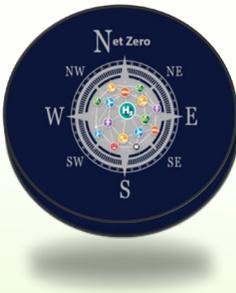


GENCOMM, THE STORY SO FAR...

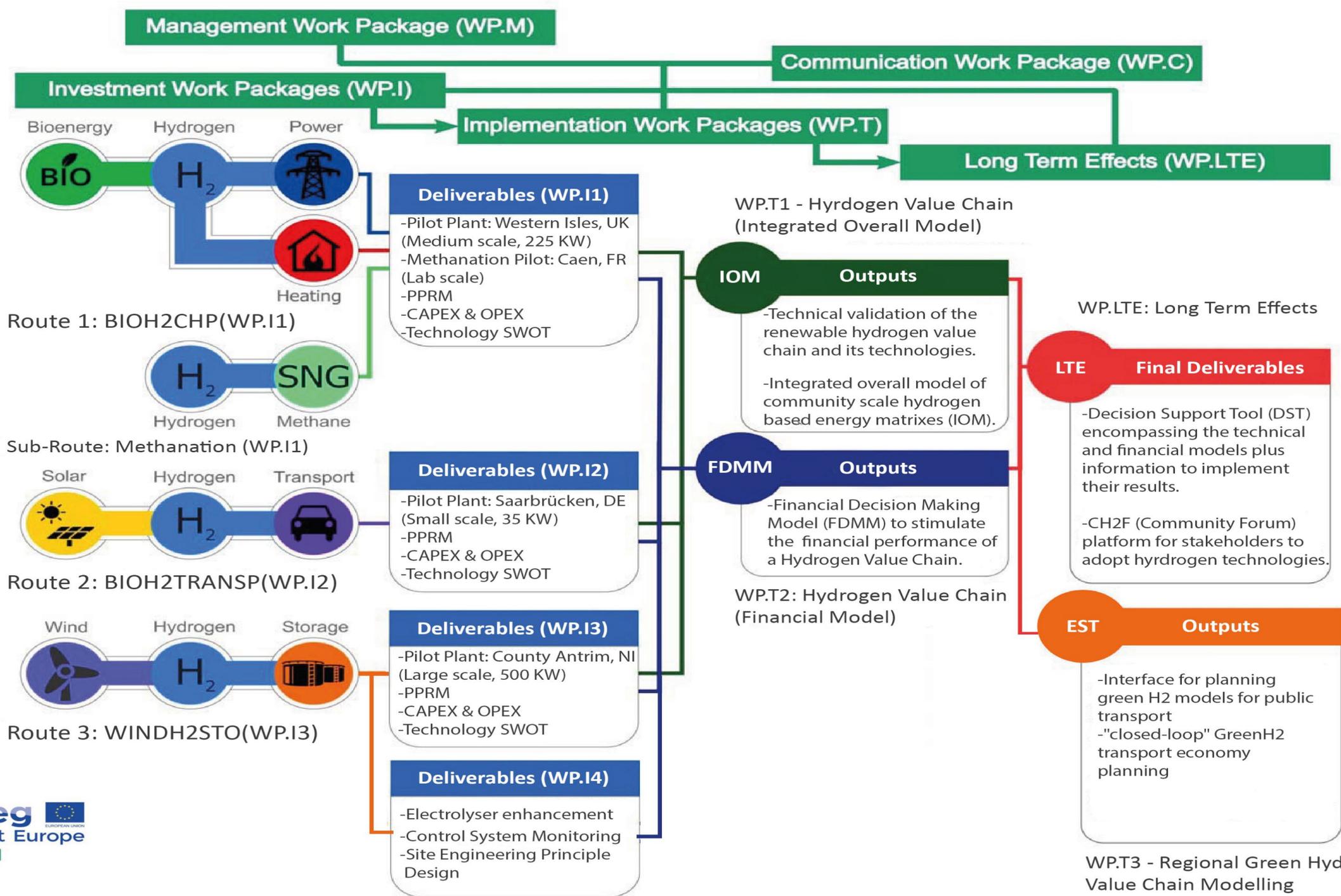
PAUL MCCORMACK

INNOVATION MANAGER BELFAST MET



GENERATING ENERGY SECURE COMMUNITIES

- ▶ GenComm bid commenced 2016
- ▶ Communities especially in remote areas, face multiple challenges to become energy secure and sustainable.
- ▶ Growth in electricity from renewable sources is stalling due to intermittency, grid restrictions, curtailment, and high costs.
- ▶ Sustainable energy to supply the transport sector and heating demand are even further underexploited.
- ▶ GENCOMM will address these issues by developing a sustainable, renewable community-scaled, hydrogen (H₂)-based, energy model based on the results of 3 pilot plants that will use local renewable sources to supply electricity, heating and transportation fuels.
- ▶ The main output of the project is an H₂-based energy model. The second output is the adaptation of the model The final output is the creation of an H₂ stakeholder's forum.



Management Work Package (WP.M)

Communication Work Package (WP.C)

Investment Work Packages (WP.I)

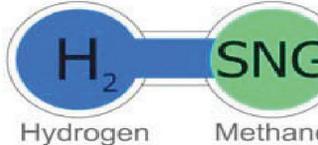
Implementation Work Packages (WP.T)

Long Term Effects (WP.LTE)

Bioenergy Hydrogen Power



Route 1: BIOH2CHP(WP.I1)



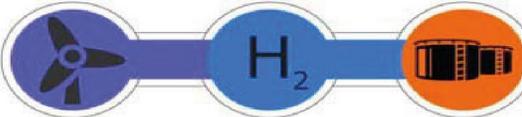
Sub-Route: Methanation (WP.I1)

Solar Hydrogen Transport

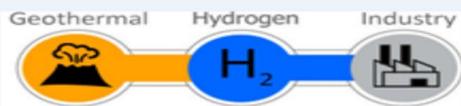


Route 2: BIOH2TRANSP(WP.I2)

Wind Hydrogen Storage



Route 3: WINDH2STO(WP.I3)



Route 4: GEOH2IND

Deliverables (WP.I1)

- Pilot Plant: Western Isles, UK (Medium scale, 225 KW)
- Methanation Pilot: Caen, FR (Lab scale)
- PPRM
- CAPEX & OPEX
- Technology SWOT

Deliverables (WP.I2)

- Pilot Plant: Saarbrücken, DE (Small scale, 35 KW)
- PPRM
- CAPEX & OPEX
- Technology SWOT

Deliverables (WP.I3)

- Pilot Plant: County Antrim, NI (Large scale, 500 KW)
- PPRM
- CAPEX & OPEX
- Technology SWOT

Deliverables (WP.I4)

- Electrolyser enhancement
- Control System Monitoring
- Site Engineering Principle Design

WP.T1 - Hydrogen Value Chain (Integrated Overall Model)

IOM Outputs

- Technical validation of the renewable hydrogen value chain and its technologies.
- Integrated overall model of community scale hydrogen based energy matrixes (IOM).

FDMM Outputs

- Financial Decision Making Model (FDMM) to stimulate the financial performance of a Hydrogen Value Chain.

WP.T2: Hydrogen Value Chain (Financial Model)

WP.LTE: Long Term Effects

LTE Final Deliverables

- Decision Support Tool (DST) encompassing the technical and financial models plus information to implement their results.
- CH2F (Community Forum) platform for stakeholders to adopt hydrogen technologies.

EST Outputs

- Interface for planning green H2 models for public transport
- "closed-loop" GreenH2 transport economy planning

WP.T3 - Regional Green Hydrogen Value Chain Modelling

ADVISORS, ASSOCIATES, ACOLYTES, AUXILIARIES.....



Steering Committee

Associate Partners

Partners



- Andrew Morrison
- Chris Corken
- Damian Duffy
- David Rooney
- David. Strain
- Declan. McGarrigle
- Edward Kerr
- Emma Hyland
- Emma O'Kane
- Jane Denvir
- Judith Wilson
- Kevin Hegarty
- Lisa Kelly
- Mark Palmer
- Marie Skelton
- Mark Welsh
- Martin Doherty
- Clare McKeown
- Meabh Cormacain
- Rachel Sankannawar
- Sam Knox
- Tim Weir

60 APs from across Europe including;

- Belfast City Council
- Louth County Council
- Mid & EST Antrim Council
- Gas Networks Ireland
- Action Renewables
- Invest NI



GenComm EST to help bus fleets decarbonise globally goes live →

Europe makes hydrogen central to its future energy plans →

Green Economy – Northern Ireland's potential

Clean hydrogen from dirty waters: Galway ANEMEL project to tackle the challenge →

New Hydrogen Taskforce in Luxembourg

UK takes first step to introducing a Low Carbon Hydrogen Certification Scheme →

GenComm Partners research into transport decarbonisation →

Valentia Island project H₂ORIZON selected for European hydrogen project →

GREEN HEADLINES

- ▶ 24 quarterly GenComm H2GO Newsletters
- ▶ 13 white papers
- ▶ 4 Academic papers
- ▶ 10 H2 strategy papers
- ▶ 4 EU energy Week (EUSEW) presentations
- ▶ 200+ articles
- ▶ 4 Webinar series - 20 webinars
- ▶ 85 GenComm press releases
- ▶ Rathlin/Valentia Hylanders, a renewable energy journey of two Irish islands
360° Destination Green©
- ▶ & much more



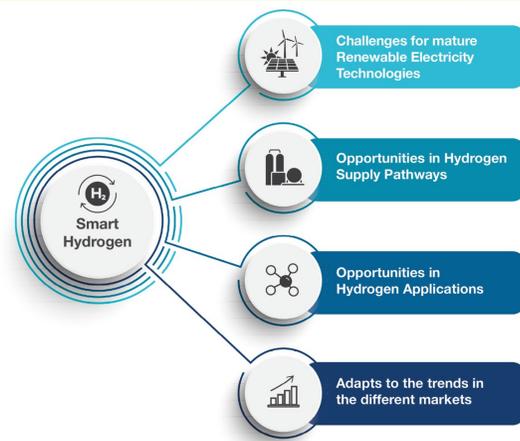
GENERATION H₂ PLUS

HALLIE



H₂AZEL

Hydrogen enAbleD ZeRO Emission supply chains



SH₂AMR[☘]CK

Ireland's Emerald Hydrogen Valley



H₂ORIZON

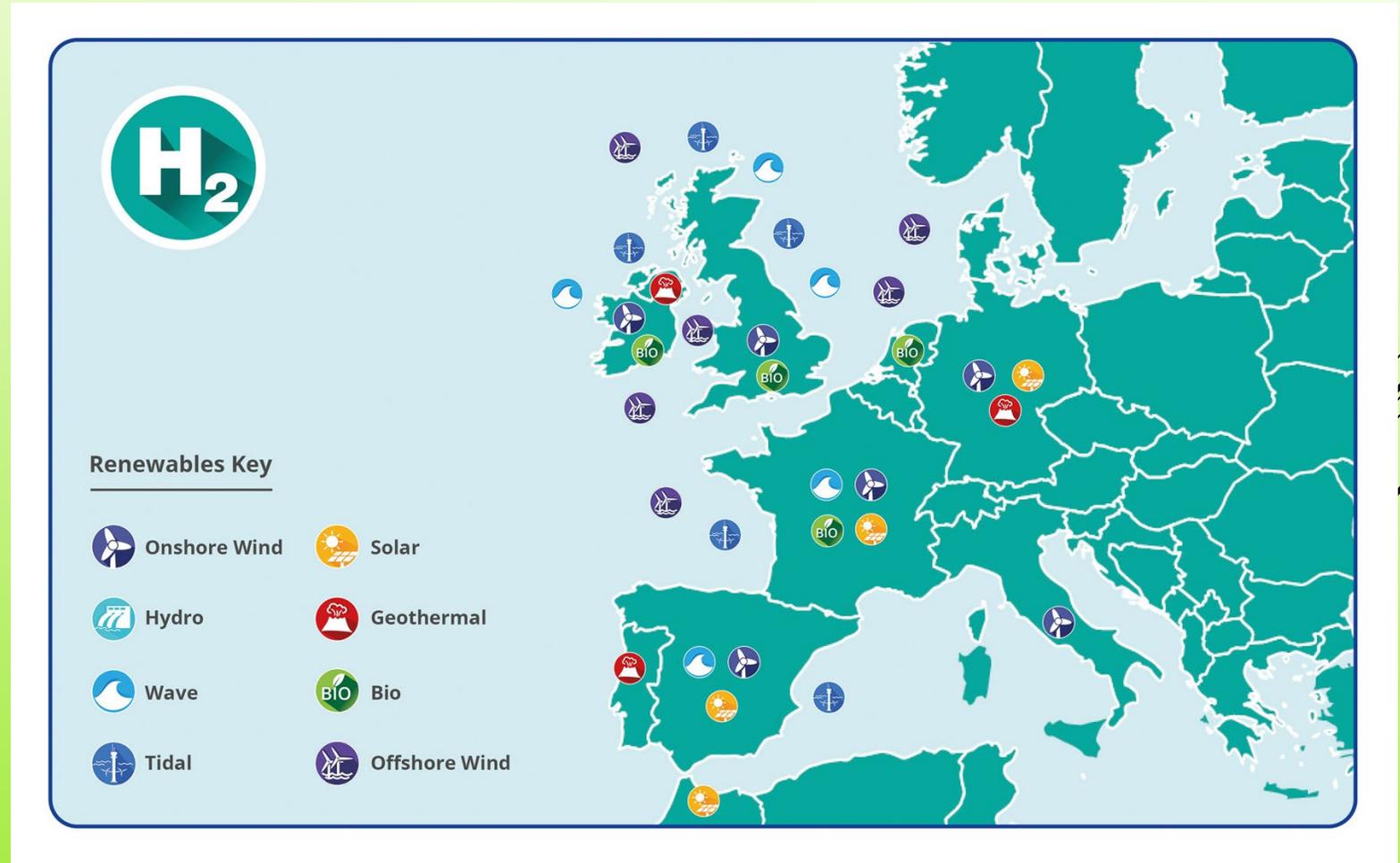


HYDROGEN TOPOGRAPHY



This approach empowers communities across Europe to access hydrogenewables- their own renewable opportunities wind, solar or bio and use these green sources to provide green solutions and end use on their specific journey to net zero.

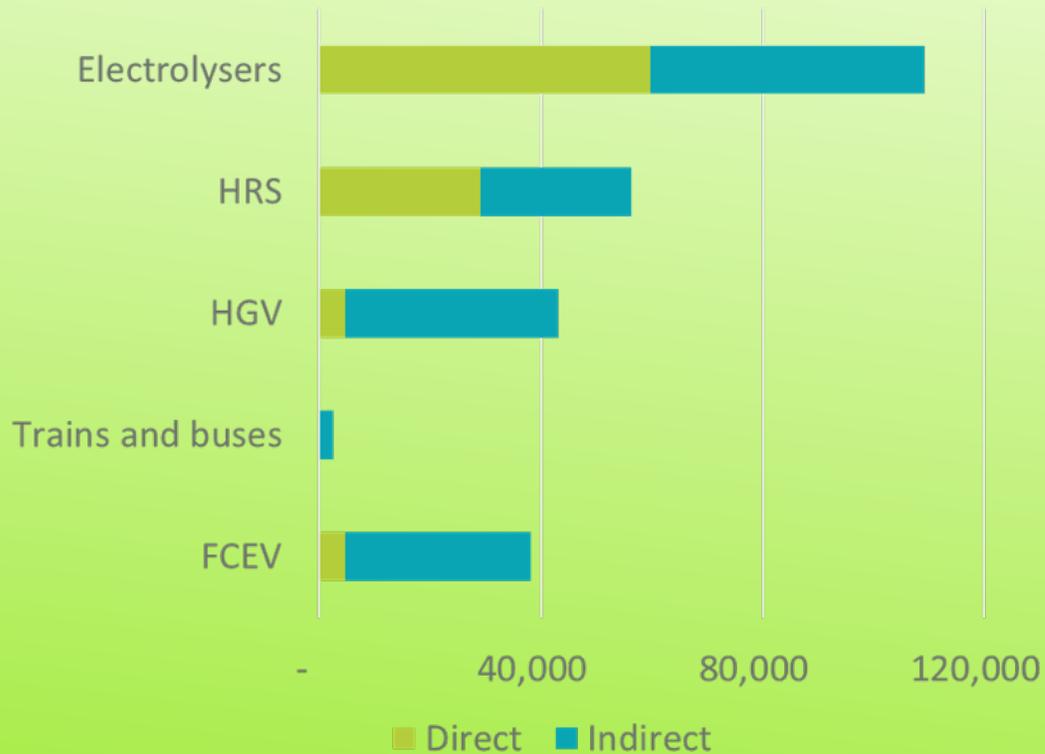
https://hydrogeneurope.eu/wp-content/uploads/2022/05/How-to-deliver-on-the-EU-Hydrogen-Accelerator_Final.pdf





SKILLS THE ENGINE OF THE ECONOMY

Estimated number of jobs created in Europe by 2030



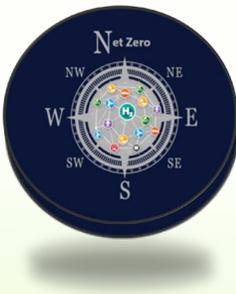
▶ Hydrogen Europe estimates that the sector will generate 249,000 jobs (98,000 direct and 151,000 indirect) by 2030, assuming that by 2030 the levels of key equipment manufacturing will be the following:

- ▶ •Electrolysis: 130 GW
- ▶ •FCEV: 500,000
- ▶ •FC Buses: 3,500
- ▶ •HGV: 60,000
- ▶ •Trains: 100
- ▶ •HRS: 2,500



ENERGY INNOVATION AT SCALE

- ▶ The impact of crises of climate change, energy security and energy cost on global operations, supply chains, and entire populations have shown us that learning fast and adapting quickly is a business necessity.
- ▶ True innovators are using this newfound capacity as a foundation for accelerating change, building advantage, and consolidating success.
- ▶ GenComm epitomises *‘Opportunity Driven Innovation’* a dramatic evolution in enabling more effective, efficient, and predictable innovation.



REPOWERING EUROPE RESKILLING EUROPE

- ▶ Skills - paving the way for a clean Hydrogen economy in Europe
- ▶ Providing workers and industry with the new skills that are required to meet the challenging targets of the Green Transition.
- ▶ The EU is aiming for 1 million highly skilled jobs by 2030 and up to 5.4 million by 2050
- ▶ Green Skills for Hydrogen will help meet REPowerEU targets by fast-tracking the upskilling and reskilling of students and members of the workforce all over Europe. Workers in declining sectors and transition regions will also benefit from upskilling and reskilling opportunities, through VET programmes that will enable them to access new employment opportunities within the Hydrogen sector.

- ▶ Six in 10 workers will require training before 2027, but only half of workers are seen to have access to adequate training opportunities, World Economic Forum Report May 2023.



TRAINING ACCESS



HYDROGEN EVERYDAY VERNACULAR

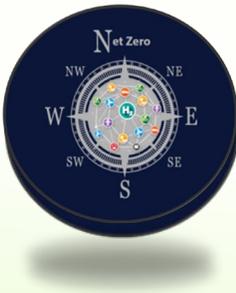
‘Hydrogen is not a silver bullet it is more a silver buckshot.’

- ▶ Mark uses this term to reflect the many solutions where green hydrogen can be utilised in as part of a hybrid solution to achieve net zero by 2050. Mark states *‘Green hydrogen is a key ingredient in the recipe for net zero in our energy mix. As an energy vector it can be used as a single solution or as part of a ‘solution of choice’ or in a power-to-X (P2X) solution where the consumer chooses what energy mix is best suited to their technical, geographical or environmental need. In short green hydrogen has a myriad of applications and is a key energy decarbonisation catalyst closing one of the many gaps in the energy transition strategy’* Mark Welsh Energia Feb 2019

- ▶ Environmental, Social, and Governance (ESG) has gained significant traction as a way to address the climate change and energy impact environmental issues and to ensure sustainable development.
- ▶ Economic growth is something that benefits both companies and local communities, and with this growth tied to a global transition to sustainability and climate action.
- ▶ ESG policies are providing a platform for private entities to collaborate with public sector projects.
- ▶ Green Hydrogen is opening new opportunities on a pathway to public-private partnerships capable of creating lasting positive change.



ECONOMIC OPPORTUNITY & SOCIAL EQUALITY



GLOBAL HYDROGEN

Future growth and success can and will be achieved by exploring mutual opportunities between the

- ▶ European Union Fit for 55 package and REPowerEU plan,
- ▶ USA Inflation Reduction Act,
- ▶ Japan's Green Transformation programme,
- ▶ India's Production Linked Incentive scheme
- ▶ China who is working to meet and even exceed the goals of its latest Five-Year Plan.



SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

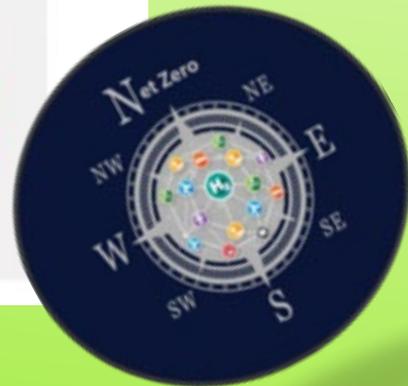
13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS





GENCOMM MEETING BELFAST CITY 2019

THE ENABLING SUPPORT TOOL

THE FIRST STEP TO DECARBONISING YOUR BUS FLEET



Interreg 
North-West Europe
GenComm
European Regional Development Fund

COMMUNITYH2.EU



CLEAN TECHNOLOGY ISN'T NEW

In the early 20th century, the streets of the city of Berlin were cleaned with the help of electric-powered heavy-duty wagons that roamed the city. Believe it or not, electric-powered vehicles have been around a lot longer than we think.

Since the 19th century, electric vehicles have been a known and viable mode of transport, though they were not necessarily the fastest. Electric vehicles eventually fell out of favour as consumers shifted to cheaper, oil-powered cars. Now decades electric vehicles are become popular again.





AGENDA MORNING

Part 1 Deliverables 09:00 - 13:00 hrs

09:00 Welcome address - Paul McCormack Belfast Met

09:15 Tina Black Belfast City Council Lord Mayor

09:20 Powering the Green Economy - Louise Warde Hunter Principal and Chief Executive Belfast Met

09:35 Interreg North-West Europe - Gina McIntyre SEUPB

09:50 Clean Energy - Eva Clymans Senior Project Officer Interreg North-West Europe

10:05 Hydrogen Mobility - William McCullagh General Manager - Translink

10:25 Green Molecules - David Butler Director, SGN Natural Gas

10:45 Q&A

11:00-11:20 Tea/Coffee

GenComm Micro H2 Hubs

o11:20 Wind - Andrew Morrison Energia

o11:45 Solar - Dr Bodo Gross IZES

12:00 The KoNSTanZE /eH2cycle project -Dr Michael Reinstaedtler BOSCH

12:20 GenComm Enabling Support Tool - Branca Delmonte University of Luxemburg, Tadgh Cummins University of Galway, Tim Williamson HY Energy



13:00 Lunch

AGENDA AFTERNOON



Part 2 Influence/Impact 14:00 - 18:00hrs

14:00 Community Hydrogen Forum - Ch2F - Dr Rory Monaghan University of Galway

14:20 SH2AMROCK H2 valley - Ian Williamson HY Energy

14:40 Hydrogen Triple Alliance - Paul McCormack Belfast Met

15:00 Hydrogen Ireland - Mark Welsh H2Irl

15:20 HyLight - Dr James Carton Dublin City University

15:40 Hydrogen Training Academy - Alan Reid Northern Regional College,
Connor Dornan Mid & east Antrim Council

16:00 Tea/Coffee

16:20 Associate Partner presentation Ursula Conlon Louth County Council (TBC)

16:30 Hydrogen Skills FE/HE cohesion- David Rooney QUB, Chris Corken Belfast Met

16:45 Climate Action Plan - Kevin Hegarty DAERA

17:00 Energy transition - Eddie Kerr DfE

17:15 The Green Economy -Sam Knox Invest NI

17:30 Amazing clean energy technologies/communities - to infinity and ...? - Dr Mark Palmer QUB Dr Nicola Barron QUB

17:45 - 18:00 Q&A and Conclusion