Interreg
North-West Europe
GenComm
European Regional Development Fund

EUROPEAN UNION

NEWS
September 2017

Project Summary

Project GenComm will address the energy sustainability challenges of NWE communities through the implementation of smart, hydrogen-based energy matrixes. The project certifies the commercial maturity of hydrogen technologies by implementing three pilot plants, linking the three main NWE renewable sources, Solar Power, Wind Power and Bioenergy, with energy storage and the main forms of energetic demand; heat, power and transportation fuels. Based on the pilot plants; integrated technical and financial simulation models will be developed.

Together, both models will form a Decision Support Tool (DST) that provides a roadmap for communities from transition to renewable, hydrogen-based energy matrixes. The final goal of the project is, through the combination of sources and forms of demand, to lead NWE's road to sustainability while granting hydrogen its position as a commercially viable energy medium for the future.

Project Objective

GenComm will technically and financially validate and model the renewable H2 value chain and adapt it to a DST that leads NWE communities into sustainable, local and autonomous energy matrixes. The DST is directed to community energy stakeholders (utilities, policy-makers and private firms in the energy sector), as the key agents to implement the proposed matrix. The project will first engage energetically and territorial remote communities to then address the rest of NWE.

Project Sub-Objectives

1. Empower communities to implement hydrogen-based energy matrixes to sustainably satisfy their energetic demand.
2. Stimulate the uptake of renewable hydrogen-based technologies by successfully running three demonstration facilities.
3. Establish a strong group of energy stakeholders devoted to, through the use of hydrogen, "sustainabilise" the energy matrix of the NWE region.

Belfast Met leads the way in securing €9.39m funding for energy sustainability project

GenComm Project gets the green light after securing multi-million-euro funding

An energy sustainability project led by Belfast Met has been given the green light after winning an Interreg North-West Europe funding bid for the €9.39m GenComm Project.

Marie-Thérèse McGivern, Principal and Chief Executive of Belfast Met said

> "Belfast Met has always been ahead of the curve. For more than a century we have been upskilling the City's workforce in line with industry need. Leading the way with Linen Manufacturing, through Shipbuilding, Engineering, onward to Data Technologies and now developing new initiatives in Clean Energy Storage. GenComm opens the latest chapter in the Further Education sector; a chapter where FE is recognised as the primary conduit to deliver the technological skills mix required to enable todays industry to deliver tomorrows energy requirements..."

Belfast Met is the first College of Further and Higher Education in Northern Ireland to secure Interreg North-West Europe Programme funding and this is one of the largest EU projects ever secured by an NI led Partnership.

The College, as Lead Partner, is working in conjunction with nine Universities and private companies across Europe to deliver the GenComm Project including: National University of Ireland Galway (ROI), University Institut National des Sciences Appliquées Rouen Normandie (France), IZES gGmbH (Germany) Vrije Universiteit Brussel (Belgium); ENSICAEN – CNRS (France); Pure Energy Centre (Scotland) and three further NI organisations; Viridian, TK Renewables, and Williams Industrial Services.

From left: Paul McCormack, GenComm Project Manager, Finance Manager Peter Smyth, Marie-Therese McGivern, Principal & Chief Executive of Belfast Met, Glenny Whitley, GenComm's Operational & Communications Manager and Damian Duffy, Belfast Met Director Of Development

GenComm aims to answer the energy sustainability challenges facing remote communities across North-West Europe through production and storage of renewable hydrogen.

GenComm will develop three pilot facilities fuelled by Solar Power, Wind Power and Bioenergy to measure their ability to produce and store hydrogen, together with its viability as a sustainable energy solution for heat, power and fuel for communities across North-West Europe.

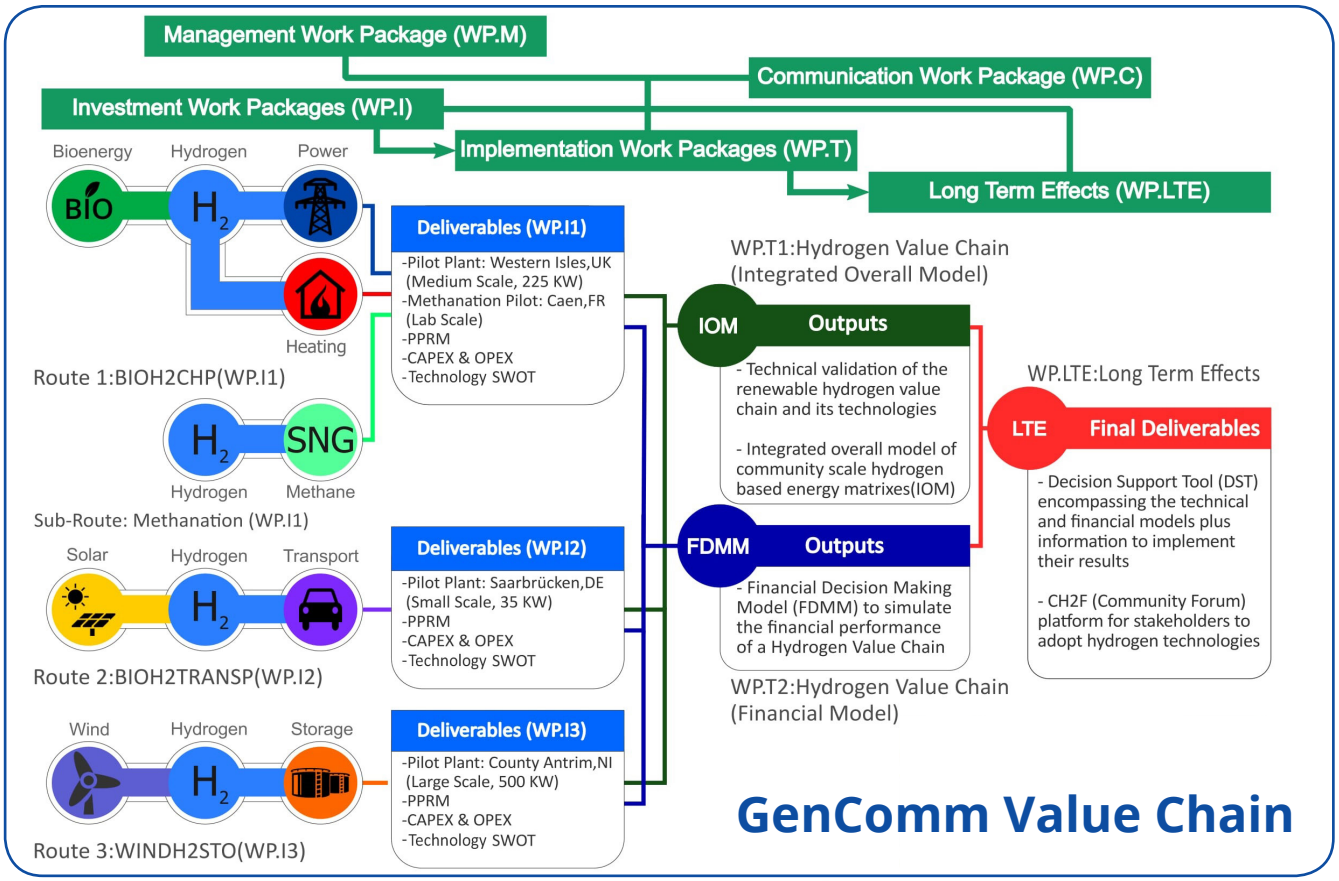
On being awarded the Interreg North-West Europe Programme funding; Belfast Met Director of Development, Damian Duffy, said: "Belfast Met is delighted to secure funding from the Interreg North-West Europe Programme for this exciting energy sustainability project. Securing this project best demonstrates the contribution which FE Colleges can make to the development of applied innovation solutions working in partnership with researchers and industry.

"This is the largest award of EU funding Belfast Met has ever secured and the first time a College in Northern Ireland has been awarded funds from the Interreg North-West Europe Programme.

"This is testament to the strength and innovative nature of the project and the high calibre of partner organisations as we seek to work together to deliver hydrogen based solutions that will help address energy sustainability challenges to communities across North-West Europe."

For more information on the GenComm Project contact:

Glenny Whitley
Communications Manager, GenComm
Tel: +44 (0) 28 90 26 52 76
email: gwhitley@belfastmet.ac.uk
www.nweurope.eu/gencomm



Partners:

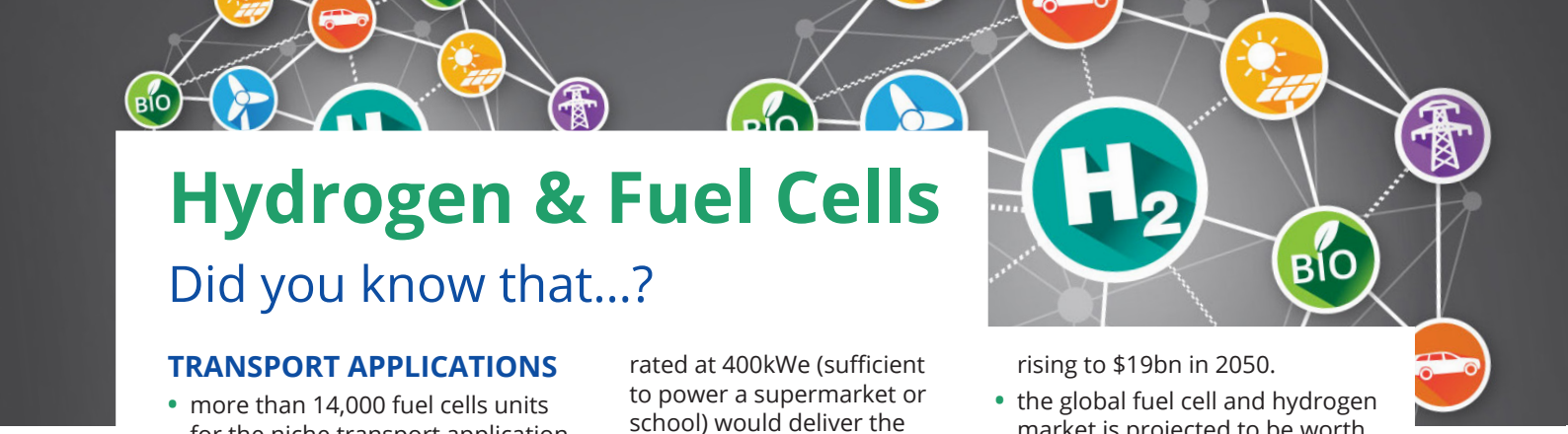
Belfast Met, NI
Energia, NI
Williams Industrial Services, NI
TK Renewables, NI
National University of Ireland Galway
Pure Energy Centre, Western Isles, Scotland
BURN Joint Research Group, Vrije Universiteit Brussel
IZES gGmbH, Germany
ENSICAEN, Caen, France
INSA Rouen Normandie, France

Associate Partner Meetings

14 Dec 17 .....IZES (GER)
14 Mar 18 .....NUIG Galway
13 Jun 18.....Pure Energy Centre (Scotland)
16 Oct 18 .....INSA (France)
12 Dec 18.....BURN (Brussels)
13 Mar 19 .....Energia (NI)
12 Jun 19.....Pure Energy Centre (Scotland)
11 Sep 19 .....IZES (Germany)
11 Dec 19.....ENSI Caen (France)
11 Mar 20 .....Belfast Met (NI)

Associate Partners:

Newry & Mourne and Down District Council, Northern Ireland
Belfast City Council, Northern Ireland
Invest Northern Ireland, Northern Ireland
Mid & East Antrim Borough Council, Northern Ireland
Dunloy Development Association, Northern Ireland
Bombardier Aerospace, Northern Ireland
SONI Ltd (System Operator Northern Ireland), Northern Ireland
Hy-Energy, Northern Ireland
Mutual Energy, Northern Ireland
Green Lizard Technologies Ltd, Northern Ireland
Causeway Coast and Glens Council Northern Ireland
Action Renewables, Northern Ireland
Louth County Council, Ireland
Claremorris & Western District Energy Cooperative, Ireland
Sustainable Energy Authority of Ireland, Ireland
Templederry Community Wind Farm, Ireland
Gas Networks Ireland, Ireland
Tipperary Energy Agency, Ireland
Energy Co-operatives Ireland, Ireland
Western Isles Council, Scotland
UNST Partnership, Scotland
Scottish Crofting Federation, Scotland
LEWS Castle College, Scotland
Soil Concept SA, Luxembourg
Avenhyr Conseil, France
RENDA SA, Luxembourg
Ministerium fur Umwelt, Energie, Ernahrung und Forsten, Rhienland Pfalz, Germany
GIU Gesellshaft f□r Innovation und Unternehmensf□rderybg mbH (GIU) Germany
Stadtwerke Saarbrucken Consulting GmbH, Germany
Stadtwerke Merzig GmbH , Germany
STEAG New Energies GmbH, Germany
Stadtwerke Homburg GmbH, Germany
Ministerium f□r Wirtschaft, Arbeit, Energie und Verkehr Saarland, Germany
Reutlingen Research Institue, Germany
da Vinci Association of Engineers, Architects, Scientists, Industrials, Luxembourg
EWR Aktiengesselschaft GmbH, Germany
Badenova AG & Co. KG, Germany
AREVA GmbH, Germany



Hydrogen & Fuel Cells

Did you know that...?

TRANSPORT APPLICATIONS

- more than 14,000 fuel cells units for the niche transport application have been sold internationally, including materials handling devices such as forklifts
- 75% of fuel cells systems manufactured for niche transport applications in the period 2008-20092 were produced in Europe
- fuel cell cars powered with renewable hydrogen have zero well-to-wheel emissions
- fuel cells produce between 0g (for hydrogen produced from renewable sources) and ~85g (for hydrogen produced from fossil fuels) of CO2/km, compared to a gasoline internal combustion engine, which produces approximately ~170g of CO2/km
- hydrogen fuelled transport fuel cells improve general air quality by eliminating oxides of nitrogen and particulate matter from exhausts
- neither biofuels, Battery Electric Vehicles (BEVs), Plug-in Hybrid Electric Vehicles (PHEVs) nor Fuel Cell Vehicles (FCVs) can be commercialised in large scale without significant further development
- by 2017, nearly 50,000 California customers could be driving fuel cell vehicles
- to date, 250 demonstration fuel cell vehicles—passenger and transit buses—have been deployed on California's roads
- a mass produced fuel cell vehicle with 350-mile all-electric range is projected to cost less than plug-in hybrid and full battery-electric vehicle
- Germany already has over 300 fuel cells vehicles on the road.
-

STATIONARY APPLICATIONS

- more than 11,000 small stationary fuel cells units have been deployed globally
- in 2008, the installed capacity of fuel cells in large scale stationary applications reached 170MWe
- Japan has 5,862 stationary fuel cells units under operation
- 6,000 fuel cell CHP units, commercially available today, rated at 400kWe (sufficient to power a supermarket or school) would deliver the same level of
- CO2 reductions as the proposed Severn Barrage, and could be in place in 5 years at more than 3 times lower capital cost
- if 5.6 million homes had microCHP installed by 2020, the saved CO2 emissions would be equivalent to the emissions from eight new 750MW Combined Cycle Gas Turbine power stations
- a 2kW stationary fuel cell CHP unit can save up to 5 tonnes of CO2 per household per annum depending on the installation
- fuel cells enable wider uptake of combined heat and power generation at 80-90% overall efficiency.

PORTABLE APPLICATIONS

- more than 10,000 fuel cells units for portable applications were sold in 2008 alone

HYDROGEN

- more than 150 hydrogen refuelling stations have been in operation worldwide
- for a given quantity of energy storage, compressed hydrogen storage costs are expected be 1/20 that of advanced lithium-ion batteries ($15/KWH vs. $320/KWH)
- European research conducted as a part of the European HyWays project has shown that hydrogen deployment could reduce oil consumption in road transport by 40% by 2050

FUEL CELL AND HYDROGEN INDUSTRY

- the global fuel cell market could be worth over $26bn in 2020 and over $180bn in 2050. The UK share of this market could be $1bn in 2020 rising to $19bn in 2050.
- the global fuel cell and hydrogen market is projected to be worth $8.5billion (CAD) (£4.89billion) in 2016
- the fuel cell sector is expanding rapidly, and experienced a 22% gain in fuel cell specific employment in 2006, building on a 12% increase in 2005
- between 2003 and 2008 the fuel cell and hydrogen industry created 2,000 green collar jobs in Canada alone
- In the USA, more than 630 companies and laboratories in 47 states are investing $1 billion a year in fuel cell and hydrogen
- in 2008, approximately 3,870 organizations worldwide were involved in fuel cells, hydrogen energy and related nanotechnology; associated spending was an estimated $8.4 billion.

RESEARCH AND ACADEMIA

- in 9 universities in the UK has active R&D programmes in hydrogen and 1 in 20 undertakes research into fuel cells
- in 2008, this community provided 344 full time jobs and postdoctoral positions
- total university funding in FY2008 for hydrogen and fuel cell research topped £29 million; over 9% of this came from industry, and well over 75% came from UK sources
- 15 spins out have been created so far from the research being done in UK universities, with at least 5 more in the pipeline

FUEL CELLS AND GREEN JOBS CREATION

- a DOE study estimates a net increase of fuel cell related jobs of 361,000 in the US by 2050
- California alone could see up to 25,000 new jobs within the fuel cell supply chain by 2050
- the global fuel cell industry could create 700,000 green manufacturing jobs over the next decade