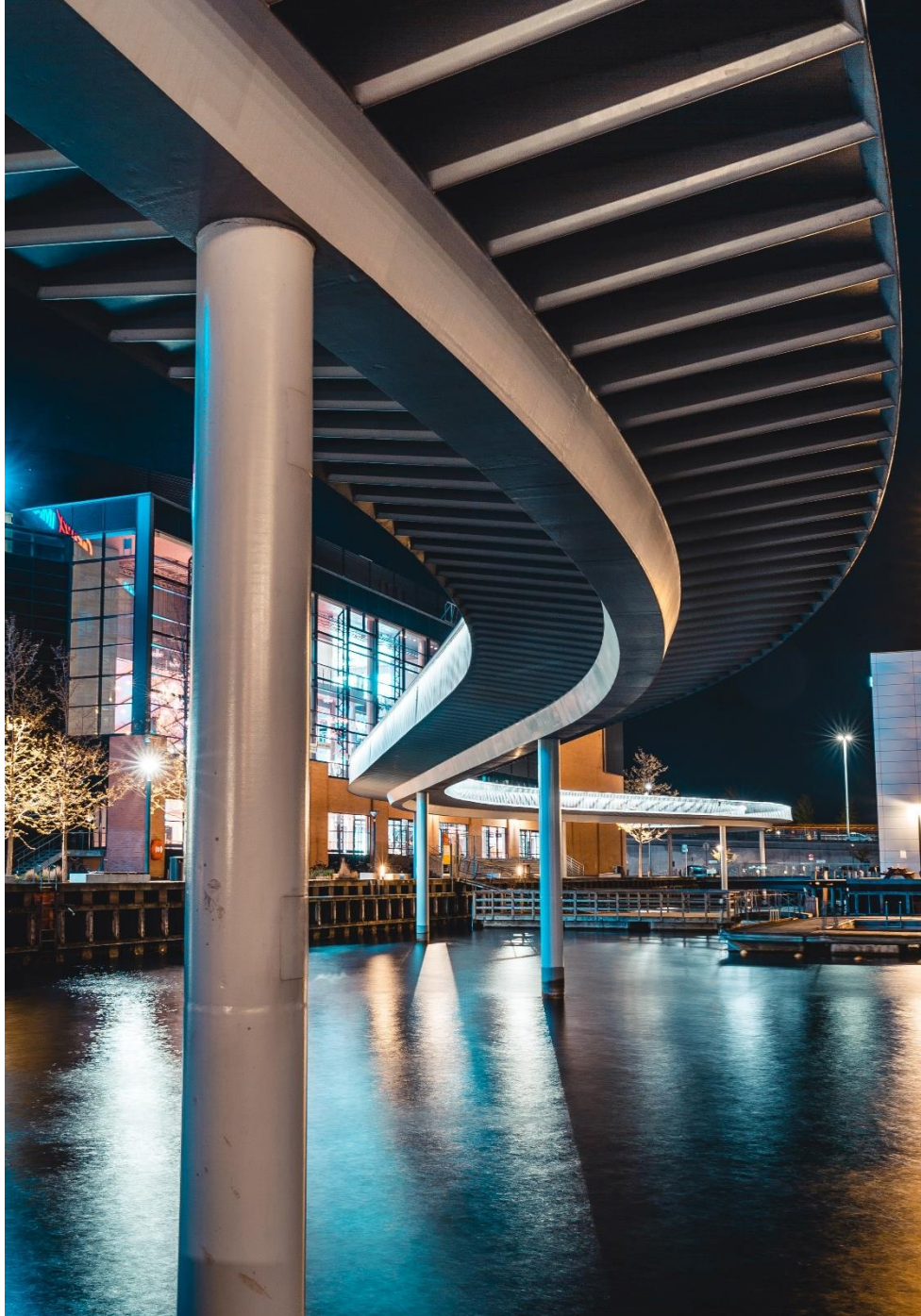


# ESTEP HIGHLIGHTS 2019

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*European  
Steel  
Technology  
Platform*



# Cykelslangen – Bicycle Snake

Steel is the world's most important engineering material as its properties and uses are limitless. The usage of steel in construction and infrastructure is one example among many other steel-using industries. One inspiring project in this framework is the '[Cykelslangen](#)' or 'Bicycle Snake', a made of steel elevated cycle path/ bridge over the harbour in Copenhagen.

Designed by the architecture firm Dissing+Weitling, the 'Bicycle Snake' meanders 6-7 meters above the sea surface with a length of 200 meters and with 30 meters of ramp. With its light and elegant look, the made of steel bridge has also an orange colour on the surface that creates a clear visual for cyclists. The ramp provides a unique harbour view and improves the overall quality of the area. On top of its practicality, the 'Bicycle Snake' bridge provides a strong, enjoyable, safe and sustainable solution.

# 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 2019.

During 2019, 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 with Horizon Europe, were core activities. ESTEP, together with its increasing membership, has also been engaged in European public funded projects as both beneficiary and partner

We look forward to a challenging business year in 2020 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), the continuation of the transition of the European steel industry towards carbon neutrality and the materialisation of the Clean Steel Partnership. 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 2019. It then outlines the Focus 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 2020.

On behalf of ESTEP,



Klaus Peters, Secretary General, ESTEP



Carl De Maré, Chairman, ESTEP

# Activities in 2019

## January

### Harmoni Project Summit

The [HARMONI Summit](#) “Boost innovation - Establish the right framework for your industry” held on 16-17 January in Brussels brought together more than 150 European experts in the search for solutions to facilitate transfer of technologies and innovation in the process industries. The HARMONI project, a SPIRE funded project, was about overcoming non-technological barriers to innovation and innovation transfer such as regulatory bottlenecks, standardization needs and other barriers.



Against this background, the Summit gave an insight into key topics such as circular economy, waste as well as into the EU project world, innovation mission concepts and the final results of the HARMONI project. The steel sector provided examples related to the regulatory challenges for the process industry and standardisation potential.

## February

### Research & Development workshop on steel

The German representation to the EU hosted on 25 February a Research & Development workshop on steel. The major technological challenges and the limits of the existing technologies in the steel production were discussed. The workshop also focused on a possible participation of steel companies in the next European Framework Programme for Research & Innovation "Horizon Europe". Dr Gerd Schumacher, NMBP Programme Coordinator from Jülich, introduced the steel research topics and ESTEP.

## March

### K4I – Climate change: the future of European research and collaboration to address the challenge

ESTEP co-organised a [dinner debate](#) with EURAMET at the European Parliament on 5 March 2019. The dinner debate was hosted by Ricardo Serrão Santos, MEP, with the intention to discuss data quality in view of climate data measurement and climate change mitigation.

The discussions also involved members of the European Parliament's Industry Committee as well as speakers from industries, Copernicus Climate Change Service and the World Meteorological Organisation. They provided proposals for handling the challenges and the improvements in measuring essential climate variables, ensuring data



accuracy as well as building a future-proof collaboration of all crucial players. ESTEP representatives from Focus Group Circular Economy, Enrico Malfa, and Focus Group Smart Factory, Valentina Colla, shared views on how could industrial plants control and real-time decision making be improved in order to tackle climate change.



### Steel and coal: a new perspective – research and innovation in action

On 28 March 2019, high-level stakeholders and decision-makers discussed the questions of steel and coal in Europe at a seminar organised by the European Commission's Directorate General for Research & Innovation (DG RTD).



This conference provided a good opportunity to explore synergies between public, private, academic, research and NGOs on sustainable forward-looking options and achievements for steel and coal. On behalf of ESTEP, Delphine Snaet presented the latest steel

solutions in the session “The age of new steel – Steel 4.0, electric mobility, renewables”.



This conference was also the opportunity to visit the exhibition on a model of hydrogen steelmaking, a sample of real deposit of iron ore electrolysis, and a virtual reality visit of a coal mine.

## April

### Eurosteelmaster

The XIth edition of the [Eurosteelmaster](#), the advanced training course for the European steel sector, was successfully held from 1 to 5 April in Brescia. The course was organised by RINA and the Centro Sviluppo Materiali (CSM) with the support of the Associazione Industriali Bresciana, the European Commission, ESTEP, EUROFER and Federacciai. During this training course, steel production and application aspects as well as relevant external influences were discussed. A workshop on the ‘LowCarbonFuture’ project was also held.



### ESTEP General Assembly

The second ESTEP General Assembly took place on 9 April. The objective of required quorum of members in attendance was met. The priorities and the activities for 2019 were discussed along with the new objectives and future activities for 2020.

## June

### European Steel Day: Transitioning to the future of the EU industry

Hosted by the European Steel Association (EUROFER), the [European Steel Day 2019](#) took place on 26 June 2019. This high-level conference explored how the many changes (in environment and trade policy for instance) in the EU and in the world are affecting not only the European steel industry, but also sectors related to it.

‘Transitioning to the future of the EU industry’ was the theme of European Steel Day 2019. The conference also examined at how policy makers and business leaders intended to continue the transition to a cleaner, more circular European economy.

### ESTAD & METEC

The 4<sup>th</sup> edition of the European Steel Technology and Application Days ([ESTAD](#)) was held at the steel trade fair METEC from 24 to 28 June in Düsseldorf.

The technical highlights included presentations on advancements towards significantly reducing CO<sub>2</sub> emissions in steel production and the digitization of the steel industry. The RFCS “LowCarbonFuture” workshop was also held with six panellists from European steel producers active in the current CO<sub>2</sub> reduction projects. This panel session included Carl De Maré, ESTEP President.



## September

### European Research and Innovation Days

On 24-26 September, the European Commission hosted the first edition of the [European Research & Innovation Days](#), which brought together stakeholders to debate and shape the future landscape of research and innovation in Europe and beyond.

This high-level event was an opportunity for stakeholders to meet and co-create the

strategic priorities for the European Commission's investment in research and innovation.

The steel sector, with the participation of Carl De Maré, ESTEP President, contributed in the session 'Industries: global players on a clean planet'. Discussions focused on the need for global cooperation and novel partnership models, the importance of global industrial engagement and how to make the energy-



intensive industries become low-carbon and contribute meeting the Paris Agreement targets.

## November

### Green steel by EAF route workshop

The ESTEP Focus Group Circular Economy presented its workshop "Green steel by EAF route: a sustainable value chain in the EU Circular Economy scenario". The workshop, which was held on 13-14 November in Bergamo, focused on sharing experiences, needs, opportunities and best practices for further greening the steel production by the EAF route.



Presentations and round-table discussions covered four key topics: scrap management, decarbonisation, energy efficiency and the circular economy. The workshop was highlighted by the visit of the TenarisDalmine plant, being itself an example of a 'green' production cycle.



## December

### Ai & Big Data for Innovation Summit

As part of the [Artificial Intelligence & Big Data for Innovation Summit](#) of Knowledge 4 Innovation (K4I), ESTEP organised jointly a session with Cefic, EMIRI and SPIRE at the European Parliament on 5 December 2019. The session was hosted by MEPs Maria da Graça Carvalho and Susana Solis Pérez, with the intention to discuss 'Artificial intelligence, big data & European upstream industries: what now?'

The session offered concrete examples and perspectives from major industrial sectors on the importance of artificial intelligence and big data. The steel sector was represented by Valentina Colla from SSSA with a presentation on 'Empowering steel manufacturing through Artificial Intelligence and Machine Learning'.



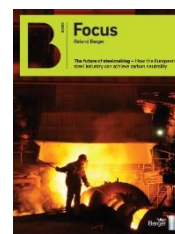
### Kick-off meeting of Clean Steel Partnership Roadmap

In addition to the preparation of the Clean Steel Partnership proposal, the kick-off meeting for writing the Clean Steel Roadmap was held on 9 December 2019. Both ESTEP and EUROFER are driving the process together with a dedicated task force including steel related stakeholders. The starting point was the development of building blocks, which will define the research areas for the calls of the Clean Steel Partnership itself.



## Suggestions for further reading

- EUROFER [position paper](#) 'A Green Deal on Steel'
- [Climate action report 1](#), ArcelorMittal, May 2019
- [Report](#) on 'The future of steelmaking – How the European steel industry can achieve carbon neutrality', By Roland Berger



# ESTEP Focus Groups

The Steering Group, which is in charge of piloting the overall ESTEP research programme and reviewing the activities of the Focus Groups, held three meetings in 2019. The exchange between the Focus Groups (FG), the Heads of Research of steel producers and key representatives of steel stakeholders, allowed to provide valuable feedback to the work programme of the Focus Groups. The chairman of the SG, Michael Steinhorst, strongly supported the cooperation between the Focus Groups as today's challenges are often broader than the scope of one single focus group.

In 2019, the Focus Groups continued to work under a task approach. The tasks are divided under three categories depending on the efforts and resources needed. A well-defined task can either represent a mini-conference or a pre-study. More complex tasks can be defined as a project that needs a contract among task members. Twenty-one tasks were identified and covered all seven Focus Groups.

## Focus Group Circular Economy

As ESTEP modified its structure and governance, 2019 was the first full year for the Focus Group Circular Economy within the new organizational structure of ESTEP.

The main activities were discussed and covered in three meetings. Participation in the Focus Group is growing with about 24 active members representing steel producers (9), technology providers (2), RTO's (8) and associations (5) for a total of 43 people.

During the first 2019 meeting in April, the mission of the FG was defined (figure 1).

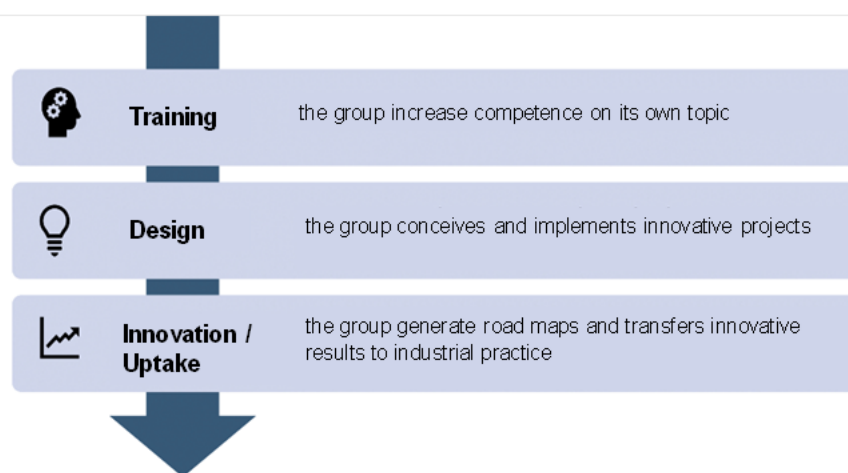
The FG worked actively by generating different tasks according the three pillars of the mission.

### Training

The FG Circular Economy organised in 2019 a workshop on 'Green steel by EAF route: a sustainable value chain in the EU Circular Economy scenario' which was held in Bergamo (Italy) on 13-14 November 2019. This workshop was the opportunity to highlight the European steel industry's determination to help build a carbon neutral economy by developing low environmental impact steelmaking technologies. The event attracted more than 100 people coming from different steel producers, technology providers, RTO's, associations and other steel related stakeholders. A final [report](#) of the event was published.



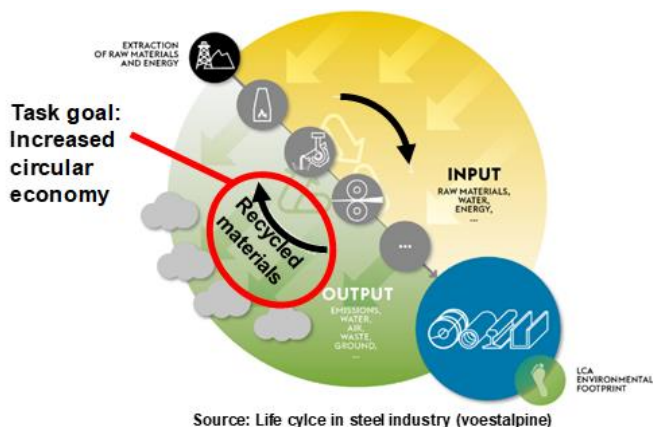
*Collaborative actions (meetings, workshops, and especially projects) on environmental aspects, especially on circular economy, which is re-use, recycling and use of co-products and by-products of steel industry and other industries.*



**Figure 1 – FG Circular Economy mission**



The FG also worked on the preparation for the 2020 workshop on ‘Optimal valorisation of waste, residue streams and recycled end-of-life materials as feed’, in collaboration with the RFCS dissemination project REUSEEL.



### Design

The RFCS REUSTEEL dissemination project was submitted in 2018 and has been approved. The FG Circular Economy continued to provide input.

The RFCS iSlag project has been submitted in September 2019 as a collaboration between FG Circular Economy and FG Smart Factory. 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.

### Innovation and uptake

As part of the innovation and uptake pillar, the FG has contributed to the DG RTD workshop ‘The age of new steel – steel 4.0, electric mobility, and renewables’ with some examples of projects generated in the FG regarding residual valorization such as EAF and BOF dust and LF slag.

The FG has also started to define the roadmap on ‘Improve the EAF scrap route for a sustainable value chain in the EU Circular Economy scenario’ with the following selected priorities:

- Scrap: pre-treatment, yard management and use of DRI
- Valorisation of residual for internal & external use
- Use of renewable energy sources: direct use of renewable or green H<sub>2</sub> in liquid steel production and re-heating/treatment furnace
- Replacement of coal with residue or carbon neutral materials: lump and pulverised coals substitution, Improved use of graphite electrode
- New tools/sensors for process improvements



### Focus Group Transport & Mobility

At the beginning of 2019, Reinhard Hackl assumed the role of new chairman of the Focus Group Transport and Mobility. The main focus in 2019 was the launch of two tasks related to material testing, “Hydrogen Embrittlement” and “Measurement of Local Ductility for AHSS”. For both activities, the definition of the working program, the role definition of the involved partners and the creation of a project contract was the main work content.

For the project “Measurement of Local Ductility for AHSS”, ESTEP is in close collaboration with the Verband der Automobilindustrie (VDA - German Association of the Automotive Industry), that is working on a very similar topic. The objective of the project “Local Ductility” is the generation of building a common understanding of local ductility measurements via tensile tests and to show the added value of such a characteristic for material characterization.

As there is no standard procedure for testing of hydrogen embrittlement in steels, within the project “Hydrogen Embrittlement” a scientific basis for an EN–standard for testing hydrogen embrittlement in cold formable steel grades should be generated.

### Focus Group People

The year 2019 was very successful for the Focus Group People. By contributing to a lot of fruitful exchanges and conferences, FG People represented the people-driven approach of ESTEP, and this also across sectoral borders.

As part of the task “ESSA+”, the ‘Industry-driven sustainable European Steel Skills Agenda and Strategy (ESSA)’ was intensively supported. Indeed, the FG proceeded to provide answers for the strategic sectoral challenge of cooperation on skills, mainly in vocational education and training for the steel industry.



Furthermore, the proposal on the project ‘Skills Alliance for Industrial Symbiosis - A Cross-sectoral Blueprint for a Sustainable Process Industry (SPIRE-SAIS)’ was successfully submitted and approved in 2019. The SPIRE-SAIS project will start in January 2020 with the steel sector as being one of the eight SPIRE sectors involved. 5 of 24 partners – such as ESTEP – represent the steel industry and will actively contribute to the project. Antonius Schröder, member of the FG People, is the project coordinator.



Both, ESSA and SPIRE-SAIS were presented to the audiences of various workshops and conferences, such as, among others, the Sectoral Social Dialogue Committee on Steel (SSDCS), the Ceramic Day 2019, the SPIRE Stakeholder Workshop 2019, the annual meeting of the ‘Union des Industries Ferroviaires Européennes (UNIFE)’ and of the ‘Comité International d’Étude du Laminage à Froid du Feuillard d’Acier (CIELFFA)’.

FG People also contributed to the ‘[Steel Sector Careers](#)’ project workshops, which offered considerable impact on the task “ESSA+”. FG People members contributed in Germany (Stahlzentrum), Spain (UNESID) and Poland (IMZ).



In addition to the task “ESSA+”, the task “Attracting People to the Steel industry (ATS)” was approved by the ESTEP Board of Directors. FG People commonly worked on a recommendation paper to be launched in the beginning of 2020.

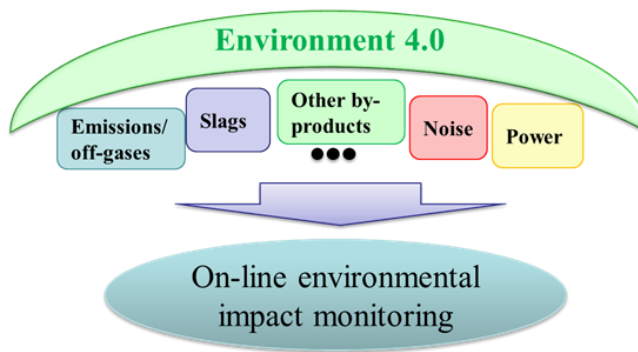
Meanwhile being a good tradition, FG People was happy to support the international and the national edition of the 2019 ‘Eurosteelmaster’ in Brescia (Veit Echterhoff, April) and Dalmine (Antonius Schröder, November). Also, in November, the FG provided input to the HR/skill panel at the Raw Materials Week 2019 in Brussels (Peter Schelkle).

Throughout the whole year, the FG members experienced high readiness to discuss people-related issues. The skill perspective has become a main topic to discuss along the digital challenges in the European steel industry.

### Focus Group Smart factory

Throughout 2019, the Focus Group Smart Factory carried on its activities.

The original task on “Environment 4.0 – Online monitoring and improved control of environmental performance of electric steelworks” aimed to prepare a large project addressing the issues of the total environmental impact monitoring in steel plants. Nevertheless, this has been transformed into a new approach, which can be seen as a an “umbrella” clustering different potential building blocks to be integrated into a new generation of comprehensive on-line environmental monitoring and control. This has allowed to increase the cooperation with others Focus Groups such as FG Circular Economy and FG People.



The year 2019 was also the outcome of two winning projects in the 2019 RFCS calls : the RFCS Project “EnerMIND - Energy Management in the Era of Industry 4.0” and the RFCS Project “iSLAG - Optimizing slag reuse and recycling in electric steelmaking at optimum metallurgical performance through on-line characterization devices and intelligent decision support system.”

The FG Smart Factory also further worked on the task “Online measurement of internal stresses” and on the workshop on “Cybersecurity in the steel industry, threats, risks and impact on the steel companies”. However, in the end of 2019, the scope of the workshop on cybersecurity has been expanded to” Artificial Intelligence & Machine Learning: impact and opportunities of AI techniques in the steel industry”. This workshop will be held in 2020.



Moreover, the FG started to elaborate the ‘Steel Smart Factory Roadmap’, which aims to define the R&D&I areas and lines taking into consideration the disruptive advances of ICT highlighting barriers and enablers of the digital transformation in the steel manufacturing sector.

## ESTEP’s projects & contributions

ESTEP is involved in a number of initiatives and continued its participation in various activities in 2019 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.

### EU Clean Steel Partnership

A core activity of ESTEP in 2019 was the further development of the Clean Steel Partnership, a proposal for a European Partnership on low-carbon steelmaking.



After successful advocacy results, the Clean Steel Partnership was enlisted in the list of proposed EU partnerships for the next Framework Programme for Research & Innovation [Horizon Europe](#). The potential Clean Steel Partnership under Horizon Europe will address collaborative research activities, whereas other instruments in which steel is taken up such as Important Project of

Common European Interest (IPCEI) and the New Innovation Fund (NIF) are more focused on single company driven large scale projects.

Throughout 2019, ESTEP together with EUROFER and the steel community further worked on the application process for the Clean Steel Partnership. The concept of building blocks has been initiated, which will be considered as research areas for calls in the future. All these strenuous efforts of the whole steel community have finally allowed to submit a first

proposal of the Clean Steel Partnership to the European Commission. This has made possible to define the objective of the partnership, which is to develop and test at large scale the technologies by 2030 required to reduce CO<sub>2</sub> emissions by 80-95% by 2050, ultimately achieving carbon neutrality.

In parallel to the Clean Steel Partnership proposal, the steel community started to work end of 2019 on the structure of the multiannual roadmap. The roadmap will contain 4 chapters: vision, innovation & research, impact and governance. Final submissions of the Partnership and the Roadmap will be expected by mid-2020.



### European Parliament Pilot Project – Green Steel for Europe (GREENSTEEL)

On 25 April 2019, the European Commission adopted a financing [decision](#) to implement the European Parliament Pilot Project on ‘Research on reduction of CO<sub>2</sub> emissions in steel production’. The Pilot Project aims at exploring the feasibility of implementing breakthrough technology options, deployment paths and investment strategies for clean steelmaking in Europe with almost zero CO<sub>2</sub> emissions. It has the overall objective of contributing to the sustainable decarbonisation of the steel industry, helping to position the EU as a leading provider of low-carbon products, services and advanced technologies in steelmaking.



On 6 November 2019, the project proposal ‘Green Steel for Europe’ (GREENSTEEL) was selected for funding. The project will start in January 2020 for a total duration of 18 months (until June 2021). Its consortium comprises 10 partners, including ESTEP and EUROFER, is coordinated by the Centre for European Policy Studies (CEPS). The deliverables of this project are pressing as they are intended to support the preparation for the Clean Steel Partnership.

### Research Fund for Coal and Steel (RFCS)

Thanks to the contribution of all ESTEP Focus Group participants and the EUROFER Refocus Group the Steel Annual Priority 2019 was proposed to the Commission (see box).

Along with a one page explanatory fiche, the priority was published in the [RFCS Information Package 2019](#). ESTEP volunteered again to moderate the process of the generation of the Steel Annual Priority 2020. The annual budget in 2019 for coal and steel was around €40 million due to the use of de-committed money, which could partly compensate the low interest rates.

**RFCS Steel Annual Priority 2019**  
Pilot/Demonstration projects or Accompanying Measures of emerging and innovating technologies leading to industrial efficiency improvements and/or emission reductions.”

In 2019, a High-Level Expert Group was established in order to prepare the second report on the seven-year monitoring and assessment of the Research Fund for Coal and Steel (RFCS) programme, which should analyse the benefits delivered by the RFCS projects between 2011 and 2017. This report is expected to encompass a qualitative evaluation and quantification of the benefits triggered by the RFCS programme as well as its development over the period analysed. The publication of this [report](#) is expected at the beginning of 2020. Among the 10 members of the Expert Group, three came from ESTEP members and a fourth member was until 2012 the Secretary General of ESTEP: Bertrand de Lamberterie (France), Harald Peters (Betriebsforschungsinstitut Dusseldorf, Germany), Katharina Rechberger (Metallurgisches Kompetenzzentrum K1-MET, Linz, Austria) and Adam Schwedler (Instytut Metalurgii Zelaza, Gliwice, Poland)

## REUSTEEL

ESTEP is beneficiary of the RFCS project ‘REUSTEEL: project dissemination of results of the European projects dealing with reuse and recycling of by-products in the steel sector.’



The proposal aims at developing an extensive action of dissemination and valorisation of the most important research results on the reuse and recycling of by-products derived from the steel production cycle as well as the exploitation of by-products coming from other industrial sectors within the steelmaking cycle. The kick-off meeting started in 14 June 2019 for a total duration of 24 months (until mid-2021).

## Sustainable Process Industries through Resource and Energy Efficiency (SPIRE)

The steel sector is well represented within SPIRE. The ESTEP Secretary General has a seat in the Board of Directors and is one of the two Vice-Presidents. In 2019 it became obvious that ESTEP should ensure the continuation of its role. This has required a change in the SPIRE statutes as a renewal of a Vice-President can only be done once. In parallel with the adaptation of the SPIRE statutes to the new Belgian company law, the expansion of the Board to new sectors as well as the renewal of SPIRE positions were discussed. The discussions of the new statutes started in 2019 and will be finalized in 2020.



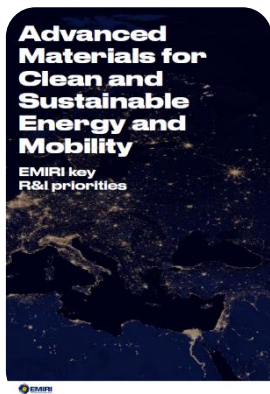
The SPIRE community was in 2019 also heavily engaged in the preparation for a new partnership within Horizon Europe (HEU). It became clear very soon that a continuation of SPIRE is not sufficient to meet the criteria for HEU partnerships. The vision document of SPIRE, generated in 2018, provided a good starting point for defining the scope of the future partnership of the SPIRE community. (The private side of the future partnership will continue under A. SPIRE). The aspect of circularity gained high momentum with the introduction of the ‘Hubs4Circularity’ concept by SPIRE.

In the scope of the Clean Steel Partnership, the steel sector and SPIRE agreed on a complementary approach of both proposed partnerships (Clean Steel and carbon neutral & circular industries). A dedicated joint declaration was signed by A. SPIRE, EUROFER and ESTEP in September 2019.



### Energy Materials Industry Research Initiative (EMIRI)

In September 2019, the Energy Materials Industry Research Initiative published its new ‘[EMIRI Technology Roadmap](#) – Advanced materials for clean and sustainable energy and mobility’, which is a reference for European policymakers as well as for the industry and research world. This second edition of the EMIRI roadmap presents its research and innovation key priorities in the areas of battery energy storage, hydrogen for mobility, hydrogen for stationary applications & carbon capture and utilisation, solar energy, wind energy, building energy performance and lightweight technologies for mobility.



During 2019, EMIRI also strongly advocated for the strategic role of advanced materials by supporting the efforts for climate change mitigation. EMIRI, together with RECHARGE and EUCAR, is working on a co-programmed partnership on batteries.

Throughout the year 2019, ESTEP continued to have good contacts with Philippe Jacques, Managing Director at EMIRI. The good discussions provided some food for thought for the further preparation of the Clean Steel Partnership.

### 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.

Following the European election, MEP Maria Carvalho became the new Chair of the K4I Governing Board. Throughout the year 2019, ESTEP members contributed to several dinner debates and events. As part of the [Artificial Intelligence & Big Data for Innovation Summit](#) of K4I, ESTEP co-organised a plenary session in cooperation with Cefic, SPIRE and EMIRI.

### Strategic Energy Technology (SET) Plan Action 6

The European Strategic Energy Technology (SET) Plan Action 6 aspires to “make EU industry less energy and resources intensive, more carbon-neutral and competitive”. A central objective of the SET [Action 6 Implementation Plan](#) is to enhance cooperation between national financing programmes in order to develop R&I activities into actual projects in the sectors of steel



production, chemicals, system integration as well as heat and cold technologies. ESTEP and EUROFER continued to provide their support to the activities.

In 2019, a survey was launched in order to identify in which of the SET Plan Action 6 areas industry stakeholders have an interest in conducting R&I activities in cross-border cooperation. In parallel another survey on the national R&I funding/financing schemes was also held in order to provide a complete picture of the financing opportunities relevant for the Action 6.

The networking event of 4 December 2019 provided with information on European and national financial instruments. It also focused on cooperation and finance for improved energy efficiency in industry, and specifically for the reduction of CO<sub>2</sub> emissions in the sectors of steel production, chemicals, heat and cold technologies and system integration.

### High Level Group of Energy Intensive Industries (HLG EII)

The High-Level Group on Energy Intensive Industries gathered several times during 2019 by aiming to develop an action plan for the transition of energy intensive industries towards carbon neutrality. For the first time the industries provided a common view, which was very well perceived by the European Commission. The scope of the working groups was extended to cover as well social aspects. ESTEP contributed in the area of research and development.

After strenuous efforts, the [report](#) from the High-Level Group of Energy Intensive Industries 'Masterplan for a Competitive Transformation of EU Energy-intensive Industries Enabling a Climate-neutral, Circular Economy by 2050' was published in the end of 2019. The Masterplan is an outcome of the work of the HLG EII organised in three thematic subgroups on (1) creation of markets for climate-neutral, circular economy products, (2) developing climate-neutral solutions and financing their uptake, (3) resources and deployment.



# Outlook 2020

ESTEP is not just involved in research and is not only connected with the European 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.

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 'Artificial Intelligence & Machine Learning', and 'Residue valorization in iron & steel industry' will be organised during 2020. As part of the European Steel Days, the first ESTEP DAY will also take place in 2020.

In view of the strategic planning of Horizon Europe, the steel community will continue to progress in the development of the EU Clean Steel Partnership and in the update of the multiannual Roadmap. The Clean Steel Partnership is very important as it will be one of the tools to achieve the targets set out in the European Green Deal. ESTEP will also continue to engage in European funded projects such as a dissemination partner. The kick-off meetings of the 'Industrial symbiosis' SPIRE-SAIS project and the European Parliament Pilot project 'Green Steel for Europe' are scheduled for beginning 2020.

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 2020. One of the main activities will be the conference 'Industrial Technologies 2020 – Transition to Sustainable Prosperity' (IndTech 2020).

# ESTEP members

Acciaieria **Arvedi**



**ACCIAIERIE VENETE SPA**

**Air Liquide**

**ArcelorMittal**

**Bfi**  
Angewandte Spitzenforschung

CASRI Centre for Advanced Steels Research

**cetic**  
Your Connection to ICT Research

**CRM GROUP**

**CSM**  
Centro Sviluppo Materiali  
materials, technology & innovation

**DANIELI AUTOMATION**

**DILLINGER**

**EURO ALLIAGES**

**EUROFER**  
The European Steel Association

**Federacciai**

INSTITUT FÜR BAUSTOFF FORSCHUNG

**FEHS**

**FERALPI GROUP**

**GMH GRUPPE**



**ijl** INSTITUT JEAN LAMOUR  
UNIVERSITÉ DE LOURNAI



**ivl**

**Jernkontoret**

**John Cockerill**

**KIT MET**  
metallurgical competence center

**LULEÅ UNIVERSITY OF TECHNOLOGY**

**Materials Processing Institute**

**MONTAN UNIVERSITÄT LEOBEN**



**outokumpu**

**PITTINI**

**PRIMETALS TECHNOLOGIES**

**I0B | RWTH AACHEN UNIVERSITY**

**SALZGITTERAG**  
Stahl und Technologie

INSTITUTE OF COMMUNICATION, INFORMATION AND PERCEPTION TECHNOLOGIES  
**Scuola Superiore Sant'Anna**

**sidenor**

**SMS group**

**SWERIM**

**TATA STEEL**

**Tenaris Dalmine**

**Tenaris Silcotub**

**tu** technische universität dortmund



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ONE STEP AHEAD.



# 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
CSP	Clean Steel Partnership
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 <sup>th</sup> Framework Programme for Research & Innovation
H2020	Horizon 2020
HEU	Horizon Europe
HLG EII	High Level Group of Energy Intensive Industries
ICT	Information and Communication Technology
IPCEI	Important Projects of Common European Interests
K4I	Knowledge for Innovation
LCA	Life Cycle Assessment
MEP	Member of the European Parliament
PPP	Public Private Partnerships
R&D	Research & Development
R&D&I	Research & Development & Innovation
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
SPIRE-SAIS	Skills Alliance for Industrial Symbiosis - A Cross-sectoral Blueprint for a Sustainable Process Industry
SRA	Strategic Research Agenda
SUSCHEM	European Technology Platform for Sustainable Chemistry
ULCOS	Ultra-Low CO <sub>2</sub> Steelmaking

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ESTEP - European Steel Technology Platform  
Av. de Cortenbergh, 172  
B-1000 Brussels  
[secretariat@steelresearch-estep.eu](mailto:secretariat@steelresearch-estep.eu)  
<http://www.estep.eu>

