

Supporting recovery and the EU Green Deal

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During this European Year of Rail, as we look hopefully towards the end of the Covid-19 pandemic, it is clear that railway research and innovation is more essential than ever in shaping the next generation of sustainable mobility.

As I come to the end of my three year term as Chair of the European Rail Research Advisory Council, and look back on the period during which I have been privileged to hold this office, I am amazed by the progress that has been made — some of which exceeded both our expectations and our understanding of the possible.

When I joined ERRAC, we set out to continue the strong legacy established by my predecessor. Andy Doherty had put ERRAC in a strong position to help build a robust European railway research strategy, offering professional and technical advice to the European Commission from the rail sector — as I like to say, honouring the ‘A’ in ERRAC. However, I came to realise that this was no simple task.

Since the beginning of the von der Leyen Commission in 2019, the European institutions have begun to take concrete steps towards a ‘green and just transition’ — a departure from our traditional reliance on fossil fuels that will change virtually every facet of our daily lives. Transport is today the second largest sector in terms of greenhouse gas emissions, and will need to undergo a significant evolution.

In the *EU Green Deal* and the subsequent *Smart & Sustainable*



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Reflecting on the importance of research and innovation in shaping a more sustainable rail sector, outgoing ERRAC Chair Alberto Parrondo considers the strategic priorities which need to be addressed by the new Europe’s Rail Joint Undertaking.

The EU Year of Rail offers an ‘unprecedented moment’ to reflect on rail’s future role, suggests Alberto Parrondo.

Mobility Strategy, the Commission clearly indicated that decarbonising mobility will demand a shift to rail, as the most sustainable form of mass transport. The Mobility Strategy presented by Vice President for the EU Green Deal Frans Timmermans and Transport Commissioner Adina Vălean in December (RG 1.21 p6) calls for a doubling of rail freight traffic and a tripling of rail ridership by 2050. Such a dramatic alteration of behaviours, both at the industrial and individual level,

will require not only massive investment but also innovation to create the rail transport solutions to support a more sustainable Europe.

ERRAC has long argued that creating such a European future would require the positioning of rail as the backbone of a singular, seamless and sustainable transport network with the help of next-generation digital technologies. That was our guiding principle behind the Rail Vision 2050 report, published by ERRAC on behalf of the sector, which proposed that railways should act as a connective element in a multimodal system connecting the 27 member states.

Having reached this conclusion, the next step was to identify what research activities should be prioritised in the first decade of that 30-year period. This would provide the Commission with a more detailed plan to inform its funded

“ ‘Railway research and innovation is more essential than ever in shaping the next generation of sustainable mobility’ ”



programmes, and give the wider community a statement of the rail sector's research and development ambitions.

Following a cohesive effort by a team reflecting all the constituent parts of ERRAC, we were able to publish our *2030 Research & Innovation Priorities* in 2019. This focused on:

- automation and digitalisation of the railway system;
- integration of the railways in a door-to-door mobility ecosystem;
- intelligent assets and life-cycle management;
- environmental sustainability and green freight transport;
- transverse enablers, such as new materials, 5G telecommunications, cybersecurity and tools such as AI and big data.

Working with Shift2Rail

As the rail sector's institutionalised partnership with the EU in which many ERRAC stakeholders actively participate, the Shift2Rail Joint Undertaking has been an invaluable ally in pursuing these priorities. To facilitate the development of innovative solutions for the rail sector, ERRAC has engaged in a two-way conversation with S2R, welcoming its Executive Director Carlo Borghini to serve as formal Observer at our meetings, providing programme updates and contributing to the ongoing debate. Conversely, ERRAC has attended

S2R events, such as its Innovation days, and promoted its activities. We have also shared space at major conferences and exhibitions such as InnoTrans.

As Shift2Rail is the main delivery mechanism for the ERRAC strategy, and will eventually deliver 100 projects, we paid careful attention as the programme began to produce significant outputs. However, Shift2Rail falls under the EU's Horizon 2020 research and innovation programme for 2014-20, which like all good things is coming to an end.

ERRAC has been a vocal proponent of continuing S2R's fruitful private-public partnership through a successor joint undertaking under the follow-up R&I programme, Horizon Europe. So I and my colleagues were heartened to see the Commission formally propose on February 23 the establishment of a new 'Europe's Rail Joint Undertaking'. We look forward to seeing the enabling Regulation adopted by the Council of Ministers and the European Parliament's Economic & Social Committee during the course of 2021.

We share Commissioner Vălean's assessment that 'EU partnerships will have a central role to drive the twin green and digital transition for the mobility and transport sector'. Like its predecessor, ERJU will be a key engine in the swift development and deployment of research and innovation outputs in a cost-effective manner,



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Making rail more attractive and driving modal shift will be essential to supporting decarbonisation of the transport sector.

thanks to a strong collaboration between European rail stakeholders.

This support for railway research and innovation partnership aligns with the larger European policy objectives. Both the EU Green Deal and the Safety, Security & Sustainability Goals are dependent on having a well-performing railway. Supporting R&I is also essential to the market relevance of the European rail industry, increasing the attractiveness of its proposals and ensuring continued global leadership at a time when the world is seeking sustainable mobility alternatives in the face of the mounting consequences created by climate change.

ERRAC helped to elucidate the central rail objectives that would allow the EU to empower our sector to contribute to these wider policy aims through its *Strategic Research & Innovation Agenda*, which was published in December 2020.

Digital twins of rail infrastructure assets can be used to plan maintenance activities and simulate usage or deterioration scenarios.



“It is essential to discuss how the EU and rail stakeholders can work together to implement sustainable projects”

As the European Commission prepares ERJU's Master Plan, the SRIA priorities must be reflected in that influential document. That would ensure that sufficient resources are directed towards the key enabling technologies.

The SRIA is at the core of ERRAC's exchanges with the Commission, listing the following priorities in the ongoing effort to enable a modal shift to rail and ensure ever more sustainable operations in line with the EU Green Deal objectives:

- automation;
- green freight;
- smart integration for door-to-door mobility;
- network management planning and control;
- smart asset management;
- artificial intelligence;
- digital twins.

European Year of Rail

Positioning Europe's greenest, safest and most reliable form of mass transport as the backbone of a new mobility paradigm takes on an added dimension during the EU Year of Rail. This year-long celebration is in part a recognition of the sector's contributions during the

Telematics and condition monitoring will help to streamline the operation of both freight and passenger services, improving the efficiency and attractiveness of rail.

Covid-19 pandemic. Despite a slump in ridership of up to 90% due to restrictions on movement, the pandemic clearly demonstrated rail's value in supporting crisis management efforts and general resiliency across the EU. While stepping up to move essential goods to keep economies functioning, railways continued to ferry key workers to their posts, transport medical equipment and medicines to the critically ill and even evacuate patients from heavily hit regions to others capable of providing them with potentially lifesaving care.

In terms of research and innovation, much of which originates from ERRAC, this year offers an opportunity to assess the successes our sector has experienced over the course of the pandemic, as well as identifying opportunities for growth. It is also a meaningful opportunity to recognise rail's potential contributions to the post-pandemic economic recovery that will dominate the coming years. It is essential to discuss how the EU and rail stakeholders can work together to implement sustainable projects, providing jobs for hundreds of

thousands of Europeans and transport services to millions more. Both workers and customers have a role to play in shaping, implementing and utilising the innovative solutions that originate from ERRAC and contribute to the wider transport decarbonisation objectives.

I believe the EU Year of Rail offers an unprecedented moment to reflect on rail's past contributions, its place in Europe's present and its potential role for the future. Research and innovation will become even more important to achieving sustainability milestones. Working alongside ERJU, ERRAC has a valuable role to play in setting priorities for the sector and its institutional partners in Brussels, as we collectively embark on an ambitious path towards carbon neutrality.

If we are to decarbonise transport, we need to change how Europeans move themselves and their goods to the benefit of the planet. That will help to increase quality of life across the EU, as well as creating the jobs that are sorely needed after a devastating health crisis unmatched in living memory.



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Empowering this essential body that I have been proud to lead is part of that process. Railway research will require institutional support in the form of dedicated funding from Brussels. Towards the end of 2020, ERRAC called for a total EU funding budget of €1.5bn for Europe's Rail Joint Undertaking. We also reiterated the importance of avoiding any delays in launching the new partnership, particularly as there will be no Shift2Rail funding calls in 2021.

By working together and prioritising the research that enables the transformative shifts needed for our shared tomorrow, we can ensure that Europe retains its global leadership in the rail sector and promotes sustainable mobility globally. While I am sad to be stepping down, I wish my successor well in continuing ERRAC's essential work into the ERJU era. 