequently VVO based Fame because of the blend wall or 2) keep the Fame feedstock mix broadly unchanged and blend UCO or tallow based HVO?
- For now, we picked the assumption n°1, pushing the UCOME/TME demand to around 200 KT
- The feedstock mix between RME/SME/PME is difficult to forecast because of the pending anti-subsidy investigation
- We choose to favour the scenario according to which a duty would be imposed to Argentinean SME, allowing the RME number to rebound steeply and the PME share to increase

1.2 GERMANY

MANDATES	**2017**	**2018**	**2019**
Biofuels (GHG)	4%	4%	4%
(Kt)			
FUEL MARKET	**2017**	**2018**	**2019**
Diesel fossil road	36 037	34 332	34 575
Fame	**2 161**	2 340	2 280
HVO	**33**	33	33
Pure plant oil	**3**	0	0
Diesel fuels under compliance	38 234	36 705	36 888
Gasoline fossil	16 725	16 739	16 890
Ethanol	1 151	1 227	1 165
Gasoline fuels under compliance	17 876	17 965	18 055
FEEDSTOCK MIX	**2017**	**2018**	**2019**
RME	**767**	831	809
PME	**497**	538	524
SME	**46**	50	49
UCOME	**851**	921	898
Ethanol crop	**1 149**	1 222	1 160
Ethanol wastes	**2**	5	5

2017

- **Official data BLE**
- The release of the BLE annual report confirmed a higher than anticipated use of PME (with methane capture), which represented almost a quarter of the feedstock mix
- Our expectations of a higher UCOME number did not materialize
- Although we anticipated the collapse of the HVO segment, its magnitude was greater than expected
- Biofuels GHG performances were reported slightly higher than what we used in our models
- The new numbers run in our model show that the compliance level hit 3.82% e.c (vs 3.74% e.c forecasted), still explaining why physical blending rebounded in 2018

2018

- We updated our model with the new feedstock mix and GHG values revealed by the BLE for 2017, and the bearish fuels sales growth rates (-4% for diesel)
- We still assume the new calculations rules (related to methanol) will impact negatively the GHG performance of each kind of Fame (-2% in average)
- The growth rates of Fame (+11%) and ethanol

1.2 GERMANY

ASSUMPTIONS	2017	2018	2019
B7/B10 blend wall	2 676	2 569	2 582
E5/E10 blend wall	1 180	1 168	1 174
B10 market share	0%	0%	0%
E10 market share	15%	15%	15%
Diesel fuels growth	1%	-4%	1%
Gasoline fuels growth	1%	1%	1%

BIO SUBSTITUTES SHARES	2017	2018	2019
Total bio substitutes (% e.c)	6.04%	6.72%	6.48%
GHG emissions reduction (% GHG)	3.82%	4.18%	4.02%
Share Crop	3.39%	3.69%	3.54%

ASSUMED GHG INTENSITIES	2017	2018	2019
RME	68%	66%	66%
SME	73%	71%	71%
PME	79%	77%	77%
UCOME	94%	92%	92%
Pure plant oil	60%	60%	60%
Ethanol	83%	83%	83%
HVO	64%	64%	64%
Biomethane	90%	90%	90%

(+6%) consumption suggested by the BAFA during Jan-Aug would mean the GHG mandate will be overcome (4.26% when processed in our model)

- That is why we revised down the growth rate of Fame demand, as we believe the consumption of it slowed down in Q4 on prohibitive RME levels
- The expected compliance level (4.18% e.c) will allow players to rely on a new surplus of tickets

2019

- We adapted the numbers to the revision made for 2017 and 2018
- We revised our projections sharply down on the following drivers: the surplus of ticket will be greater than expected, fuel sales have been depressed in 2018 and biofuels GHG performance will be significantly higher than initially anticipated
- We assumed in our model than a strict 4% GHG reduction would apply in 2019, leading to negative growth for Fame and ethanol