

# ***IEE Project 'Carbon Labelling'***

## ***Minutes of the 1<sup>st</sup> Carbon Labelling Workshop***

***11 December 2007, Floriana, Malta***



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## 1. Introduction

The Carbon Labelling workshop on “Biodiesel and other Biofuels for smaller EU Member States” took place in Malta on 11 December 2007 in the framework of the Carbon Labelling project which is supported by the European Commission under the Intelligent Energy for Europe programme. The workshop was organised by the Malta Resources Authority, Malta, and by WIP Renewable Energies, Germany.

The workshop was opened by Antoine Riolo, CEO Malta Resources Authority, and Anthony C. Mifsud, Permanent Secretary Ministry for Resources & Infrastructure, Malta, who gave a Keynote speech. 39 participants, mainly key stakeholders from industry and policy sector, attended the workshop.

## 2. Objective of the Workshop

The main objective of this workshop was to inform stakeholders in Malta about biofuels and more specifically about biodiesel as sustainable and efficient transport fuel. This included biodiesel production, legal issues, policies, GHG calculation models, and environmental impacts.

Special emphasis was given to opportunities for using biodiesel in Malta and for the implementation of Carbon Labelling initiatives in the Maltese fuel sector. Opportunities were presented by biofuel experts in ten speeches and discussed among workshop participants.

## 3. Opening Keynote

***Antoine Riolo, CEO Malta Resources Authority, Malta***

***Anthony C Mifsud, Permanent Secretary Ministry for Resources & Infrastructure, Malta***

Keynote Speech:

Ladies and gentlemen, it is an honour to be here with you this morning, for this workshop, on ‘Biodiesel and other Biofuels for smaller EU Member States’ under the Intelligent Energy for Europe Programme, and I would like to thank you for your time and for the effort to be here.

First of all, I would like to spend a few words for the benefit of those who are unfamiliar with the aims of this programme. It brings together participants from several EU Member States, to collaborate together on carbon labelling programs that can achieve optimal results in their respective home countries. Lessons learned from each particular approach are discussed within the project to assess interest in European carbon labelling initiatives.

It is hoped that the results of affixing carbon labels on biofuel products in the transportation sector should be similar to the successes achieved in the energy labelling of consumer products. Inclusion of fuel and lubricant additives in the labelling effort at the present, and for other products like tires in the future, should also engender opportunities to substantially reduce energy use, fuel costs and most importantly, lower carbon emissions.

The pilot projects under this programme will provide the necessary information to generate stronger consumer interest in biodiesel. Strong public support will help sway future choices in favour of environmentally positive and energy secure outcomes.

The E.U.'s pledge to ensure that renewables account for 20% of the overall energy mix by 2020, and, particularly with relevance to today's workshop, a specific commitment that 10% of it to be from biofuels, has placed these renewable resources in the centre-front of the landscape of any future energy-mix.

Biofuels offer the possibility for us to better confront today the multiple and linked challenges posed by climate change and security of energy supply. A substantial increase in the use of biofuels will help head-off these threats. The numbers related to production are impressive in their increase in magnitude. They are in fact forecasted to experience a four-fold increase in the coming years.

An optimistic scenario envisioned for biofuels would suggest that switching to biofuels can meaningfully help in reducing the one third of the E.U.'s overall CO<sub>2</sub> emissions which come from transport. Needless to say, this would be a tremendous contribution to combating climate change. It can also reduce our reliance on the escalating cost of fossil fuels, since the transport sector is currently 98% dependent on oil, thus enhancing energy independence.

It is with these statistics in mind that, in its own right, a successful carbon labeling effort may help educate consumers as to the huge benefits to be derived when consuming biofuels, an important step to help secure a better environmental future for ourselves and for our children.

Thank you for listening.

#### **4. Carbon Labelling - The Concept**

##### ***Dominik Rutz, WIP Renewable Energies, Germany***

In the first session Dominik Rutz, WIP Renewable Energies, Germany, presented the concept of the Carbon Labelling project including its objectives and first results.

Currently, opportunities for reducing carbon dioxide emissions in the transport sector are discussed in order to meet European greenhouse gas reduction targets. Therefore, the European Commission wants car manufacturers to cut average new car emissions of carbon dioxide to 130g CO<sub>2</sub>/km by 2012, 18% lower than 2005 levels. Improvements in motor technology would have to reduce average emissions to 130g CO<sub>2</sub>/km, while complementary measures would contribute a further emissions cut of up to 10g CO<sub>2</sub>/km, thus reducing overall emissions to 120g CO<sub>2</sub>/km. These complementary measures include efficiency improvements for car components, such as tyres and air conditioning systems, and a gradual reduction in the carbon content of road fuels, notably through larger use of biofuels.

One opportunity to support CO<sub>2</sub> emission reductions in the transport sector is to inform consumers about the CO<sub>2</sub> reduction potential of biofuels when compared to fossil fuels. This approach is encouraged by the Carbon Labelling project. The aim is to create and implement a European label for CO<sub>2</sub> reductions through biodiesel and fuel efficiency measures.

The Carbon Labelling project implements several labelling initiatives in Europe focussing on products and services with low CO<sub>2</sub> emissions. The project promotes biodiesel, fuel efficiency improvements and 'low carbon' freight services. All initiatives of the Carbon Labelling project contribute to improve information and education of fuel consumers, freight customers, and farmers. This first European carbon labelling initiative helps meeting greenhouse gas reduction targets of the European Union, reduces petroleum dependence and helps to combat climate change.

A dedicated task of the Carbon Labelling project is to support and promote biodiesel to smaller EU member states like Malta. This workshop will contribute to meet Renewable Energy and Greenhouse Gas Mitigation targets of the European Union and Malta.

The Carbon Labelling project (<http://www.co2star.eu>; EIE/06/015), coordinated by WIP Renewable Energies (Germany), is supported by the European Commission under the Intelligent Energy – Europe programme (October 2006 to September 2008).

## **5. Labelling Initiatives and Results from Q1 in Germany**

### ***Sven Bürkner, Q1, Germany***

Sven Bürkner, Q1, Germany, presented encouraging results from the introduction of the CO<sub>2</sub>Star label at Q1 filling stations in Germany.

Biodiesel was exempted from fuel taxes in Germany, but in August 2006 the German government introduced taxes for biodiesel which will be successively increased until the full fuel tax will be applied in 2012. Currently, 3.5 percent of fuels which are sold at Q1 filling stations are biodiesel (B100) and due to the partial tax exemption there is a price gap between fossil diesel and biodiesel of about 0.10 €.

Q1 launched the CO<sub>2</sub>Star Label initiative in July 2007 in order to promote biodiesel at its filling stations. The promotion material included flyers, banners, T-shirts, posters, pump signs and stickers. Together with the Carbon Labelling Advisory Board and the Ifeu Institute, Germany, the CO<sub>2</sub> reduction potential of B100 was discussed. Based on the results of this discussion, Q1 promotes 60% CO<sub>2</sub> reduction for B100 (from rapeseed, produced in Germany) in comparison to fossil diesel.

In order to assess the impact of the CO<sub>2</sub>Star labelling initiative, Q1 implemented an on-site consumer survey at its filling stations. The following conclusions were presented:

- The price of fuels is of utmost importance for fuel clients (especially among biodiesel clients)
- There is a basic mindset pro climate protection
- The personal commitment for climate protection is limited by a lack of willingness to pay more for environmentally friendly fuels
- There is a great confusion about the pros and cons of bio fuels

## **6. GHG calculation models and the Dutch Freight Labelling Initiative**

### ***Elke van Thuijl, Senter Novem, The Netherlands***

Elke van Thuijl, Senter Novem, The Netherlands, gave an overview about the planned pilot carbon labelling initiative for freight services in The Netherlands and presented the Dutch Greenhouse gas (GHG) calculation model.

The objective of the pilot labelling initiative in The Netherlands is to implement the CO<sub>2</sub>Star label on trucks using B100 and thereby to promote freight services as low carbon services. This pilot programme is included in the project 'Green products, green transport' ('Schoon Vervoerd').

The 'Green products, green transport' project is an initiative of a powerful consortium with several leading Dutch parties in production, trade and distribution of horticultural products such as flowers, plants, vegetables, and fruits. The parties involved are: Innovation network, Trade organisation horticulture, the Dutch Agricultural Wholesale Board/ Flowers and Plants, leading freight companies transporting horticultural products, several Dutch auctions, and the Rabobank. This project aims to improve the green and sustainable image of the horticultural sector in the Netherlands through contributing to the reduction of CO<sub>2</sub> emissions and the start-up of the market for pure biofuels.

In early 2008, the CO<sub>2</sub>Star label will be implemented at 100 trucks running on B100 and a B100 filling station. The initiative will be monitored, evaluated and expansion options of the pilot project will be explored.

In the second part of the speech, Elke van Thuijl presented the Dutch GHG calculation model. The GHG calculator allows to report CO<sub>2</sub> emissions as part of sustainability reporting within the biofuels obligation scheme. With this calculator well-to-wheel GHG emissions (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O) can be calculated for e.g. biodiesel use from different feedstocks and origins. The CO<sub>2</sub> calculation tool, which was developed by Senter Novem and Ecofys, is a compromise between a scientifically correct and detailed life cycle analysis, and an easy-to-use policy instrument.

The Excel based software of the final draft version was presented to the audience and the final version of the GHG calculator will be published in 2008

## **7. Biodiesel Technology - Current Production Methods**

***Martin Mittelbach, University of Graz, Austria***

In the second session, Prof. Martin Mittelbach, University of Graz, Austria, gave an update about biodiesel technologies and current production methodologies. He presented the development of the biodiesel market in Austria with a target to produce 580.000 t of biofuels in 2008.

In order to supply the growing European biodiesel markets, a diversification of new feedstock sources is needed: palm, soybean, sunflower, cuphea, crambe, jatropha, castor, yeast, funghi, algae, used frying oil, animal fat and other waste oils. In Austria first experiments with Used Frying Oil started in 1983. Currently, all 150 City Buses in Graz are running with 100 % Biodiesel from Used Frying Oil. This initiative was awarded with the World Climate Star in 2002 and with the Osmose Award in 2006.

Research on biodiesel conversion technologies has increased drastically in the last years. This is represented by the increased number of patents and publications on biodiesel. In general, biodiesel production can be divided into single and multi feedstock technologies. Depending on the feedstock source, so far either homogenous catalysts can be used for transesterification or acidic catalysts for esterification. Two new trends in using catalysts were presented: heterogenous catalysts and enzymes as catalysts.

## **8. GHG savings associated with production of biodiesel compared to fossil fuel-derived diesel**

***Richard Safford, Home Grown Cereals Authority, UK***

Richard Safford, Home Grown Cereals Authority, UK, gave a presentation as a representative of farmers about GHG savings associated with production of biodiesel compared to fossil fuel-derived diesel.

In the UK, the Renewable Transport Fuel Obligation RTFO aims to encourage supply of biofuels from sustainable sources to effectively contribute to reduction in GHG emissions. Objective of this obligation is that 5% (volume) of all UK fuel sold on UK forecourts is renewable by 2010. Furthermore, the RTFO aims to reduce carbon emissions until 2010 by 0.75 million tonnes per year, which is equivalent to the removal of 750,000 cars from the road. Introducing biodiesel in the UK is very ambitious since currently only 0.70% of total road fuel (Oct 2007) are biofuels. However, production plants are planned and constructed and the estimated production capacity for biodiesel is 2 Mio t per year and 0.15 Mio t bioethanol in 2011. These targets are supported by the European Commission which confirmed 0% set-aside farmland rate for 2008 which allows farmers to grow more crops.

In order to encourage suppliers to sell sustainable biofuels and to receive Renewable Transport Fuel Certificates (RTFCs), the UK Government proposes to include reports on both the net GHG savings and the sustainability of the biofuels. The challenge is to define sustainability criteria and to assess GHG savings since they vary significantly depending on the system of cultivation, processing and transportation of feedstock. Therefore, HGCA developed a GHG calculator for biofuels which was briefly presented.

Finally, the following conclusions were given:

- Fuel security, fossil fuel prices and GHG savings are driving the global biofuels market
- Europe is the leader of global biodiesel production
- The UK biofuel targets will be published in April 2008
- There are currently many biofuel plants planned in the UK
- Zero set-aside allows farmers to increase crop yields and to reduce crop prices
- Domestic feedstock is preferred, but imported biofuels/feedstocks are required in the future
- The RTFO promotes carbon savings and sustainable biofuel production
- Farmers will have new market opportunities due to feedstock production

## **9. Biofuel a European Perspective - Current and Future EU Policy on Biofuels**

***Rainer Janssen, WIP Renewable Energies, Germany***

Rainer Janssen, WIP Renewable Energies, Germany, gave a presentation on current and future European policies on biofuels.

The current energy policy (January/March 2007) in the European Union is based on three challenges: reducing climate change, ensuring security of supply and supporting a competitive EU economy. The following targets and objectives can be summarised:

- Reducing GHG emissions by 20% by 2020 compared to 1990
- Improving Energy Efficiency by 20% by 2020
- Raising the share of RE to 20% by 2020
- Increasing the level of Biofuels in transport to 10% by 2020
- National Action Plans (Energy mix decided by MS)

In order to achieve targets in the transport sector, the European Biofuels Directive was introduced in May 2003: “Directive on the promotion of the use of biofuels or other renewable fuels for transport (2003/30/EG)”. This constitutes the legislative framework for Member States to promote biofuels (e.g. tax exemption, biofuel obligations) and has included the indicative targets of 2% biofuels by 2005 and 5.75% biofuels by 2010. Thereby, the Directive allows Member States to set their own indicative targets and to develop national policies and measures (technical, financial, social choices).

This Biofuels Directive is currently under review and the revised version will be published in January 2008. The need to review the Biofuels Directive was also highlighted by the Biofuels Progress Report (Jan. 2007) which showed that the target of 2% biofuels by 2005 was failed and only 1% biofuels were achieved in the European Union.

The following summary about the European biofuels policy can be concluded:

- The new EU Energy Policy includes a target for biofuels in transport of 10% in 2020
- Based on the Biofuels Progress Report the revised Biofuels Directive (January 2008) will (a) set a binding target of 10% by 2020 and (b) encourage biofuels with good environmental performance
- Carbon Labelling Initiatives may significantly contribute to achieving EU biofuel targets

## 10. Biodiesel in Malta

### ***Simon Borg, Malta Resources Authority, Malta***

Simon Borg, Malta Resources Authority, Malta, gave an overview about the biodiesel market in Malta. Currently Malta’s consumption of biofuel consists exclusively of biodiesel. In 2005 the biodiesel consumption in Malta was approximately 1.492.000 litres, 60% were used for transport and 40% for industry. In the transport sector, biodiesel consumption was about 0.52% of total petrol and diesel consumption (based on energy content). Biodiesel is retailed as pure biodiesel (B100) only at about 50% of Malta’s 84 petrol stations.

The benefits of using biodiesel in the transport sector in Malta are mainly reductions in carbon monoxide, hydrocarbons, and particulate matter as well as GHG reductions. However, biofuels can also have negative impacts if the feedstock is not produced sustainably or if higher demands increase crop prices.

The current legislation which is in force in Malta is based on the European Biofuels Directive “Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport”. This Directive is implemented in Malta in L.N. 528 of 2004. The Maltese fuel market is currently liberalized which is a result of L.N. 278. of 2007 “Petroleum for the inland (wholesale) fuel market regulations”. Regulation 33 allows authorised providers to blend any petroleum product which is wholesaled in the inland fuel market with biofuels. The percentage of biofuels shall not exceed specifications in any European directives.

The target of Directive 2003/30/EC is a market share of 5.75% biofuels in 2010. This is a non-binding target and each country has to set its own indicative target. The target for 2020 is binding and includes 10% biofuels market share. For Malta, Mr. Borg presented three scenarios on how to achieve the target:

- Targets reached by Biodiesel only
- Targets reached by Bioethanol only
- Target reached by 50:50 ratio Biodiesel:Bioethanol

However, there are severe obstacles to be overcome. In Malta, there is limited availability of arable land and water resources for growing energy crops. Thus, feedstock or biofuels have to be either imported or processed from locally available waste materials. There are limitations in storage capacities which compete with oil storage infrastructures for petroleum products. Furthermore, in Malta economies of scale are limited and there exists a lack of knowledge about biofuels. Finally, in Malta biofuels are object of competing sectors since they are used for industrial use, heating, transport, and other purposes.

In order to overcome these barriers, following measures are proposed that could be implemented in Malta:

- Improving the existing legislative framework
- Introducing a Substitution Obligation
- Enhance education, communication and information throughout the fuel market chain, from importer/producer to consumer
- Improving/Increasing the collection of waste oils, from commercial establishments as well as from domestic sources
- Enforcement of the regulations regarding dumping of oils in sewers
- Encourage consumer confidence through enforcing of quality standards and control
- Voluntary agreements especially with fleet operators
- Introduction of grants on the purchase of vehicles that can take higher blends

## **11. Future of Biofuels, Other Biofuels and 2nd Generation Biofuels**

### ***Bill Wason, Manzoil, Poland***

In the third session, Bill Wason, Manzoil, Poland, gave a presentation about the “Future of Biofuels, Other Biofuels and 2nd Generation Biofuels”.

Currently, the biofuels industry is faced by high feedstock costs and discussions about CO<sub>2</sub> performance and sustainability aspects. The pressure to improve sustainability and CO<sub>2</sub> emissions is increasing steadily. However, biofuels are supported by many governments. The development of next generation biofuel processes or use of new feedstocks have the potential to offer solutions to make biofuels more competitive and sustainable.

One potential second generation biofuel is BtL (Biomass-to-Liquid) which has similarities to CtL (Coal-to-Liquid) and GtL (Gas-to-Liquid) which has been produced by Petro SA and Sasso for a decade in South Africa in multi-chemical output processes. The resulting fuel is identical to gasoline or diesel and has a higher cetane number and no sulfur/aromatics. It leads to improved fuel economy or performance (4% according to Shell Studies). GtL and BtL are chemically identical allowing easy transition and joint production efforts.

The BtL production involves gasification or pyrolysis of biomass and Fischer Tropsch refining similar to the GtL process. The main effort on BtL research in the EU is jointly made by VW, Daimler and Choren (Sun Biofuels).

However, also new feedstock sources will play a significant role in the future biofuel market, including biofuels from algae and native palms.

## 12. Economics and Sustainability of Biodiesel and other Biofuels

### *Rocio A. Diaz-Chavez, Imperial College London*

Dr. Rocio A. Diaz-Chavez, Imperial College London, UK, highlighted the need for sustainable and competitive biofuels in her presentation about "Economics and Sustainability of Biodiesel and other Biofuels".

It was shown that the lowest production costs for ethanol are from sugarcane (0.20-0.30 €/litre petrol equiv.) and the highest costs are for ethanol from cellulose (0.65-1.00 €/litre petrol equiv.). For biodiesel costs are lowest for biodiesel from waste grease (0.21-0.38 €/litre diesel equiv.) and highest for biodiesel from rapeseed, which can be as high as 0.66 €/litre diesel equiv.

Globally, biodiesel production is the third fastest growing renewable energy sector, after grid-connected PV and wind energy. However, total global biodiesel production remains significantly lower than bioethanol production likely to have been around 5 billion litre in 2005 (LowCVP, 2006). Europe leads the world in biodiesel production and use. Currently biodiesel production uses about 1.4 Mha agricultural lands in the EU according to the European Biodiesel Board. Thereby, Germany is the key producer and consumer of biodiesel in the world (UFOP, 2005). Its consumption is likely to be about 9% of the German conventional diesel market by the end of 2007.

Within the biodiesel life cycle chain there are many different stakeholders involved which aim to improve profits and sustainability of biodiesel, and which aim to reduce social and environmental impacts. National and international certification and standard systems are currently being developed by several initiatives. An overview about sustainability certificates is given in the Renewable Transport Fuels Obligation (RTFO). Also the Cramer Commission in The Netherlands as well as the Öko Institute and the WWF in Germany elaborated reports on sustainability standards for biofuels. However, the implementation of sustainability standards has to take into account the Lisbon Strategy which aims to make "the EU the world's most dynamic and competitive economy" by 2010. The Lisbon Strategy was adopted for a ten-year period in 2000 in Lisbon, Portugal by the European Council.

Examples of biofuel feedstock production with high risk of environmental and socio-economic impacts are sugar cane, palm oil, and soya.

Dr. Rocio A. Diaz-Chavez made the following conclusions:

- A standard assurance or certification system must be implanted and is currently under design at different levels in the EU
- Biofuels production and use must be sustainable (economic, environmental and social)
- Biofuel production promotes rural development
- Biofuels production may be seen as an additional form to help reduce poverty in developing countries
- Problems with certification or standard assurance concern implementation, additional costs, audit and compliance

### **13. Future Global Labelling Initiatives**

#### ***Bill Wason, Manzoil, Poland***

Bill Wason, Manzoil, Poland, gave a presentation about “Future Global Labelling Initiatives” and stressed the need for carbon labels in the framework of an integrated strategy.

The integrated strategy involves several measures to reduce carbon emissions in the transport sector such as control mechanisms for tire pressure, improved use of tires, use of improved lubricants and efficiency additives as well as the implementation of driver training.

A carbon labelling system could be also used for other sectors like the food sector or for consumables.

## 14. Agenda

08.45 – 09.00 Registration

09.00 – 09.10 Opening Keynote

*First Session* Chairperson *Dr. Rainer Janssen, WIP, Germany*

09.15 – 09.30 **Carbon Labelling - The Concept**

Dominik Rutz, WIP

09.30 – 09.45 **Labelling Initiatives and Results from Q1 in Germany**

Sven Bürkner, Q1

09.45 – 10.00 **GHG calculation models and the Dutch Freight Labelling Initiative**

Elke van Thuijl, Senter Novem

10.00 – 10.15 Question Time

10.15 – 10.30 Coffee break

*Second Session* Chairperson, *Ing. Charles Buttigieg, MRA*

10.30 - 10.45 **Biodiesel Technology - Current Production Methods**

Prof. Martin Mittelbach, University of Graz

10.45 – 11.00 **GHG savings associated with production of biodiesel compared to fossil fuel-derived diesel**

Richard Safford, HGCA

11.15 – 11.30 **Biofuel a European Perspective - Current and Future EU Policy on Biofuels**

Dr. Rainer Janssen, WIP

11.45 – 12.00 **Biodiesel in Malta**

Ing. Simon Borg, MRA

12.00 – 12.15 Question Time

12.15 – 13.00 Refreshments

*Third Session* Chairperson, *Dipl.-Ing. Dominik Rutz M.Sc., WIP*

13.15 – 13.30 **Future of Biofuels, Other Biofuels and 2nd Generation Biofuels**

Bill Wason, Manzoil

13.30 – 13.45 **Economics and Sustainability of Biodiesel and other Biofuels**

Dr. Rocio A. Diaz-Chavez, Imperial College London

13.45 – 14.00 **Future Global Labelling Initiatives**

Bill Wason, Manzoil

14.00 – 14.15 Question Time & Closing

## 15. Participant List

No	Title	Name	Organisation
1	Mr	Philip Psaila	Edibile Oil Refining Company
2	Mr	Michael Busuttil	Edibile Oil Refining Company
3	Ms	Carmen Delia	Malta Resources Authority
4	Ing	Antony Cachia	Airmalta
5	Mr	Natalino Formosa	Airmalta
6	Ing	Charles Farrugia	Airmalta
7	Mr	Raymond Attard	Airmalta
8	Mr	James Mizzi	Airmalta
9	Dr	Vincent Buhagiar	University of Malta
10	Ing	Michael Cassar	Malta Standards Authority
11	Mr	Martin Hignett	Trelleborg Sealing Solutions
12	Mr	Emanuel Borg	Malta Customs Dept
13	Dr	Emmanuel Sinagra	University of Malta
14	Ing	Mark Azzopardi	Malta Entereprise
15	Eng	Elaine Theuma	Enemalta Corporation
16	Ing	Priscilla Camilleri	Malta Standards Authority
17	Eng	Stephen Bonnici	Enemalta Corporation
18	Mr	Joseph Pandolfino	Enemalta Corporation
19	Ing	Philip Borg	Enemalta Corporation
20	Ms	Marie Stella Grima	Malta National Laboratory
21	Mr	Frank Sammut	Technical Services Bureau
22	Mr	Philip Caruana	Malta Resources Authority
23	Mr	Natalino Spiteri	Malta Resources Authority
24	Mr	Derian Debattista	Malta Resources Authority
25	Dr	Andre` Buttigieg	Malta Resources Authority
26	Ing	Charles Buttigieg	Malta Resources Authority
27	Ing	Simon Borg	Malta Resources Authority
28	Dipl.Ing	Dominik Rutz	WIP, Germany
29	Dr	Rainer Janssen	WIP, Germany
30	Mr	Richard Safford	HGCA, UK
31	Mr	Sven Bürkner	Q1, Germany
32	Ms	Elke van Thuijl	Senter Novem, The Netherlands
33	Mr	Bill Wason	Manzoil, Poland
34	Dr	Rocio A. Diaz-Chavez	Imperial College, Uk
35	Prof	Martin Mittleback	University of Graz, Austria
36	Mr	Saviour Vassallo	Malta Environment and Planning Authority
37	Ms	Louise Refalo	Malta Resources Authority
38	Mr	Gordon Micallef	Trelleborg Sealing Solutions
39	Mr	Johann Aquilina	The Palace Operations Ltd