



British Section

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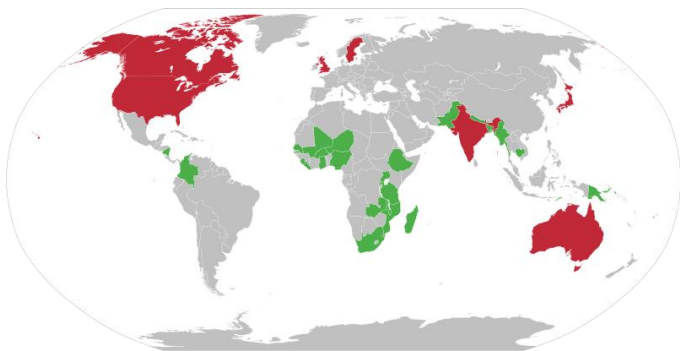
Issue 36: Dec 2023

Why we Should Continue to Support Water Aid

by Malcolm Brandt

Malcolm Brandt has worked in the water industry for over 50 years covering water resources, treatment works, water transmission as well as distribution. Malcolm's lecture covered the work of Water Aid as well as his involvement with the full gambit of the clean and waste water industries.

Water Aid was founded in 1981 by members of the UK water industry at the Thirsty Third World conference and is a registered UK charity with King Charles III as its president. Over the years, it has expanded into Australia, USA, Canada, Sweden and India under an organisational federation.



Water Aid's aim is to transform the lives of the world's poorest people by improving access to sanitation, hygiene and safe water. Their target is to serve 400m people by 2032. It does more than install taps and toilets - it works with governments to change laws, to change attitudes and behaviours as well as pool knowledge and resources.

Malcolm said that in the Third World, a new born dies every minute - a horrendous statistic!

Teaching people about basic hygiene - washing hands which relies on access to clean water - has developed from Water Aid's efforts to provide water standpipes locally.

The supply of a local clean water source has the added benefit of not having the women and girls spending hours of each day fetching water from a distant source which often is itself contaminated. This has enabled the girls to get / continue with their education and for the women to have time to set up businesses selling home-grown vegetables and local produced products. There is a short film produced by Water Aid illustrating this point called '**Water Walk**' - go to their website to view it!

Malcolm said that 74p out of every £1 raised is spent on delivering safe water etc with the remainder covering fundraising and admin.

In his career, Malcolm has worked in many third world countries and he gave us a taster of some of the situations he had encountered, In one a water source in a valley supplied seven villages. The village at the head of the valley had clean water but deposited its waste water back into the stream. As Malcolm stated, the seventh village was drinking the contaminated water from the six villages upstream. Not a pleasant thought!

Following his lecture there were many questions from the audience about Water Aid in the Third World. The consensus was the need to educate all children on the requirement for good hygiene as well as the need to look after their water supply. By educating successive generations, Water Aid is not only providing key infrastructure but also ensuring that everyone understands the requirement for basic hygiene.

Making a connection with French engineering and science

Partners Day to Denbies Wine Estate July 2023



Our visit to Denbies began with a welcome from winery manager, Jeremy, who gave a brief history of how the vineyard was established before conducting us through the winery and describing the wine making procedures.

Denbies Estate was purchased by Adrian White in 1984. The estate included a farm for the fattening of cattle and pigs, which owing to EU regulation compliance was proving unprofitable.

It was Richard Selly, a professor in Geology at Imperial College who suggested that the estate was ideal for a vineyard. The estate's geology was similar to that of the champagne area of France and the flinty-chalk based south-facing slopes, coupled with a comparatively warm and dry microclimate were, he advised, an ideal site.

Denbies vineyard was planted in 1986, and since then has become one of the largest wine producers in the UK. The estate produces an award-winning range of white, red and sparkling wines.

Denbies' wines are produced from a variety of grapes suited to cool-climate wine production, including Bacchus, Ortega, Reichensteiner and Rondo as well as classic varieties such as Pinot Noir and Chardonnay. Denbies sparkling wines are produced using the traditional method and ageing on the lees for complexity, whilst the still wines undergo gentle destemming and pressing, some oak ageing and

malolactic fermentation for certain styles. There is also extensive hands-on-activity in the winery, as the entire winemaking process takes place at Denbies, from pressing the grapes, through to tank and barrel fermentation and the riddling, disgorging, and bottling of the sparkling wines. Our group passed through to the sampling room where we were invited to a wine tasting!!

After a short recovery period we embarked on the vineyard train tour. There is a considerable element of physical labour in the vineyard throughout the year with both pruning and canopy management and, in particular, during harvest time (September - October). Where practicable a mechanical harvester is designed to handle the grapes carefully and shakes them gently from the vine to ensure berries aren't damaged. The harvester picks 30 - 40 tons per day. Certain areas of the vineyard can only be harvested by hand due to the slopes and access, while certain varieties such as Pinot Noir are thinner skinned and therefore benefit from gentle hand-harvesting. During the harvest a team of around 30 pickers are employed.



Near the summit of the estate the train halted for another opportunity to sample the excellent sparkling wine produced by the champagne method and to toast the President, our Partners, and each other on today's site visit.

Grahame Barwell

Where does our water come from?

By Rob Baldry, SES Water

Following our afternoon visit to Denbies Winery, we repaired to the Burford Bridge Hotel for an evening lecture by Rob Baldry, Water Quality Manager for SES Water.

SES Water initially called Sutton & East Sussex Water after the merger of the two adjacent area water companies has a regional monopoly for water supply. Waste water in the area is the responsibility of Thames Water.

Rob, who is both a chartered engineer and scientist, explained his career choice of the water industry after visiting India as a 16 yr. old and seeing the benefits of supplying wholesome water to rural villages.

SES supplies up to 160 million litres/day (ML/d) to three-quarters of a million people via 3500 km of mains (equivalent of a 250 mm dia. pipe from here to Egypt containing all the water they supplies every single day).

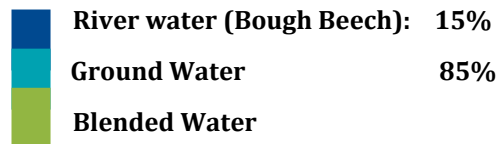


The regional water company's original mains were made of wood, predominately elm.



Nowadays, pipes are made of plastic or for higher pressures, ductile iron.

The geology of the SES's area allows the extraction of water from the underlying Chalk and Greensands Beds. 85% of the raw water comes from aquifers with the remainder from a local river. Consequently 7 out of the 8 Treatment Works treat raw aquifer water including partial softening to remove some of the calcium in the water.

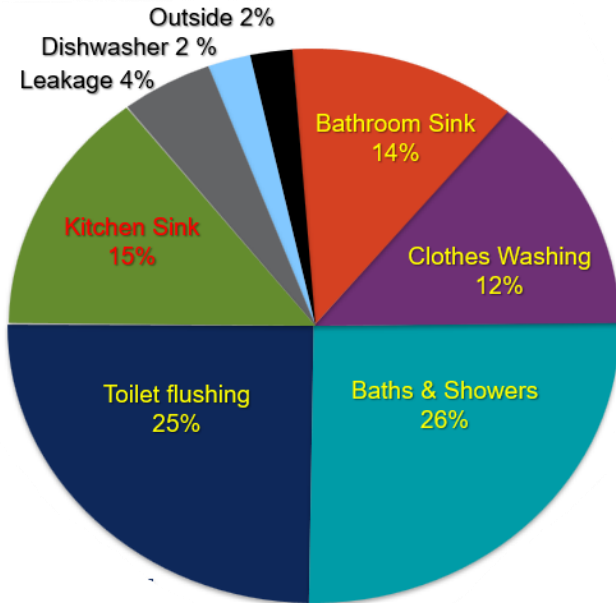


Rob showed a sample of softened aquifer water that looked clear but which, when shaken in the bottle, turned white. Similarly, some of the aquifer water has traces of iron and this also needs to be reduced to below the statutory levels.

Pumping raw water from depth as well as pumping treated water around the system has a high electrical cost. Whilst pumping from the wells is continuous, pumping to storage tanks can be reduced during periods of high electricity usage such as in the early evenings. SES are charged on a varying hourly electricity rate.

Rob emphasised that water is a finite resource which needs to be impressed upon the general public who on average use 160 litre per person per day. Leakage is a big problem and all, both the public and the water companies, need to reduce it. The main source of leakage is from old mains. The

water companies have mandatory leakage targets but are only replacing old mains at a rate of 0.5% per year - a 200 year project! In the average home, 4% of the water is lost due to leakage such as dripping tap.



Average Household Water Usage

Next morning a visit to Elmer Water Treatment Works took place where we were taken round by Rob and some of the Work's team. This Works processes up to 84 Mld of aquifer water.

Those not from the water industry were impressed at the technical expertise in producing potable water, especially when only 15% of the potable water is used in the kitchen and for drinking. One of our members commented that such visits should be compulsory for all school children to instil in them the value of water; a finite resource.

Voyage to Paris and Strasbourg, September 2023

The President's Autumn Voyage to France was splendidly organised by William Powles who lives in the eastern suburbs of Paris. Travel was by Eurostar and TGV with local coach transfers, accommodation was in Mercure and ibis hotels. Fine dining was enjoyed at the

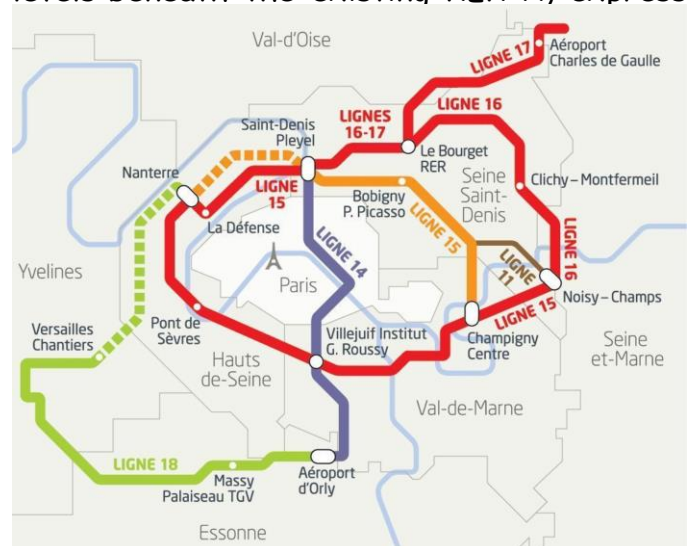
Chateau de Ferrières near Disneyland Paris and in Strasbourg at Sofitel Grande Ile, Au Pont St Martin and the historic Maison Kammerzell by 36 voyagers.

The Grand Paris Express Construction Site

On our first morning the members visited the Noisy-Champs (NCH) construction site of Grand Paris Express (GPE) by kind invitation of the manager Charles Dureuil of the Client, Société du Grand Paris (SGP). Lola Hailot and Audrey Kinnoo Agar from SGP gave a project overview, [link](#) Katerina Chatzigeorgiou from consultant EGIS, supervising engineer for line 16, gave a technical overview about section 3, [link](#)

Both presentations can be viewed on the IESF website: [click link](#).

The NCH site east of Paris is the terminus of new lines 15 and 16 built on separate levels beneath the existing RER A, express



Map of Grand Paris Express

Background : the existing Paris metro system provides city transport from the inner suburbs. To travel between outer suburbs, it is necessary to pass through central Paris. By 2030 the GPE orbital project will link outer suburbs to provide an integrated network without the need to travel through the centre. The project doubles the length of the

metro network with 200km of new twin track (90% in tunnel) and 68 new stations on four new lines (15, 16, 17 & 18). Metro line 14 is also being extended north & south and will be fully operational for the 2024 Paris Olympic Games. It is estimated that when completed GPE will cater for 2 to 3 million passengers per day and create 115,000 jobs.

The construction is focused on environmental issues with extensive use of low-carbon concrete, waste recycling and the use of barges and railways for transport where possible. By 2050 it is estimated the project will save 14m tonnes of CO₂, 36% by reducing car travel and 64% by renovating neighbourhoods around the stations. This reduction is 3 to 5 times greater than the CO₂ emissions generated by the GPE project. Trains will be driverless, capable of travelling at 65km/hr and with a frequency of 2 to 3 minutes.

Noisy-Champs Station : lines 15 and 16 have both been constructed using tunnel boring machines (TBMs). 28 TBMs have been used on GPE to meet the timetable, two of which were installed in the 1.2km long diaphragm wall station box, large enough for train storage behind each station. Ventilation and exit shafts connect to the tunnels at 400m intervals.

Tunnelling was completed on line 15 South in 2021 and work is underway on track laying in advance of signalling and services.

The new platforms for lines 15 and 16 are at right angles beneath the RER A station. In order to minimize disruption to the RER service a massive concrete bridge was built alongside and slid into position during a 4-day RER shutdown when the existing RER railway was demolished, prepared and reinstated.

Some GPE station designs were won in competition by signature architects such as NCH designed by Jean-Marie Duthilleul. The

structure allows natural light to reach lower levels via an open concourse enclosed by glass panelling surmounted by an iconic roof canopy using larchwood which resembles a combination of a Mexican sombrero and a helter-skelter.

The surface finish of the station box side walls is textured and coloured to represent the strata of the surrounding ground.



NCH site at RER A first basement level

Chelles Station : scheduled to open in 2028, the estimated cost of line 16 is €3.5 billion. At 29km long with 9 new stations, construction is divided into 3 sections. Section 3 at 5.5km long was awarded to contractor Fayat in February 2021 and includes one deep station at Chelles and seven ventilation and exit shafts. Tunnelling using a Herrenknecht EPB (earth pressure balance) TBM called Maude, which applies pressure at the cutting face to prevent water ingress, began from a cavern at the north end of NCH terminus box in April 2022 and is now 60% complete. Line 16 passes beneath the River Marne where the ground is saturated. Maude passed under Chelles station in June 2023. Excavated material has been 60% recycled and 40% sent to landfill.

Chelles station is expected to cater for 45,000 passengers daily. Restricted access around the site led to a bilobed solution of

diameters 38.9m and 35.1m instead of a conventional rectangular box. Platform level at 35m depth is below the water table so, to reduce hydrostatic pressure and restrict permissible settlement of the adjacent TGV East high speed railway at only 9m distance, the 1.2m thick interconnecting perimeter diaphragm walls using bentonite have been sunk to bedrock at 63m depth. Excavation is by top-down construction with heavy steel section plunge columns sunk to support the floor slabs after excavation beneath. Extensive use of BIM (Building Information Modelling) has been adopted to ensure all data is shared and potential clashes avoided.

Site visit onto Noisy-Champs station : we descended to second basement line 15 platform level below the RER A platforms. Here track has been laid with overhead catenary bar installed. Work for station services is underway including platform barriers and sliding doors similar to the Elizabeth Line in London. From there we could see down to third basement level where track laying has begun for line 16. We admired the iconic superstructure with the larchwood roof supported by laminated wooden beams and coated steel members.



IESF group with SGP & EGIS engineers on site of NCH iconic new station

Tony Barber and William Powles

Chateau de Champs sur Marne

Meanwhile that same morning, Amis and partners arrived to see this neoclassical palace dominated by 5 red fire-engines parked at the entrance. However, no smoke

was sighted, and we learnt that the fire engines were just making a security inspection.



Chateau de Champs sur Marne with IESF group and fire-engines in foreground

An impressive spacious house, it was built in 1699 by Pierre Bullet, the King's architect. After bankruptcy it was finished by his son Jean-Baptiste Bullet in 1747 for a financier of King Louis XIV. The house extends over 4 floors, with impressive garden views to the front and rear. It has imposing rooms and impressive oil paintings including portraits of the Marquise de Pompadour and the Duc de La Vallière, a previous owner.

In 1935 the Chateau was donated to the State by Charles Cahen d'Anvers who had restored the building to its former splendour. Until 1974, it was used as a residence for foreign Heads of State on official visits to France. The chateau was reopened to the public in 2013 after a seven year structural restoration following collapse of ceilings due to mushroom growth in the woodwork. Highlight is the Chinese Salon with exquisitely painted wood panelling of Oriental scenes.

Helen Graham

Before leaving Paris, we met up briefly with Jean Dambreville, IESF Délégué Général, at Gare de l'Est. Upon reaching Strasbourg we

were delighted to be joined at dinner by Céline Poloce, President of IESF Alsace.



Meeting Jean Dambreville, Délégué Général, IESF

Visiting the Herrenknecht Factory

After an early breakfast in Strasbourg, 22 voyageurs went by coach over the Rhine into Germany to the Herrenknecht plant at Schwanau. There we met Willy Kresser, Secretary of IESF Alsace.

Our host for the day was Alexander Holderer who explained the history of the company, founded by Martin Herrenknecht in 1977. The plant has about 2,400 staff with about 5,000 worldwide generating over €1.2bn revenue. His success in the "ground-breaking" world of tunnelling has produced a comprehensive range of technology in use around the world.

Now Herrenknecht Group, a family of specialist companies, they have an impressive portfolio of products that they design, manufacture and can operate and support. Alexander showed us examples of some of these enormous machines. Whilst the multi-metre diameter cutting faces are impressive, much of the technology is in the drive train that moves the face, collects and passes back the spoil and installs the concrete tunnel lining.

They offer several types of Tunnel Boring Machines (TBM) of various sizes up to a

staggering 19.25m diameter: Earth Pressure Balance; Mix Shield; Open Shield; Multi Mode, and other variants (see <https://www.herrenknecht.com/en/>). And their technology has been applied to vertical drilling for oil and gas. Their systems have been used in major projects including: Jiangyin Jingjiang River Crossing (China), Snowy 2 (Australia), Hampton Roads (USA), Deep Tunnel Sewage System (Singapore) (200km by 25 TBMs of various sizes), and of course, Woodsmith Mine (25km long, 5.9m dia) in the UK. One hundred and ten Herrenknecht TBMs have built about 700km of European rail tunnels to date: including Grand Paris Express, Brenner Base Tunnel (8 TBMs), Crossrail, and HS2 (88.5 km). [link](#)

Alex described some of new technology - automation, robotics and digitisation - that they are developing, and, as the photograph show, we got up close to one machine being completed before being dismantled to be shipped to the customer in Romania. A lot to ponder on the coach back to Strasbourg.



Voyageurs and Herrenknecht TBM destined for Romania

Barry Brooks

Cultural visit to Palais Rohan, Strasbourg

While the members went to the Herrenknecht factory, Amis and partners went to the 18th C Palais Rohan, opposite the Cathedral. Completed in 1742 for Armand Gaston, Prince de Rohan and Bishop of Strasbourg, the Palais eventually became the residence of the Emperor Napoleon after the Revolution. Today it houses three museums.

The Museum of Decorative Arts includes the sumptuous King's Bedchamber used by Louis XV during a short stay in October 1744. There is also an imposing library lined with bookcases and tapestries. Books from the 17th to the 19th Centuries replace the 23,400 books seized in the Revolution.

The modern wing includes a room devoted to clock making which includes two astronomical clocks - forerunners of the current clock in Strasbourg Cathedral - plus a mechanical rooster that surmounted the Cathedral's first clock. There is also a fine display of world-renowned Hannong porcelain.

The Fine Arts Museum houses a wide range of paintings from early religious works; Italian Renaissance paintings; Dutch everyday scenes and realist paintings of nature by Courbet, Delacroix and Corot.



Napoleon's bedroom. Matching furniture and bed were made by his official cabinetmaker

The Archaeological Museum has exhibits from Palaeolithic to Merovingian dynasty and an extensive collection of Roman artefacts, uncovered during construction of the tramway in the late 19th C. Also displayed are beautiful intricate pieces of jewellery and artefacts from the Merovingian era.

Diana Blair-Fish

Visiting the European Parliament

After lunch on Friday our groups recombined. Briskly we disembarked from a short river cruise, walked through suburban streets, and glimpsed our destination - the European Parliament - inaugurated in 1999, designed by Paris based team Architecture Studio Europe. The size and scale of the building with 220,000m² of floor space and the largest plenary chamber in Europe with 785 seats for MEPs is to be seen and visited to be believed.



The Palais de l'Europe

Once inside, welcomed by an excellent guide, and yes, the IESF 2023 Voyage Group Photo.



The European Parliament. Spot the missing flag!

Between 1870 and 1945, the citizens of Alsace were forced to change nationality four times. Reconciliation between former enemies in this historical European crossroads became a familiar role. By 1945 Churchill, Schuman, Adenauer and de Gaulle agreed that Strasbourg should play this reconciliation role officially.

The city became the seat of the Council of Europe in 1949 promoting pluralist democracy, human rights and the rule of law. In 1952 it was chosen as the seat of the European Assembly which evolved into the European Parliament.

In 1950 the French Foreign Minister, Robert Schuman had set out his vision of a European Institution that would make future war in Europe unthinkable. He became the first President of the European Parliament in 1958. Louise Weiss is commemorated in the new Parliament building which is named after her. She was a journalist passionate for European union and women's rights. Born into an Alsatian Jewish family, she gave up a glittering academic career in 1914 to open a military hospital. Only in 1979, with elections by universal suffrage finally taking place, could she enter Parliament as an MEP. She presided over the inaugural sitting of the new European Parliament as the oldest member (age 96). Members meet 12 times a year, monthly, in the second week.

Other buildings in this European quarter include the Palais de l'Europe - now home of the Council of Europe, inaugurated in 1977, designed by French architect Henri Bernard - and the European Court of Human Rights - opened in 1995, designed by British architect Richard Rogers.

Jane Hughes

A Day Out in Alsace

Saturday 16th September found us in full tourist mode, enjoying Alsace together by coach.

Château du Haut-Kœnigsbourg: Our first stop was at the spectacular Château du Haut-Kœnigsbourg, standing on the summit of Staufenberg Mountain. A castle has occupied this strong point since at least the 12th C, although much of the current fortress is more recent. The bulk of what we see today is the work of the architect Bodo Ebhardt working on a commission from Kaiser Wilhelm II in the early 20th C. The Kaiser had been gifted the castle in 1899 while Alsace was under German rule and wanted it restored as a museum of the Middle Ages.

Ebhardt's meticulous restoration could be the prototype of every fantasy castle.



Château du Haut-Kœnigsbourg

Colmar: After a generous lunch in the historic village of Riquewhir we drove past ripening vines to Colmar, the capital of Alsatian wine, where a road-train tour introduced us to its attractive historic centre known as *Petite Venise*.

Domaine Allimant-Laugner: A splendid day out was concluded at the village of Orschwiller, where we visited the Allimant-Laugner vineyard. The two families have been

cultivating vines there since the 17th century. They had just finished harvesting grapes for their crémant wine. We were delighted to sample some of the wines from the seven different grape varieties grown on their twelve-hectare estate. Bottles were bought and carried away!

Ray Jefferson

Les Petits Trains de Strasbourg

On Sunday we boarded the 'Blue Circuit' Petit Train to see the Imperial German District, known as Neustadt. It was built following the victory of Bismark's Prussia over Napoleon III's France in 1870 which resulted in the annexation of most of Alsace. The architecture displays the impressive clean lines of the classically inspired Germanic architecture of the period.

We next joined the train for the 'Green Circuit' of *Petite France*, passing the Place Gutenberg, with its grand bronze of the old guy holding a proof sheet. We passed through the narrow streets of half-timbered buildings as well as 'covered' bridges down to the *Barrage Vauban* and the fortifications of the river Ill. Winding our way back around the water side and Place St Thomas to the *Ancienne Douane* and the *Musee Historique* it seemed like summer, and everywhere the flowers sparkled with colour - a relaxing break before joining our TGV for Paris and home.

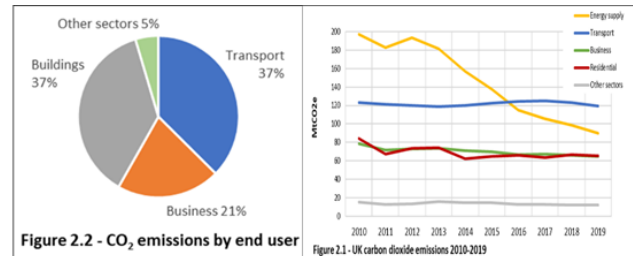
Susan Shillito

Climate Change - How on Earth can we reach Net Zero?

Lecture given by Philip Pascall

The audience was gently led into this major and complex issue through a simple example of raising a dinghy storage platform at Philip's sailing club, necessary to raise it above the increases in the high tides that are now being experienced through the effects of Climate Change through the associated storm wind

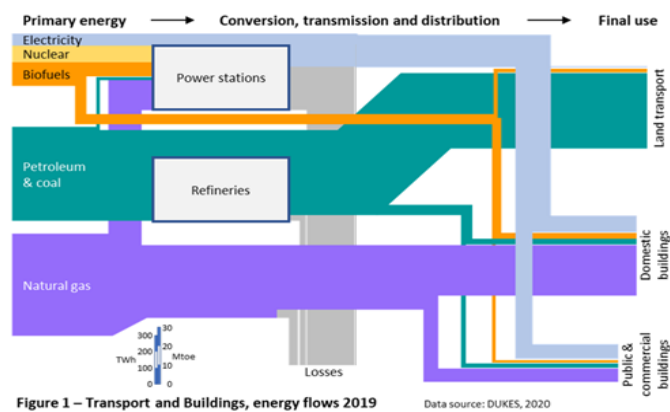
tidal surges. The lecture concentrated on CO₂ emissions, as the major contributor to Greenhouse Gas emissions. The following two charts show the source of these emissions and how they have changed over the last ten years.



Little change with buildings and transport but good progress with energy supply using wind, solar, changing from coal to gas and some improved efficiencies. These are territorial emissions and under the Climate Change Act, imported emissions representing 40% of our total are reported in the source countries. Shipping and air transport are not reported at all. The CO₂ emissions are dominated by cars for transport and domestic buildings for buildings. Electric cars represent a reduction, but they are heavier vehicles, and the embodied carbon of the batteries alone is the same as petrol and diesel cars. There are also issues with the mining of the raw materials for the batteries. The next technological challenge for cars is the further development of the Hydrogen Fuel Cell which overcomes battery problems of range, re-fuelling, and payload. Fuel cell hydrogen cars are already on the roads, and you can fill up with hydrogen at the Cobham service station on the M25, but for the public these cars are some way off. The third and potentially significant reduction in emissions associated with cars is to use them less! For buildings the first and biggest issue is the large stock of poorly insulated homes and until this issue is addressed it is difficult to take advantage of the more efficient heating methods. New homes can perform well but

the building regulations require improvement. Philip showed the audience details of his three-year-old house where it is well insulated and almost airtight and using heat recovery ventilation and heat pumps for heating. In 2022 the house used 8000kWh of electricity compared to 24000kWh of gas and electricity for the average house of similar size.

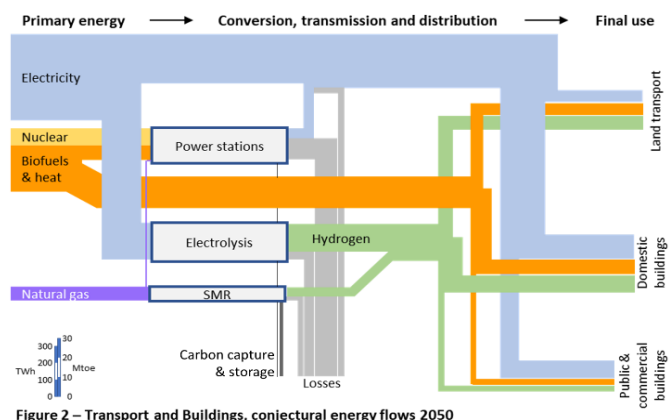
The key is the total elimination of CO₂ emissions. The following chart which again



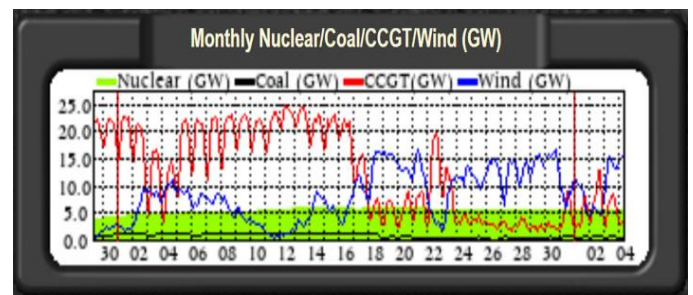
concentrates on transport and buildings shows the journey of energy source through final usage in 2019 with 78% of the source coming from fossil fuels. This shows the dependency that we have on petrol, diesel, and gas and not surprisingly the difficulty there will be to stop using them.

The next chart shows a 'very speculative' how the same scenario might look in 2050.

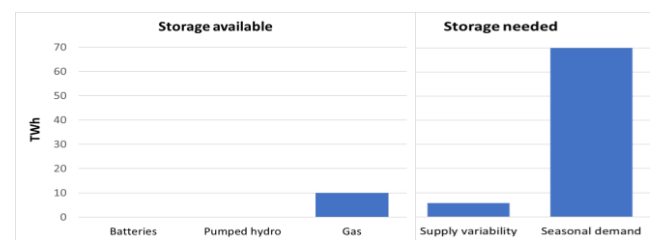
The first thing to note is that a lot less energy is being used, the most beneficial way to reduce dependency on hydrocarbons. The second is that most of the energy source is



now electricity from Nuclear and renewables, mainly wind with contribution from solar, biofuels, hydro and tidal. Both these charts show the total energy flow for transport and buildings from source to final use, but they do not reflect the intermittency of the renewables source and the seasonal and diurnal fluctuation in demand. As an example, the following chart, covering a one-month period, shows the intermittency of wind generation (blue line) and the changes necessary in Combined Cycle Gas Turbine generation to cope with this intermittency and fluctuations in demand (red line).



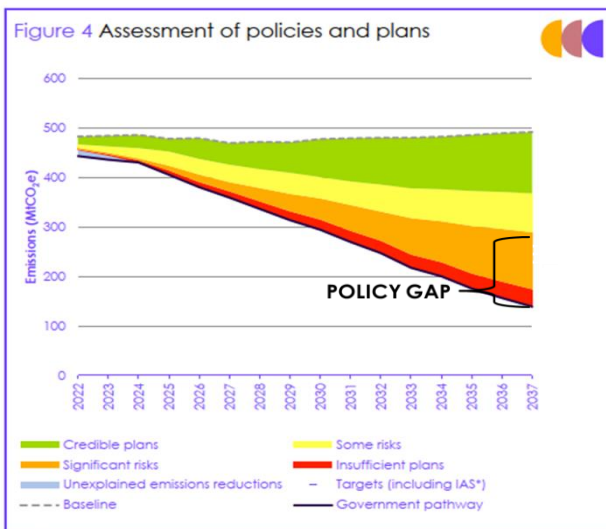
The seasonal fluctuation is even greater with demand in the winter, three times the minimum summer demand. We have some ways of storing energy that can be converted into electricity to address these variations, but the current storage capacities are tiny compared to the requirements. Dinorwig is the largest pumped storage facility in the UK and the largest battery storage is located near Hull.



This chart shows the huge amount of storage required and an interim measure could be to store the hydrogen from the Electrolysis and SMRs shown in the earlier 2050 scenario chart. There are a couple of options where this amount of energy might be stored, one;

depleted natural gas storage and two; using salt domes which exist in the North of England. Another method of reducing energy usage by efficiency is the use of District Heat Networks. Denmark is a good example of this where 65% of its citizens are served by heat networks, compared to 2% in the UK. One of the largest district heat networks in the UK is in the city of London. The UK is missing a trick where the use of area networks has the potential to significantly improve efficiency.

ARE THERE GROUNDS FOR OPTIMISM? YES - the post fossil fuels; more complex energy system produces opportunities for synergies and optimisation. The UK government's policies and intentions are good and their targets world leading. The bad news is that implementation is falling behind and some delays are being introduced such as the production of IC cars and vans and gas boilers. Some delays are not necessarily bad, as setting unrealistic targets is not the way forward.



The Government must lead with clear, consistent overarching plans that will then attract investment. The lecture concluded with a question-and-answer session and a vote of thanks given by Graham Owens, who emphasised some of the actions that all of us can take.

Ron Walker

New Members

John Chandler is retired but previously a Parole Board Judge after a career in the RAF.

Darren McClure is a Chartered Civil Engineer with SNC Lavalin/ Atkins.

Hugh Deighton before retirement Programme Director at CGI (previously Logica).

New Ames

Paddy Manning is the wife of Dr J T Manning

Ann Nuttall widow of Brian Nuttall

RIP

Brian Nuttall was a Fellow of the IEE (now IET), Member of the CIBSE and a Liveryman of the Worshipful Company of Engineers. Manager/Director on the NE Operational Board of the PSA, Dept of Environment.

John Mott was a Fellow of the Royal Academy of Engineering who died the day before his 96th birthday.

David James was a Fellow of the ICE, a Member of CABE and the Worshipful Company of Engineers. Before retiring he was a Consultant/Adviser to the Secretary of State for Transport and the Mayor of London.

Mike Dunn was a Member of the Royal Aeronautical Society and before retirement Vice President, Anti-Vibration Aerospace at Hutchinson SA, France.

Our thanks are due to those who have contributed to this newsletter. The editor welcomes contributions on matters that relate to the objectives of the Société. Email: paulgerrard24@gmail.com