

**ESTEP
Highlights
2018**



**European Steel
Technology Platform**

Barilla Pavilion, a proposal by Philippe Samyn and Partners



Sir Philippe Samyn is a Belgian architect and civil engineer whose style in the construction of monumental structures is characterised by a significant use of wood, glass and steel. His projects show many inspiring examples of innovative steel solutions and applications. One example is a proposal for the [Barilla Pavilion](#), a cultural centre project in Italy, proposed by the Samyn and Partners architects & engineers association.

This proposal is an outstanding engineering art offering a basket of biodiversity possibilities for exhibitions, theatres, events, meetings as well as an aviary and a butterfly conservatory. Having a geometric layout and a translucent ceiling, the idea of the Pavilion is to use 100% of dismantlable and recyclable material. The use of very high strength steel could enable to build ultra-light, economic structures braced with islands of columns in an ocean of traction cables, such as in this proposal.

Foreword

We jointly take this opportunity to thank all those who have supported, and cooperated with, the European Steel Technology Platform (ESTEP) during an intense 2018.

This was the year ESTEP became a legal entity. With 13 big players in the European steel sector as members, the founding was a great success, taking place on 18 March. ESTEP committed to accelerate and intensify its work on the implementation of the Strategic Research Agenda by focussing on collaborative projects and tasks. This new way of cooperating, alongside the updated internal structure, has proven to be a successful approach thus far. By October 2018, more than ten tasks had been approved to become projects.

At the same time, ESTEP continued to provide suggestions about how to further improve the European framework in order to allow a sustainable transition of the European steel industry towards carbon neutrality. The engagements in contractual partnerships, as well as the shaping of European Partnerships within Horizon Europe, were core activities.

We look forward to a challenging business year in 2019 with several important decisions ahead. Specifically, these include the successor of Horizon 2020 and its support for the steel sector along with other European instruments such as the ETS Innovation fund or Important Projects of Common European Interest (IPCEI) and the continuation of the transition of the European steel industry towards carbon neutrality. We would be delighted if the ESTEP community could count on your contribution within the Focus Groups, the Steering Group and beyond.

This report describes the main activities and meetings held in 2018. It then outlines the Working Groups' efforts and engagements, as well as ESTEP's involvement in different platforms, initiatives and programs. It finally gives a brief overview of activities and actions planned for 2019.

On behalf of ESTEP,



Klaus Peters, Secretary General, ESTEP



Carl De Maré, Chairman, ESTEP

Activities in 2018

January

EU Steel seminar: The wind of change

On 31 January 2018, more than 100 stakeholders and decision-makers discussed the questions of steel in Europe at a [seminar](#) organised by the European Commission's Directorate General for Research & Innovation (DG RTD). The seminar shed light on the opportunities offered by the Research Fund for Coal and Steel (RFCS), Horizon 2020 and the Innovation Fund. It also focused on energy aspects in future steelmaking and energy market applications. The 'European joint steel initiative', which outlined the different technological paths towards cleaner, more efficient and competitive European steelmaking, was presented by ESTEP and EUROFER. This has allowed good opportunities for exploration and discussion with high-level representatives from European Commission's Directorate General Climate, Growth, Trade and Energy.

February

Second European Industry Days

On 22-23 February, the European Commission hosted the second edition of the [European Industry Days](#). This high-level conference updated stakeholders on the Commission's strategic approach to industrial policy and actions to further develop industrial competitiveness in Europe.



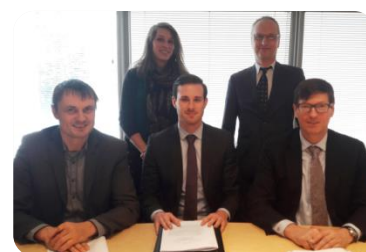
The steel sector contributed considerably, in three sessions. ESTEP, together with EUROFER, held a workshop on 'European steel industry main pathways towards the smart, low carbon industry of the future'. The session on 'Sustainable industry', in which Carl De Maré, ESTEP President, was one of the

keynote speakers as well as the EMIRI workshop on 'EU leadership in clean energy & clean mobility technologies - The strategic role of advanced materials' have highlighted the steel sector.

March

Incorporation of ESTEP AISBL

On 20 March 2018, [ESTEP](#) began its new life as an independent legal entity. 13 leading industrial and research stakeholders from the wider steel value chain across Europe were able to legally establish ESTEP as an international non-profit organisation under Belgian law (AISBL).



ESTEP already had a track record of success over a number of years, during which it has operated under the umbrella of the European Steel Association (EUROFER). Since the incorporation, ESTEP continued its cooperation with its sister organisation, EUROFER.

April

European Energy Forum dinner debate

The dinner debate of the European Energy Forum 'Transitioning to low-emission steel: making the energy market fit for the industrial future' took place on 20 April 2018.

During this debate, chaired by MEP Jerzy Buzek, representatives of the steel and energy sectors alongside with representatives of the European institutions discussed how the EU and the Member States could support the roll out of clean energy sources distributed through reliable infrastructure in order to make the potential transition towards low-emission European

steel value chains a reality. The ‘EU Steel Masterplan’ and the ‘Big Scale Initiative’ were well perceived.

April

ESTEP – K4I dinner debate: Where is the industry in FP9?

ESTEP co-organised a dinner debate with EMIRI, CEFIC, SPIRE and EURAMET at the European Parliament on 25 April 2018. The dinner debate was hosted by Ivana Maletic MEP, with the intention to discuss ‘[Where is industry in FP9?](#)’



The discussions involved members of the European Parliament’s Industry Committee as well as speakers from industry. They provided proposals for clear objectives and actions in the long-term vision of the EU’s new industrial policy strategy and how the next framework programme would have support this strategy. The steel sector was represented by Felix Bayon from Sidenor.

Harmoni Project

ESTEP hosted the HARMONI workshop, which is entitled ‘Harmonised assessment of regulatory bottlenecks and standardisation needs for the process industry’ on 26 April 2018. This workshop, a SPIRE funded project, was about identifying non-technical barriers for innovation in the EU and how to overcome them. The steel sector provided examples related to Carbon Capture Usage and the Renewable Energy Directive II.

May

Eurosteelmaster

The Xth edition of the [Eurosteelmaster](#), the advanced training course for the European steel sector, was successfully held from 14 to 18 May in Taranto. The course was organised by RINA and the Centro Sviluppo Materiali (CSM) with the support of the European Commission, EUROFER, Federacciai, ESTEP,

Confindustria Taranto, and Ordine degli Ingegneri di Taranto. During this training course, steel production and application aspects as well as relevant external influences were discussed. A workshop on Intelligent Integrated Manufacturing in the steel industry was also held.



June

European Steel Day: Steel, sustainability and low-carbon innovation

Hosted by the European Steel Association (EUROFER), the [European Steel Day 2018](#) took place on 7 June 2018. This high-level conference explored how to innovate the way towards the low-carbon transition that will require new technologies and an emphasis on sustainability and investment. Steel, sustainability and low-carbon innovation were both theme of European Steel Day 2018 and the European steel industry’s central mission. The various routes for carbon reduction, through both Smart Carbon Reduction and Carbon Direct Avoidance – including some of the challenges these approaches face were showcased. Additionally, the conference debated how sustainability in the industry could be further improved within the circular economy.

October

ESTEP Steering Group

On 23 October, the last Support Group meeting took place and was transformed into the Steering Group. This was the kick-off meeting of a new internal structure as well as the launch of tasks generation. More than 10 tasks were approved to become projects.

November

Mirror Group meeting

The meeting between the ESTEP community and representatives of Member States was

hosted within the Permanent Representation of Austria on 13 November 2018. The workshop addressed the technologies needed for the transition of the steel industry towards carbon neutrality.

November

Digital twin workshop

The ESTEP Focus Group I2M - Smart factory, integrated intelligent manufacturing for steel production, presented the workshop 'Digital Twin technology in the steel industry: from concept to operational benefits'. This first ESTEP workshop was

held in Charleroi on 21 and 22 November.



During the [workshop](#), presentations and round-table discussions covered the theoretical background of Digital Twins, showing industrial applications and R&D projects on the topic of Digital Twins that are relevant to the Steel Sector as well as to other industries.

December

ESTEP General Assembly

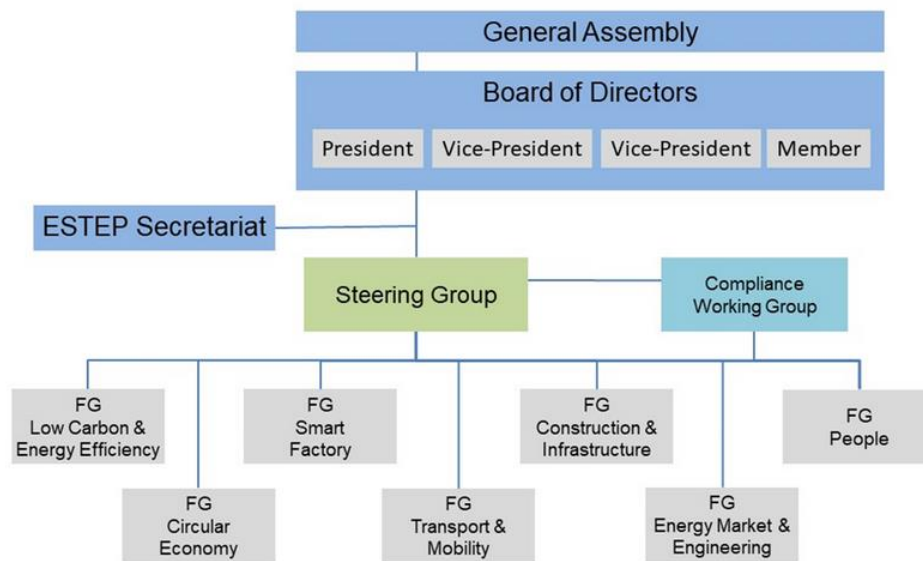
After the incorporation in March, the first ESTEP General Assembly took place on 4 December. The objective of required quorum of members in attendance was met. The priorities and the activities for 2018 were discussed along with the new objectives and future activities for 2019.

Suggestions for further reading

- [The Circular Economy](#): a powerful force for climate mitigation. Transformative innovation for prosperous and low-carbon industry, by Material Economics (see cover on the right)
- [A Clean Planet for all](#). A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, by European Commission
- [Study](#) '10 trends reshaping climate and energy', by European Political Strategy Centre (see cover on the right)
- [Report](#) 'Industrial Value Chain: A Bridge towards a Carbon Neutral Europe', by Vrije Universiteit Brussel (VUB) - Institute for European Studies (IES) (see cover on the right)
- [Mazzucato Report](#) 'Mission-oriented research & innovation in the European Union. A problem-solving approach to fuel innovation-led growth', by European Commission (DG RTD) (see cover on the right)
- [Report](#) from the high-level strategy group on industrial technologies: 'Re- finding industry', by European Commission (DG RTD)



New ESTEP organisation



Since its incorporation into an AISBL in March 2018, ESTEP modified its structure and governance during the year.

ESTEP is governed by a Board of Directors, with Carl De Maré as President, Axel Eggert and Roberto Pancaldi act as Vice-Presidents and Göran Carlsson is a member.

Other modifications throughout the second

part of 2018 included the transition of the Support Group towards the Steering Group, the change of Working Groups to become Focus Groups and the creation of the Compliance Working Group.

Focus Groups

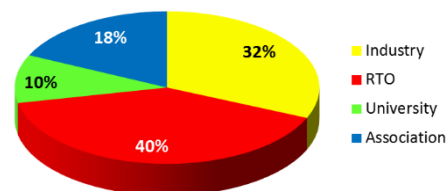
Three Support Group (SG) meetings took place in 2018. The exchange between the Working Groups (WG), the Heads of Research of steel producers and key representatives of steel stakeholders, allowed providing valuable feedback to the work programme of the Working Groups. The chairman of the SG, Michael Steinhorst, strongly supported the cooperation between the Working Groups as today's challenges are often broader than the scope of one single working group.

In 2018 two additional meetings were also held on the reorganisation of ESTEP's internal structure. In this framework, the Support Group became the Steering Group. The Working Groups became Focus Groups. The major objectives of those meetings were to define and launch the new structure, which also means to start working with a task approach. Twenty-six tasks were identified and ten were prioritised, covering all Focus Groups.

Working Group Planet – Focus Group Circular economy

During 2018, the main activities on the subjects of sustainability and circular economy for the Working Group Planet were covered in three meetings (March, May and October). The main inputs were a contribution to a RFCS priority, the search of opportunities for preparation of common research proposals, input to the new ESTEP internal structure and links within its stakeholders.

Participation in the Working Group is stable with about 11 active members representing universities (10%), RTOs (40%), industries (32%) and associations (18%).



Research Fund for Coal and Steel (RFCS) priority

Thanks to the contribution of all WG participants, the priority was revised and underlines the importance of including the re-used/valorised solid, liquid and gaseous phases in the by-products streams. Valorisation of by-products is emphasised as an expected outcome both in the form of internal reuse and in the form of products. An improved and more precise definition of waste heat has also been provided.

Research proposals

The RFCS ECOSLAG project proposed in 2017 was approved in 2018, while the proposal dealing with heat recovery from EAF off-gas and EAF dust recovery (SUPEREAF) submitted was not selected in spite of its high score (9/10).

In 2018, the WG prepared two flag RFCS projects: the dissemination project of REUSTEEL, which was already submitted last year and was improved. The original scope was enlarged including re-use of by-products as alternative C-sources partnerships, and ESTEP joined as a subcontractor. A new proposal name *iSlag* has also been submitted. The project aims at improving the valorisation of the slag coming from the electric steelmaking process route, supporting good practices in the steelmaking process and exploring new recycling paths by facilitating the real implementation of the ‘industrial symbiosis’ concept in the daily practice. In addition, two core teams within the WG are composed of BFI, RINA, SSSA and IVL and other team including TENOVA, FEHS and SSSA in order to elaborate an outline for a possible proposal concerning respectively the H2020 call CE-SPIRE-07-2020 (water) and CE-SPIRE-09-2020 (mineral waste, by-products and recycled material).

Improving reuse and valorisation of Secondary Metallurgy slag was recognised, as a potential good topic for investigation within CE-SPIRE-09-2020.



Input for internal organisation of WGs and taskforces

WG Planet elaborated a proposal for the mission and tasks of the new Focus Group Circular Economy. Possible cross-FG topics were also presented and discussed. Some ideas for the ‘Optimal valorisation of waste, residue streams and recycled end-of-life materials as feed’ were discussed and provided for the task generation.

Link with stakeholders

The dissemination activity continued with the presentation of ‘ESTEP’s Strategic Research Agenda: a further step for the steel as backbone of EU resource and energy intense industry sustainability’ paper at the CleanTech 4 conference in Bergamo/Italy on 28-29 November 2018.

Working Group Construction – Focus Group Construction & infrastructure

Working Group Construction participated in several events in 2018. At the Technology Day in Delft, Working Group Construction organised a workshop on circular economy, development of Eurocodes, connections and 3D printing in conjunction with Delft University. Another event entitled ‘The Construction Industry journey to enable the EU energy, climate and sustainability objectives: committed to a European Low-Carbon Built Environment’, was held at the European Parliament on 27 June 2018.

In 2018, the Working Group has also strengthened its ties with the European Construction Technology Platform (ECTP), especially with its participation in the General Assembly on 27 June 2018.

The Working Group has also contributed to the Energy-efficiency Buildings contractual Public-Private Partnership (EeB cPPP) Board meeting, which was welcomed by the European Commission, and has provided preliminary suggestions for the H2020 EeB cPPP calls for 2020.

Working Group Energy Market – Focus Group Energy market & engineering

In 2018, the main activities of Working Group Energy Market were covered by several conference calls and one meeting in June 2018. Alongside the usual topics, such as coal fired power plant, renewables and oil & gas (pipelines, components and wells) that were still under consideration, the WG also focused on new subjects, in particular geothermal, marine, hydrogen, energy conversion and storage.

The WG chairman, Pietro Gimondo, presented at the EU's seminar on steel, 'The wind of change' organised by DG RTD in a session entitled 'Steel for the development of renewable energy technologies' in January 2018. Several other initiatives and actions on energy topics were also conducted throughout the year.



Working Group Process – Focus Group Low-carbon & energy efficiency

Working Group Process has continued its activities and had a meeting in June 2018. With the chairman's strong involvement and with the proposition of some members in ULCOS, the Working Group followed up on climate-oriented actions such as the Big Scale Initiative, the update of the 2013 BCG Low-carbon study, Set Plan Action, and the accompanying RFCS measure, 'Low carbon future'.

As part of the reorganisation of ESTEP's internal structure, WG Process has selected some topics of common interest which will need to be connected to the Strategic Research Agenda. The Working Group has made a proposal for the tasks of the new Focus Group Low-carbon & energy efficiency. The focus is particularly set on CO₂ mitigation in the steel industry.

Working Group Integrated Intelligent Manufacturing (I²M) – Focus Group Smart factory

In 2018, Working Group Integrated Intelligent Manufacturing went to several events and had four scheduled meetings (January, April, July and December). The main inputs were the revision and short explanation to one RFCS priority, selection of RFCS flagship proposals and the organisation of the first ESTEP workshop on the Digital Twin.

In the course of half 2018, Working Group I²M nominated a new chairman, Costanzo Pietrosanti from Danieli Automation S.p.A. He is the successor to Harald Peters from BFI.

Working Group I²M contributed to the revision of the RFCS priority, in the following way: 'Embedded real-time analytics of large data streams to predict reliability of steel production plants and processes or to realise machine supported decisions on steel product quality along the production chain or to improve flexibility of production scheduling including human sustainable ergonomic aspects'.



The Digital Twin Workshop was held in Charleroi the 21 and 22 of November 2018. About 18 case studies were presented under the definition of digital twin as well as examples of digital twins coming from different sectors (oil & gas, energy, etc.) in regard to processes and products were explained.

As part of the reorganisation of ESTEP's internal structure, and thanks to some revision of its ways of working, WG I²M has evolved towards Focus Group Smart Factory. The FG has identified some primary initiatives and goals for establishing taskforces with other FGs. Some ideas for the tasks 'Online measurement of internal stresses' and 'Cybersecurity' were generated.

Working Group People – Focus Group People

After having defined its mission and objectives in 2017, Working Group People has proceeded in 2018 with mitigating risks for the highly challenged human resource community in the EU steel industry as well as developing solutions for its societal and economic challenges from a people perspective.

The 'Blueprint New Skills Agenda Steel: Industry-driven sustainable European Steel Skills Agenda and Strategy (ESSA)' was successfully tendered within the Erasmus+ programme 'Alliances - Partnerships between the world of work and education and training institutions'. This was mainly thanks to the close cooperation of members of the WG and further European stakeholders in vocational education and training (VET) systems. The ambitious goal of this multinational four year project is to provide answers for the strategic sectoral challenge of cooperation on skills, predominantly in vocational education and training for the Steel industry.

Furthermore, a second proposal within the COSME/EASME programme was approved by the European Commission, being tight-knit with ESSA: 'Blueprint for Sectoral Cooperation on Skills: Towards an EU strategy addressing the skills needs of the steel sector'.



Besides these achievements, WG People was happy to support the international and the national edition of the 2018 'Eurosteelmater' in Taranto (Peter Schelkle, May) and Padua (Antonius Schröder, November), holding fruitful discussions with the participants on the future challenges for HR in the Steel industry.

In a symposium on 'Blueprint for Sectoral Cooperation on Skills: Industrial Symbiosis and Energy Efficiency', which took place in Vienna in October, Antonius Schröder, and Pietro Gimondo (RINA Consulting) referred to the 'The steel sector's experience on the Future Skills and presentation of the ESSA project'.

Working Group Transport – Focus Group Transport & mobility

Throughout 2018, Working Group Transport carried on its activities. The Working Group has strengthened its ties with the European Council for Automotive R&D (EUCAR). Members also reviewed the Horizon 2020 work program for future funding calls for the period of 2018-2019. It was found out that only few topics were dealing with the transport sector in the strategic

orientations except the DT-NMBP-10 within the call ‘Foundations for tomorrow industry’. These topics are aligned with the proposed topic of ‘New modelling approaches for sheet metal application (multiscale modelling, mathematical formulation of material behaviour/characterisation)’. Additionally, there were some opportunities in the call related to green vehicles, but this will not start before 2020.

As part of the launch of the tasks generation activity following the reorganisation of ESTEP's internal structure, FG Transport and mobility proposed topics related to testing the ‘Method for Hydrogen Embrittlement’ and ‘Establishing a local ductility measurement for AHSS’ were discussed.

In December 2018, Olivier Moriau stepped down as chairman of this group and will be available as vice-chair. A new chairman will be nominated in 2019.

ESTEP's projects & contributions

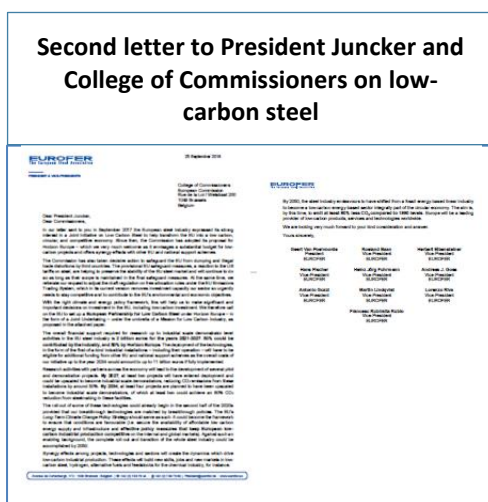
ESTEP is involved in a number of initiatives and continued its participation in various activities in 2018 in order to strengthen the position of the steel sector. The following chapter provides an overview of the continuation of ESTEP activities related to research and innovation as well as advocacy on the European level. The activities are based on the ESTEP membership in the relevant committees and bodies. The messages were presented by the President and/or Secretary General, as well as supplemented and supported in many cases by individual ESTEP members.

Clean Steel European Partnership¹ - Low Carbon Steelmaking Technologies

A core activity of ESTEP in 2018 was the further development of the Big Scale Initiative, the large scale ultra-low carbon future steelmaking projects.

In order to demonstrate the continued firm commitment of the steel sector to decarbonisation, a second letter signed by the EUROFER Vice-Presidents was sent to President Juncker and the

Second letter to President Juncker and College of Commissioners on low-carbon steel



European Commissioners in September 2018. The letter pointed out the required financial support for research up to industrial scale demonstrator level activities in the EU steel industry is €2 billion. In the negotiation process of Horizon Europe, a potential EU Partnership for low-carbon steelmaking is enlisted.

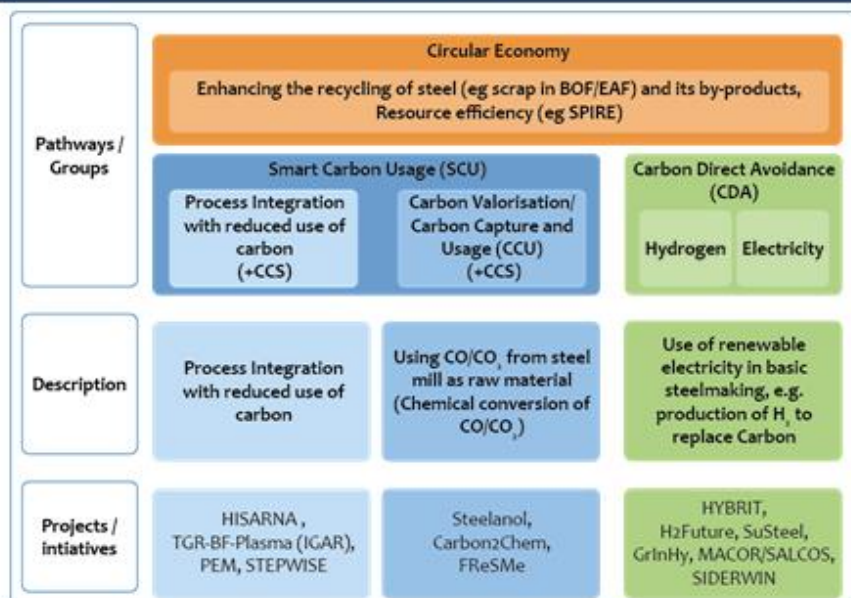
Next to this, the RFCS accompanying measure ‘Low Carbon Future’ has started. This project highlights the existing activities and results in the area of the EU steel industry transition towards carbon neutrality.

¹ The Clean Steel European Partnership has its roots in the previous activities named Large Scale Research project, Big Ticket for Steel, Big Scale Initiative, CANETES Partnership, EULOS Partnership, and Towards Carbon Neutral Steelmaking

Another important outcome is the indication of future needs of research and development in which further activities are mandatory if a successful transition is to happen. Moreover, the High-Level Group on Energy Intensive Industries and the Strategic Forum for important projects of

Technological Pathways to CO₂ Reduction in Steel

Big Scale Initiative



common European interest (IPCEIs) aim at Low CO₂ steelmaking (see page 13).

In November 2018, the ESTEP Mirror Group Meeting was held as a workshop entitled 'Towards carbon neutral steelmaking'. At this workshop, ESTEP presented an overview of various projects, driven by the steel producers, in order to transform the steelmaking towards carbon neutrality.

The schematic overview of the technological pathways (picture on the left) illustrates the three

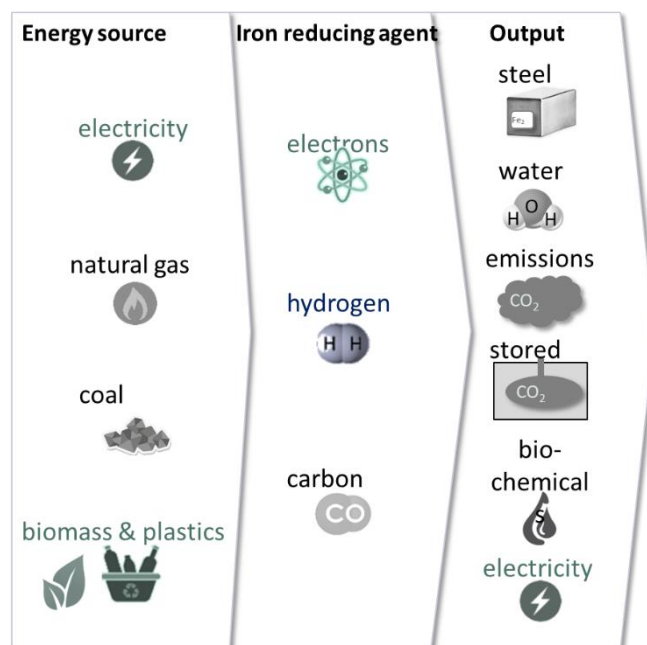
approaches: Circular Economy, which addresses the recycling of scrap and by-products (e.g. slag), Carbon Direct Avoidance, dealing with the transition to non-fossil reducing agents such as hydrogen, and Smart Carbon Usage, addressing the avoidance of CO₂ emissions when using carbon.

It is wrong to think that the pathways are isolated and have no links or synergies between them. On the contrary, the new diagram (picture on the right) illustrates the interdependence and complementarity of the different approaches by breaking down the pathways into the principles of the processes. In this regard, the next steps will be to identify the technology building blocks, which will create opportunities of collaboration and synergies among the pathways.

Research Fund for Coal and Steel (RFCS)

The RFCS is suffering from the low interest rate leading to shrinking budgets for the yearly calls. Together with the unit D4 of DG RTD, a couple of mitigation methods were explored. Finally, it was agreed to work on the stabilisation of the RFCS programme by using part of its assets to guarantee a minimum fund available of €40 million per year for coal and steel.

Beginning of 2018, ESTEP provided the explanatory fiche for the three 2018 RFCS priorities, which were published in the 2018 info package. Moreover, ESTEP was again very much involved in the



proposal of the RFCS priority, which will apply in 2019 to the Steel Advisory Group (SAG). The 2019 RFCS priority (see box) was decided in the meeting of December 2018.

2019 RFCS Priority

Pilot/Demonstration projects or Accompanying Measures of emerging and innovating technologies leading to industrial efficiency improvements and/or emission reductions

Additionally, ESTEP received the mandate of the SAG to consult with the steel community in order to provide an explanatory fiche for the RFCS priority.

As agreed in 2017, the exceptional closure of Technical Group Steel number 8 (TGS 8) in 2018 was a one-time-measure. In 2019, all Technical Groups will be open to receive proposals.

Sustainable Process Industries through Resource and Energy Efficiency (SPIRE)

Thanks to its close ties with SPIRE and with its seat in all decision bodies, ESTEP ensures that there is a good flow of information between the whole ESTEP community and SPIRE.

In 2018, SPIRE published its [2050 vision](#) as well as the [Progress Monitoring Report 2018](#). The 2050 vision document is a common view of the eight sectors represented in SPIRE with a clear value proposition as follows: 'An integrated and digital European Process Industry, fostering a 'well-below 2 degrees' scenario and a fully circular future for



our planet and society'. The SPIRE members are committed to three ambitions: bridging the climate technology gap, process industries as 'hubs for circularity', and globally competitive EU process industries. The progress monitoring report is a success story for the new contractual Public Private Partnership. Both documents provide an excellent basis for the continuation of SPIRE under Horizon Europe. However, the cornerstones of SPIRE's continuation will be defined in 2019.

A new President was sought for SPIRE in 2018. Pierre Joris from the chemical sector will follow Daniel Gauthier in 2019.

ESTEP at the genesis of the SPIRE PPP

Since the very beginning, ESTEP has been involved within the SPIRE Public and Private Partnership (PPP), and was at the origin of this initiative, conjointly with EUnited, the European Engineering Industries Association. The SPIRE PPP, focusing on Sustainable Process Industries through Resource and Energy efficiency, is nowadays very active in Horizon 2020, and will have a promising future within the next Framework Programme, Horizon Europe.

The starting point: late 2009: The 15th Conference of Parties (COP 15) in 2009 has pointed out the role of Energy Intensive Industries (EII) to demonstrate their contribution to climate change policies. In this context, ESTEP, under the impulse of its Secretary General, Jean-Claude Charbonnier, took the initiative to meet Lionel Platteeuw from EUnited in order to investigate the possibilities to promote Research & Innovation for the European Energy Intensive Industries in the field of energy efficiency. In March 2010, Bertrand de Lamberterie replaced Jean-Claude Charbonnier and had as prime mission to continue this initiative.

[... Continuation of the article on page 15 ...]

Energy Materials Industry Research Initiative (EMIRI)

The Energy Materials Industry Research Initiative gained momentum in 2018 with its strong contribution in the area of batteries.

Even if EMIRI is, for the time being, not a European Partnership, some calls were dedicated in 2018 to EMIRI topics.

During 2018, two major changes happened in the management of EMIRI. Fabrice Stassin (Umicore) stepped down and Philippe Jacques (Solvay) became the new Managing Director. Moreover, the chairmanship switched from Dow to Umicore and is now represented by Egbert Lox.

In 2018 EMIRI also started to update its roadmap but will be finalised in 2019.

Knowledge4Innovation (K4I)

As a member of Knowledge4Innovation, ESTEP has continued to provide input in order to communicate its advocacy messages. K4I offers important connections with the European Parliament in regards to Research and Innovation.

As part of the [10th European Innovation Summit](#), which took place from 26 to 28 November 2018, ESTEP's Chairman, Carl De Maré, participated at the dinner debate 'SPIRE 2050: unlocking the climate technology gap, process industries' commitment to reach a net-zero horizon'.

Strategic Energy Technology (SET) Plan Action 6

The Implementation Plan of the SET Plan Action 6 on 'Continuing efforts to make EU industry less energy intensive and more competitive' was endorsed by the SET Plan Steering Group on 29 September 2017. It describes the future activities that will contribute to reach the targets defined in the Declaration of Intent, agreed by the Temporary Working Group (WG6), which includes the SET Plan countries' representatives and stakeholders.

In June 2018, the WG6 community was invited to a workshop to discuss and shape the further work in this community. This [Cooperation Workshop](#) aimed to contribute to the realisation of the Implementation Plan, by enhancing cooperation between national programmes and further developing the activities into actual projects.

The steel sector was well represented and supported key messages (see summary in box on the right).

The implementation of the SET Plan will be supported by a tender, which will start in 2019.

SET plan Action 6

Key messages on regulatory framework:

- needs EU legislation that preserves its **competitiveness** vs. world
- Address the legal and societal opportunities and limitations of **CCS**
- Access to sustainable **energy** (electricity, H₂) at competitive prices
- A **market** for new low-carbon products needs to be created

Key messages on funding support:

- Inter-operability and **blending** of funding sources

Key messages on Cooperation between the stakeholders:

- Develop a **common understanding** on challenges & ways forward
- Promote cooperation on **specific research** questions
- Identify synergies and promote a **cross sectoral** approach also between steel sector and **energy providers**.

High Level Group of Energy Intensive Industries (HLG EII)

The HLG EII was dominated, in 2018, by the strong initiative taken by industry to develop a cross-sectorial view on the route towards carbon neutrality in a common document rather than in isolated sectoral roadmaps. The European Commission welcomed the initiative of industry and supported the proposal. This has led to the objectives for 2019 to have a common document on

the transition towards carbon neutrality focussing on, but not limited to: key technologies, abatement potential, investment needs, energy/infrastructure needs. The document would likely be a study performed by a third party and be the basis for the further work on shaping more detailed action plan for the HLG EII on the transition to carbon neutrality.

ESTEP at the genesis of the SPIRE PPP

[... Continuation of the article on page 13 ...]

October 2010, first position paper: It was decided that it would be a good idea to enlarge the scope of Research & Innovation of the European EIs to resource efficiency. ESTEP and EUnited wrote a draft position paper which was presented to the main European process industries, namely non-ferrous metals, cement, glass, wood & paper, chemistry and industrial minerals. An informal partnership, named REP (for 'Resource and Energy Efficiency Partnership') was created each time a positive reaction came from these EIs. The first REP position paper, written by ESTEP and EUnited, and validated by ten bodies from glass, non-ferrous, minerals and chemistry was officially sent to the European Commission (DGs Research, Industry and Environment). This position paper, which was positively welcomed by the European Commission, encouraged the REP members to carry on the initiative in order to steer it towards a possible new Public Private Partnership to be hosted within Horizon 2020.

2011, from REP to SPIRE: At the end of 2010, the paper and cement industries decided to join REP. At the same time, the consortium of leaders, initially driven by ESTEP and EUnited, was completed by the European Chemical Industry Council (CEFIC) including its *de facto* technology platform, SusChem. In the middle of 2011, the REP gathered 15 partners, working together under the lead of CEFIC/ESTEP/EUnited. A new position paper was written on the Resource and Energy Efficiency challenges, with the ambition to promote a new PPP named SPIRE, standing for **Sustainable Process Industry through Resource and Energy efficiency**.

2012 and 2013, towards the PPP 'SPIRE': At the beginning of 2012, an informal steering committee was created between the 14 partners of SPIRE and various representatives from the European Commission (DG Research, Enterprise and Environment). The next steps included the SPIRE R&I roadmap, the launch of its [website](#), and the creation of the legal entity 'Association SPIRE' (A.SPIRE) in October with its first General Assembly taking place on 20 November 2012. In the first half of 2013, the SPIRE PPP was officially mentioned for the first time in the European Commission communication on Horizon 2020. Finally, the contractual arrangement establishing the PPP SPIRE in the area of Sustainable Process Industry through Resource and Energy Efficiency was signed between the European Union and the Association SPIRE (AISBL) on 17 December 2013.

An article provided by Bertrand de Lamberterie,
former ESTEP Secretary General



Strategic Forum for Important Projects of Common European Interest (IPCEI)

In 2018 the Strategic Forum was composed of industry associations, the European Commission as well as representatives from Member States. The steel sector was represented by EUROFER.

The applied methodology focussed on defining strategic value chains, which could be considered as the envelope for future IPCEIs. The existing work of the steel community on outlining the transition of the EU steel industry towards carbon neutrality was an excellent starting point. The steel value chain was shortlisted and ultimately selected by the Strategic Forum at the end of 2018.

Outlook 2019

ESTEP is not just involved in research and is not only connected with the Commission through the Horizon 2020 and RFCS programs. It is also a European Technology Platform and will as such, continue to work on its visibility and on providing input for the decision-making process at European level. It will also continue to search for opportunities for its community in order to provide topics of the highest interest for its members. ESTEP will carry on going to EU events and meetings in order to establish new links with key European actors and to attract new potential members.

As part of the reorganisation of ESTEP's internal structure, 2019 will also be marked by the transition from task generation into task execution.

In the context of RFCS and Horizon 2020, ESTEP will continue to submit collaborative proposals, disseminating results via workshops and leading the informal follow-up meetings of the Steel Advisory Group – a voice of steel stakeholders. ESTEP's Focus Groups will play a key role. Several workshops in the area of cybersecurity, the scrap-EAF route and carbon-neutral steelmaking will be organised during 2019.

The progress on the Big Scale Initiative is very important and will be aligned with the EUROFER discussion paper 'Towards an EU Masterplan for a Low-Carbon Competitive European Steel Value Chain'. The Steel Low-Carbon Roadmap will also be updated in 2019, in which ESTEP members will also contribute. Building on the positive experience already gained in setting up the EU-SPIRE partnership, the steel community is enthusiastic for the continued development of the EU steel partnership in Horizon Europe.

Furthermore, in order to increase awareness of steel success stories, ESTEP will participate in, and contribute to, several initiatives and high-level events during the course of 2019. One of the main activities will be the steel seminar 'Steel and coal: a new perspective' organised by the European Commission Directorate General for Research and Innovation (DG RTD). The planned 'European Parliament Pilot project: Research on reduction of CO₂ emissions in steel production' will aim to see the convergence of various funding schemes for clean steelmaking.

ESTEP members as of 2018

ArcelorMittal Maizières Research SA, Founder
Betriebsforschungsinstitut GmbH (BFI), Founder
Danieli Automation S.p.A.
Dillinger, Founder
EUROFER, Founder
FEHs - Institut für Baustoff-Forschung e.V.
IMZ (Instytut Metalurgii Żelaza)
IVL Swedish Environmental Research Institute
Jernkontoret, Founder
K1-MET GmbH
Materials Processing Institute
Outokumpu Oyj, Founder
RINA Consulting - Centro Sviluppo Materiali S.p.A., Founder
Salzgitter, Founder
Scuola Superiore Sant'Anna - Pisa (SSSA)
SIDENOR
Swerim AB, Founder
Tata Steel Nederland Technology B.V., Founder
Tenova S.p.A., Founder
Thyssenkrupp Steel Europe AG, Founder
TU Dortmund
Voestalpine Stahl GmbH, Founder

Glossary

AISBL	Association Internationale sans but lucratif (internationally non-for-profit acting association)
CEFIC	European Chemical Industry Council
CEMBUREAU	European Cement Association
CCU	Carbon Capture and Usage
CCS	Carbon Capture and Storage
DG GROW	Directorate General for Internal market, Industry, Entrepreneurship & SMEs
DG RTD	Directorate General for Research & Innovation
EIIs	Energy Intensive Industries
EMIRI	Energy Materials Industry Research Initiative
ESSA	European Steel Skills Agenda
ESTEP	European Steel Technology Platform
EU	European Union
EUCAR	European Council for Automotive R&D
EU ETS	EU Emissions Trading System
EUNITED	European Engineering Industries Association
EURAMET	European Association of National Metrology Institutes
EUROFER	European Steel Association
FG	Focus Group
FP9	9 th Framework Programme for Research & Innovation
H2020	Horizon 2020
HLG EII	High Level Group of Energy Intensive Industries
IPCEI	Important Projects of Common European Interests
I2M	Intelligent Integrated Manufacturing
LCA	Life Cycle Assessment
PPP	Public Private Partnerships
R&D	Research & Development
RFCS	Research Fund for Coal and Steel
RTO	Research and Technologies Organisation
SET	Strategic Energy Transition
SPIRE	Sustainable Process Industries through Resource and Energy Efficiency
SRA	Strategic Research Agenda
SUSCHEM	European Technology Platform for Sustainable Chemistry
ULCOS	Ultra-Low CO ₂ Steelmaking
WG	Working Group

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