All Party Parliamentary Group for the Waterways

General Meeting

"Towards Net Zero in UK Leisure Craft"

Wednesday November 29th 2023
from 9.30 am to 11.00 am in Room U, Portcullis House and by video meeting

Present

Michael Fabricant MP (Chair), Simon Baynes MP, Heather Wheeler MP, Baroness Lynn Golding.
Apologies had been received from Kate Osborne MP, Steve Tuckwell MP, Helen Morgan MP, Steven Timms MP and James Morris MP.

Also in attendance by video were officials from the Department for the Environment, Farming and Rural Affairs (DEFRA) and representatives of navigation authorities and waterway organisations.

Welcome and Introductions

Michael Fabricant introduced Bowman Bradley, Chair of the IWA/RYA/Cruising Association Joint Working Group.

Bowman Bradley began by outlining what we mean by UK leisure craft, explaining that these are not just narrowboats, but other craft as well, such as river cruisers and small seagoing craft in coastal marinas, and that there are an estimated 80,000 leisure craft on UK waterways. Typically, they have quite small engines, and also need energy for domestic reasons e.g light and power, cooking, space heating and electrical appliances. Most energy for propulsion and domestic use comes from diesel, although some boats have petrol engines, with a few electric boats as well. Solar panels make a useful contribution to domestic energy use.

Next he examined where that energy should come from in a net zero world. Propulsion in the future for new boats is almost certainly going to be electric. Previously electric boats were not very common but that is changing and now nearly every boat builder offers an electric option. Hot water and space heating can also be electric, using heat pumps, and waste heat from propulsion.

Supplying the electricity needed is the key issue. Electricity can be supplied from shore hookups or photovoltaic cells but it's very difficult to put enough PV cells on a boat to provide all the power required, particularly if driving the boat electrically.

Hydrogen fuel cells are another possibility: a hydrogen module is available today to put on the top of a boat which will provide enough electricity for domestic needs. However, the big issue is where to get the hydrogen, and the size of the unit, which makes it impractical to navigate under bridges.

He explained how, if building a new boat today, there are technologies available to reduce emissions but there are a lot of existing boats out there that are uneconomical to convert to electricity, so the focus for the IWA/RYA/Cruising Association Working Group is this existing fleet. If well maintained, boats last a long time so a lot of boats that are afloat today will still be around a long way into the future. The group is looking for is a transitional solution which will enable a carbon reduction now, on the existing fleet and decarbonize the leisure boating sector. The leisure boating sector is not big but it's quite significant and if air quality on the waterways is improved that will have an impact in places like London and other big cities.

He explained about the issues with the current diesel available to inland waterways craft: the diesel sold at the roadside and on the inland waterways contains 7% Fatty Acid Methyl Ester (FAME) biodiesel and that causes problems. FAME biodiesel is a first generation biodiesel that has residual glycerol in it that deteriorates with time. It's extremely hygroscopic - if turning the fuel in the tank over regularly, as a car will, it is not a problem but in a boat it is a big problem because a boat could sit there with a tank full of fuel over the winter not being used. As it is also in a marine environment which is quite damp, the consequence of that is that saponification occurs in the fuel and it blocks up the injectors. This is a safety concern if three miles offshore or on a fast- flowing river. Diesel bug is also an issue in pure mineral diesel, and it is worse in diesel with FAME content.

He outlined how the alternative is a second generation biofuel called hydrogenated vegetable oil (HVO) which has been proved to be an ideal marine fuel. It is produced by treating vegetable oils with hydrogen and it has none of the technical problems associated with FAME biodiesel. All biodiesels are made with vegetable oil and that does bring sustainability issues because if plants are grown to make vegetable oil they take away land which can be used for food. The Department for Transport (DfT) do incentivise waste based stocks over primary vegetable oil stock. HVO is accredited for all modern boat engines, by all the major manufacturers. IWA have run trials in all boat heaters and cookers, where it has proved to be cleaner, lower particle emissions than mineral diesel. It can use all of the existing refuelling infrastructure on shore and on boats. It is not even necessary to clean the old diesel out.

However, he explained that it is expensive and availability is limited on the inland waterways, because while HVO is government subsidised through the RTFC (Renewable Transport Fuel Certificate) system, this only applies to fuel used for propulsion. Domestic use is excluded. For domestic use it is subject to duty and VAT just like mineral diesel is but at different rates for proportion and domestic use. Most leisure boats have only one fuel tank - some of it will be used to drive the boat and some to generate electricity and hot water. This means that the price at the pump is expensive and it is very complex to market due to the different taxes, duties and subsidies which apply at different points down the fuel chain. Boatyards are reluctant to supply it. The Joint Working Group are trying to persuade various government departments (DfT and DEFRA have responsibility for different aspects). The group aims to encourage them to adopt policies that will make HVO affordable and available to leisure. He noted that the group recognises that supply of HVO is limited and current government policy is to use it only where there's no alternative, but that it has be recognised as a suitable fuel for off-grid gas homes and there is no practical alternative to decarbonise the existing leisure boat fleet. He mentioned that the group

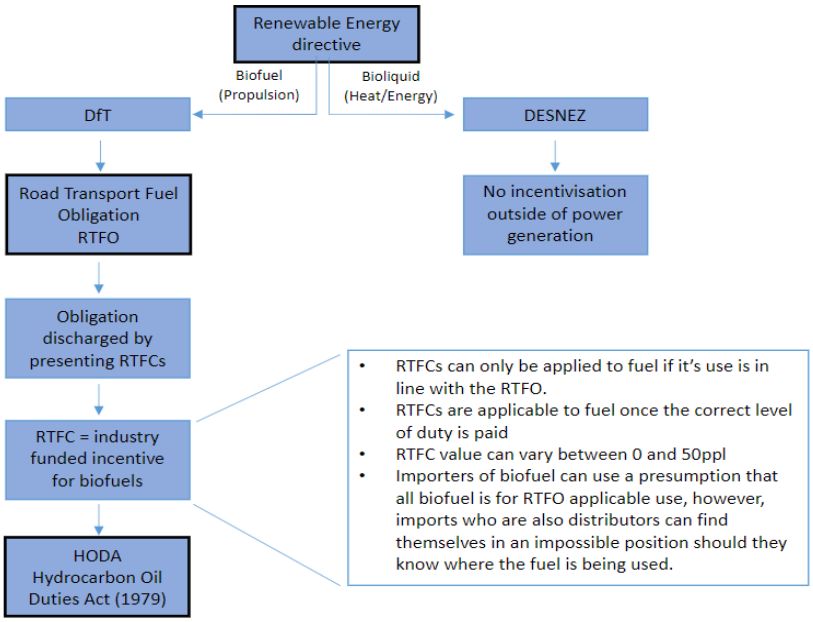
would shortly be talking to DfT to start a dialogue to see if a solution to this problem can be found.

Michael Fabricant thanked Bowman Bradley and introduced Simon Lawford, Technical Sales and Renewable Fuels Manager at Crown Oil. Simon Lawford introduced himself and said that he has a background in Chemistry.

He explained how Crown Oil have been importing HVO since 2019 as there is no HVO production in the UK. HVO is similar to sustainable aviation fuel which had been in the news recently. HVO is imported from Europe, the US and in certain instances the Far East. Generally Crown Oil sells to the construction and road transport markets, however inland waterways has been quite a difficult market. He outlined the benefits of using HVO: it provides a net CO2 reduction of up to 90% compared to fossil diesel, it is a carbon based fuel but it's a new carbon based not a fossil fuel. It's manufactured from 100 % renewable and sustainable waste - there's a long chain of audits and requirements before it reaches the UK market. To be accepted by the RTFC (Road Transport Fuel Obligation) it has to be independently certified as being sustainable by an independent international body (International Sustainability and Carbon Certification). A proof of sustainability is presented to DfT, who then approve the product for the market. There are currently four importers in the UK and all the local distributors have access to it.

As it is a “drop in” fuel, it can replace mineral diesel with no changes required to engine or operational infrastructure. In chemical terms it is a synthetic version of pure paraffin and it has no impurities in it, which reduces noxious tailpipe emissions. This means that on a straight through exhaust there is no smoke, much reduced particulate matter and NOX (nitrous oxides). It is operable in wet environments unlike FAME biodiesel which does not perform well in a wet marine environment.

He explained that despite these clear benefits the issue as a supplier of HVO is that there is a tangled web of legislation, particularly for the waterways, shown in the diagram below:



Renewable Energy Directive: a legacy EU piece of legislation which defined amongst member states a requirement to place legislation to increase the use of biofuels. It defines a biofuel, how it can be made, how it is defined as being sustainable, and how to prove that it

is sustainable. It also defined biofuels and bioliquids: “biofuels” are for propulsion, and “bioliquids” are for heat or energy. In the UK this means two different departments are involved. DfT takes the propulsion part and the biofuel part is handled by the Department for Energy Security and Net Zero (DESNZ).

Roat Transport Fuel Obligation (RTFO): The RTFO sets an obligation on fuel suppliers to place a set amount of biofuel into the market (currently just under 14%). There is no similar legislation incentivising bioliquids. Fuel suppliers need to prove to the DfT that they have met the obligation by presenting Road Transport Fuel Certificates (RTFCs), obtained by either buying them on the market or by importing biofuel and selling that fuel. Suppliers can then claim an RTFC if the fuel is to be used in line with the requirements of the RTFO: road transport and what we would call non-road mobile machinery e.g construction machinery. Inland waterways craft are essentially non-road mobile machinery. However there are also complications due to inland waterways being categorised (into A, B, C and D waterways). If a boat goes onto the sea (i.e on water that is not categorised into either A, B, C or D) then they are not able to claim RTFCs. In practice this means that as an RTFC is valued between 0 and 50p per litre, a supplier is able to discount the fuel by between 0 and 50p. Typically, an RTFC has been worth about 30p and a litre of HVO is worth 2 RTFCs so a supplier can discount the fuel by around 60p/l, which makes a significant difference to the user. However, the issue is that the supplier cannot tell where that fuel is going (i.e which category waterways the fuel will be used in). Crown Oil have a problem particularly because they are an importer of the fuel receiving the RTFC. A downstream distributor buying HVO from an importer does not have the same issue, which distorts the marketplace.

He explained that the other issue with RTFCs and selling to inland waterways (as Bowman had outlined earlier) is that part of the fuel is going to be used for propulsion and the other part of that fuel is going to be used for heating. There is no obligation on the heating component of the fuel and therefore there is no RTFC applicable and the fuel can not be discounted.

Hydrocarbon Oil Duties Act (HODA): This is legislation was put in place in 1979 and dictates how much excise duty is paid on fuels. In 1979 HVO had not been invented. Therefore HVO is being categorised in the same way as fossil diesel. With inland waterways craft the duty is split so that the duty is paid on propulsion fuel and not on the domestic fuel. He suggested that the Government looks more widely at HODA because ultimately the government is not able to claim duty at the moment on alternative fuels, and this is placing a block on decarbonisation.

He summarised by saying that it is extremely difficult to sell alternative fuels to the inland waterways market due to all the complex legislation in place.

Michael Fabricant thanked Simon Lawford and started the Q&A session.

An anonymous participant asked how will the electric infrastructure be in place in time, saying that they cruised the Rochdale Canal ten years after it was opened and there were virtually no boater facilities between Hebden Bridge and Manchester. Bowman Bradley replied that clearly there is not enough electrical infrastructure on the canals to support current electric boats and one of the things IWA is doing is campaigning to have more electrical charging points put in but of course there is a massive cost associated with that. He said that the real solution is improved battery technology which will mean it is possible to go a week or two between charges. All the technologies used on electric boats are being

developed for electric road vehicles that that technology will come along because you can put a lot of batteries on a boat, far more than you can in a car.

Vanessa Thomas asked why the UK is not making HVO so that it doesn't have to be imported, suggesting that azolla and pennywort could be used to make HVO.
Simon Lawford said that there is no technical reason why any biomass can't be used for HVO production, but a lot of pennywort would be needed for this to be viable.

Jim Forkin from IWA asked about solar panels, which are increasingly used on canal boats and ideal for summer cruising. He suggested range issues could be solved by installing more batteries, and electric charging points at marinas. Bowman Bradley said that while there is not enough space on boats to hold all the required solar panels needed, they can make a very useful contribution. He agreed that more batteries can help as well as better battery technology. He also said that most electric boats will have a diesel generator to charge the battery when not connected to shore or if there's not enough solar. An electric boat with a small diesel generator will use about a third of the diesel fuel a traditional diesel engine uses.

The National Bargee Travellers Association Secretary said this issue will affect live aboard boaters much more than leisure boater as they are on boats every day as their homes. Any penalties or compulsory use of HVO or conversion to electric will have a very severe effect as they may be in a situation where living in their home becomes untenable. They asked if the APPG would propose mitigation for boat dwellers regarding any compulsory use of biofuel or conversion to electric so that they are not put in a position where living in their homes becomes untenable. Michael Fabricant explained that APPGs don't normally make recommendations to government, as its role is to discuss issues and then members of the APPG of as Members of Parliament or Peers are able to make those proposals. Bowman Bradley said that no-one is proposing that HVO be made compulsory nor is there any proposal that conversion to electric be made be made compulsory. Instead, the Working Group are asking for the government legislation to be put in place that makes HVO affordable to all boaters.

Eoin Harris, from the Canal and River Trust asked if electric propulsion would require significant investment in charging infrastructure, as is the case for road vehicles, and how can this capital investment be accelerated in the current economic climate? He also asked if there are there any standards emerging for electrical supply and charging points on boats? This remains an issue in road transport because of divergence in car manufacturers. Bowman Bradley said that the Sustainable Boating Group of the IWA has drawn attention to a need for such a standard and have passed that position paper to the Canal and River Trust, who said they support the development of an appropriate standard. Michael Fabricant suggested that the Canal and River Trust could come up with a proposal which either he or Simon Baynes could take further. Eoin Harris also asked how widely heat pumps are used for space heating on boats. He also asked about the likelihood of hydrogen succeeding as a fuel assuming the UK transitions to a hydrogen economy. Bowman Bradley said that not enough heat pumps are currently being used on boats and it would be good to see more, as they do work well on boats (water source heat pumps are more efficient than air source). Regarding hydrogen he said that the technology to put a hydrogen fuel cell on a boat is there. It is possible to buy a hydrogen fuel cell that will fit on a boat and it will provide enough electricity to propel the boat and for domestic uses, but the big issue is where the hydrogen comes from and the cost of it. Michael Fabricant said that Andy Street (the Mayor of the West Midlands) is talking at the moment with the University of Birmingham, who have built a hydrogen canal boat.

Martin Hollis, Chair of the Wilts and Berks Canal Trust asked how does the price of HVO compare to mineral diesel? Simon Lawford replied that on the inland waterways it really does depend on where the fuel's going but if you look at it from a road transport perspective where RTFCs are applicable then it's around about 30p a litre more expensive.

Tracy Clark of the Accessible Waterways Association, who is a Roving Canal Trader and a Continuous Cruiser, wondered is it be feasible to abolish the 60/40 split? As a roving trader she is able to declare 100% domestic use. Simon Lawford said that would be possible only if the Hydrocarbon Oil Duties Act was altered. Michael Fabricant suggested that trade bodies for fuel distributors make a representation. Simon Lawford said the trade bodies are keen to have this discussion but the issue with HODA is that it is a huge primary piece of legislation and getting parliamentary time and willingness to look at it is tough.

John Packman, CEO of the Broads Authority said the Broads Authority has been using HVO very successfully for some years, but what are the issues about sustainability? Simon Lawford said that when HVO was first developed, at that time it used palm oil because essentially palm oil was the largest global supply of vegetable raw material. However, he explained that has changed and it is mainly used cooking oil that is the feedstock now. However, the system to check the sustainability isn't infallible so there could potentially be problems downstream or upstream of the fuel itself so ultimately it's important to purchase the fuel from certified suppliers. The Renewable Fuel Insurance scheme, which any good biofuel or renewable fuel supplier should be a member of, ensures that that fuel is sustainable.

Phil Horton of the Royal Yachting Association (RYA) said that their challenge as a representative body is knowing which government Department should take the lead on this, asking if it is the DfT or is it DESNZ, or is it the Treasury or even the Department of Culture Media and Sport? Michael Fabricant said that they all have potential interests.

Vanessa Thomas said she has used HVO and it is by far superior to fossil fuel diesel so is frustrated that she can't get it anymore. She asked how realistic is that we will be able to remove this red tape to get it across the system? Michael Fabricant said that it will be difficult because the legislation would require almost a year to go through Parliament.

Thomas Wombwell of British Marine asks how can we ensure that any future propulsion technology we choose to use is dealt with from a whole life environmental impact rather than solely focused on tailpipe emissions? Simon Lawford said that if you take electrification on the road then there is no whole life cycle analysis and agreed that it is important to look at the whole system.

Simon Baynes MP asked what discussions Bowman Bradley and Simon Lawford have had to date with government on these issues? Bowman Bradley said that they had a meeting with DfT after the APPG, but that they wrote to a number of different departments, including DESNZ and the only one they had a meaningful reply from was DfT, who recognise it's a multi-department issue.

Phil Horton (RYA) drew attention to the recent ICOMIA (International Council of Marine Industry Associations) report which supports the use of HVO as a transition fuel and looks at the whole life cycle analysis for various recreational and boating uses.

Summary, actions, and closing remarks

Michael Fabricant MP thanked the speakers on behalf of the All Party Group and closed the meeting.

The presentations from this meeting are available on request from Amy Tillson, APPGW Secretariat by emailing amy.tillson@waterways.org.uk.

INLAND WATERWAYS ASSOCIATION

The Inland Waterways Association provides the secretariat to the All Party Parliamentary Group for the Waterways.