Discussion paper

Staying ahead.

Mind-the-gap strategy for free and fair competition in the global rail industry.

DIE BAHNINDUSTRIE.

VDB VERBAND DER BAHNINDUSTRIE IN DEUTSCHLAND E.V.

Contents

Foreword

In December 2015, for the first time 195 states agreed on drawing up a climate agreement in Paris. The objective: To restrict global warming to two degrees Celsius – or even better, less. The railway industry in Germany is convinced that this objective must apply. And it is also convinced it can make a decisive contribution. Today, sustainable mobility around the globe is often "Made in Germany" and "Made in Europe". Rail transport is currently being reinvented. Rail 4.0 – comprehensive digitalisation – is the vision of mobility with zero emissions and zero accidents. Rail 4.0 creates mobility that is tailored to people. Because it conserves the environment, it ensures clean air to breath in megacities, it enables remarkably punctual high-speed connections and because it generates a hitherto unknown quality of customer service. The future of mobility.

> *"Yes, Europe is open for business. But there must be reciprocity. We have to get what we give. Trade is not something abstract. Trade is about jobs, creating new opportunities for Europe's businesses big and small."*
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> **Jean-Claude Juncker, President of the European Commission, 2017**

> *"By means of glasses, hotbeds and hotwalls, very good grapes can be raised in Scotland and very good wine too can be made of them at about thirty times the expense for which at least equally good can be brought from foreign countries. Would it be a reasonable law to prohibit the importation of all foreign wines, merely to encourage the making of claret and burgundy in Scotland?"*
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> **Adam Smith, The Wealth of Nations, 1776**

The rail industry today in Germany is arguably the best in the world. The rail industry in Germany and in Europe as a whole is the clear global market leader. This is why Rail 4.0 can become a huge success story. There is one prerequisite however: free and fair global competition. Free trade, open markets, respectful cooperation with partners worldwide – all this is part of the DNA of the rail industry in Germany. Increasingly however national protectionism and state control on a massive scale are distorting competition – and with it, the global rail industry market

Government must act now. Both in Berlin and in Brussels. The Rail Industry Association in Germany (VDB) proposes a mind-the-gap strategy for the creation of added value and jobs in the rail industry. The high-tech rail industry sector also requires a level playing field to ensure its success in the future. Identifying the distortions in the global rail market clearly is the key – as is counteracting them responsibly and ethically.

The Rail Industry Association in Germany has developed the guidelines set out in this paper in close cooperation and in strong consensus with its European umbrella organization Unife and its European national partner associations, in particular the Fédération des Industries Ferroviaires (FIF) in France, the Rail Industry Association in Austria and the rail industry association SWISSRAIL in Switzerland.

The paper is intended to provide the impulse for an objective discussion – and united action.

Volker Schenk
President

Dr Ben Möbius
Chief Executive Officer

Executive Summary

More climate protection, more customer quality – Rail 4.0 creates the mobility of the future.

Zero emissions, zero accidents, 100 percent availability for the people: The digital reinvention of rail is shifting the boundaries of what is technically feasible. Rail 4.0 represents a new era of mobility – not least in the interests of generations to come. The driving factor behind innovative solutions is free competition on an open global market. The rail industry is an asset in every industrial nation. It is:

- **A climate protection industry.** High greenhouse gas emissions, nitrogen oxide pollution, congestion – traffic needs to become more environmentally compatible. Emissions-free Rail 4.0 protects the climate and ensures clean air in metropolitan areas. This is the only way that UN climate goals (COP21) can be achieved.
- **Future industry.** As a global pioneer, the rail industry in Germany is defining new mobility solutions. Rail 4.0 in 2025? We are turning this paradigm shift into reality: decarbonisation, energy efficiency, inter-modal networking, silent logistics, cities that are suitable for our fellow human beings. Rail 4.0 both inspires customers and serves society.
- **Key industry.** Every leading national economy requires a digitally networked rail system. It thus constitutes a critical infrastructure (CRITIS): relevant for supply and security-sensitive for the communal good. Cybersecurity has the highest priority. Today this is guaranteed. Yet in the future, whoever allows the loss of control over Rail 4.0, will become strategically and politically dependent on non-EU regions.

Freedom and responsibility. Guidelines of the rail industry in Germany.

- **Excellence.** As a global market leader with an export share of around 50 percent and thanks to a strong cluster of medium-sized and large commercial industries, the members of the VDB provide excellent mobility solutions. Digital rail “Made in Germany” makes the world a little more sustainable every day. Improving the quality of life worldwide – this is the objective the rail industry in Germany is working towards, with professionalism and passion. To be the most successful and sustainable
- **Open markets, free trade.** An open, rule-based market creates more wealth for everyone. Protectionism, on the other hand, erodes the basis of liberal globalisation.
- **Global partnerships.** Around the globe, trusting, appreciative and fascinating partnerships are the key to success and to win-win globalisation.
- **The VDB is committed to this concept globally (VDB representation, delegations, trade fairs etc.**). Zero-sum thinking and isolation damage everyone. Each thing is geared to the next: local presence, the standardised European Railway Area and a commitment to Germany as a location with more than 50,000 highly qualified employees.
- **Corporate responsibility.** Rail 4.0 requires ethical values. Corporate Social Responsibility (CSR) – in line with the UN Global Compact, respect for the environment and people must be a credible ethical obligation rather than a fig leaf.

The global rail industry market is skewed. For a level playing field.

- **Top ranking for Germany and Europe.** Today, the rail industry is a high-tech domain in Germany and Europe with around 12 and 46 percent of industrial added value created globally. This top position has to be defended anew every day.
- **Quo vadis, level playing field?** Anybody leading the field will be challenged. The VDB is by no means a critic of global competition – quite the opposite – but it is a critic of the way it is being dismantled by massive state intervention. In addition, there are laws in the EU, which in part disadvantage European locations and which need to be updated for globalisation. In sporting terms, it is self-evident: If two teams play according to different sets of rules, the game cannot be a fair one. Competition requires the same ground rules. For all.

Mind the gap. Lack of symmetry on the global market due to state intervention.

→ **State funding of exports.** Only one third of exports funded worldwide is compliant with the OECD market economy consensus. Discounted credits (interest at 0.1 percent, minimum repayment rates), large amounts of earmarked development aid, turnkey packages – some non-EU exporters can rely on generous funding via state banks, state funds and state budgets. And the result is that they win rail projects. It is not the best products that are crucial but the best funding. This gap leads to some striking distortions in export markets. And for third countries? The phrase "There's no such thing as a free lunch" often applies, if in return subsidised, extremely cheap offers result in lock-in effects together with expensive technologies and new political dependences. An international gentlemen's agreement is required to discipline state-funded export subsidies.

→ **Unfair investment locks.** The openness of the EU to foreign direct investments (FDI) is entirely correct – but it is too often a one-way street. Some regions disadvantage companies from Germany and the EU: no complete take-overs, coercion into joint ventures (minority holding, knowledge transfer). The result is that the distribution of opportunities to strategically improve the global position of the rail industry via FDI (closing gaps in know-how, scaling effects) is unreasonably disproportionate.

→ **National protectionism.** Quite rightly, Germany and the EU stand for free trade. But some non-EU rail markets are systematically locked: there is a lack of transparency with award procedures and non-tariff barriers. In some regions, the degree to which the market is open has halved from 64 percent in 2012 to 32 percent in 2016. Due to restrictive local content requirements (LCR) there is a threat that the substance of the rail industry in Europe will gradually be eroded. Because a global spiral of LCR will only create losses, the call is for compulsory standards at WTO level (GPA). On free-trade agreements, the statement by the President of the Commission Jean-Claude Juncker is fitting: "We have to get what we give." A minimum of reciprocity is required. The new FTA between the EU and Japan shows how this can work.

→ **Funding for innovations.** That other states focus their industrial strategy on the rail industry is, in itself, legitimate. Government support for research, development and testing in Berlin and Brussels must promote the rail industry's technological performance capability and secure a locational balance when it comes to the funding of innovation (leading provider, leading market).

Mind the gap on the domestic EU market. Different rules for non-EU state enterprises.

→ **EU investment screening.** Can a non-EU State-Owned-Enterprise (SOE) complete 100% takeovers of companies in the EU rail industry – including security-sensitive companies – without any sort of European screening? – Yes. At a European level (unlike at national level) no screening framework is in place for FDI. The strategic security interests of the EU (critical infrastructure, cybersecurity) can fall through the gaps. Far from being a contradiction, freedom of investment and appropriate screening procedures are reciprocal. The EU must be in a position to cast a critical eye on individual cases of state-aided, security-relevant foreign direct investment (FDI). The proposal of the Commission from 2017 on FDI screening at EU level (European legal framework, better cooperation, transparency) is fundamentally proportionate and should be implemented as a filter – but not as a barrier.

→ **EU minimum added value.** Can a non-EU state enterprise win rail projects in Europe that, for example, are 85 percent financed by European taxpayers (structural fund), thereby competing for a tender using products that are manufactured (almost) entirely outside of the EU? – Yes. This is possible because a basic principle of European law has to date barely been applied: the EU minimum added value law (Art. 85 Directive 2014/25/EU). EU member states should implement this regulation, which ensures that 50 percent of the value is added in Europe (earmarking). Taxpayers have a right to at least half of their money being reinvested in production in the EU.

- **EU state aid law.** Can it be a structural benefit to the EU domestic market to produce as little as possible in the EU because production outside of the EU is highly subsidised and thereby enables extremely cheap offers in the EU? – Yes. State aid law has so far only been applied for added value in the EU. For non-European providers however, other standards apply in the EU. This creates two classes for public procurements. Subsidies can have ruinous effects. For this reason, EU state aid law requires the external dimension: It must be strictly applied to the domestic market – without discrimination against any bidders.
- **MEAT principle.** Can a non-European SOE win tenders as an extremely cheap provider because qualitative award criteria (innovations, lifecycle monitoring, price/performance ratio) are not consistently considered? – Yes. For although the MEAT principle (Most Economically Advantageous Tender), which takes into account sustainable solutions and rewards the most innovative provider has a basis in law, the fact is that in the case of too many contract awards, there is a focus on the cheapest provider – old habits die hard. However, this is incompatible with Rail 4.0 in the 21st century. And it can be changed quickly. Germany and the EU need an award culture that is sustainable.

Mind the gap – the outline of a strategy for the rail industry.

- **Making use of opportunities.** Far from being a threat, the megatrends in the rail industry – digitalisation and globalisation – foreshadow fascinating opportunities, both for the rail industry in Germany and for the mobility of the human race. Yet a leading global industry requires a level playing field. The goal is fair competitive conditions for companies in the rail industry located in Germany and the EU; those that conduct research here, make their know-how available here, produce sustainably here and secure jobs and pay their taxes here. The governments in Berlin and Brussels need to rapidly produce some realistic answers to the massive lack of structural symmetry in global competition.
- **Impact assessment.** More attention must be paid to non-European developments and the economic repercussions of these (the external dimension of impact assessment). These are two sides of the same coin: strengthening global partnership and dialogue forums for international rules in consensus and applying the leverage at one's disposal with a sense of proportion.
- **Economical sovereignty.** Strategic short-sightedness, a naive approach or too long a wait would damage the added value in the rail industry and core competences in Europe and Germany. Too many meaningful EU regulations are still on the waiting list. Implementation of these is the key. In these times of digital control of the rail system, this also concerns economic sovereignty relevant to security policy.
- **Acting together now.** The German government in the Coalition Agreement of 2018; the EU Commission with its new expert group; the European Parliament as well as other parliaments with important initiatives; all of the above plotted a course that will advance Rail 4.0 and react to undesirable developments. In this paper the VDB presents specific recommendations for action in five bundled measures. And it seeks discourse on these.

Mind-the-gap strategy for a global level playing field. Recommendations for action.

STAKEHOLDERS THAT ARE RELEVANT TO SUCCESS:

International responsibility

European Union responsibility i.e. realisable under European government

National responsibility (Germany) i.e. realisable under national government

I. Discipline state-controlled export funding by means of global ground rules, enhance cooperation partnerships with third countries for rail projects.

1. Aim for global market conformity rules (gentlemen's agreement) for export funding. (International responsibility)

→ International agreement on validity periods, minimum interest rates, payback amounts and transparency
→ Support for the International Working Group on Export Credits
→ Modification of OECD-RSU (credit period of 18 years)

2. Intensify political commitment to ground-breaking, open EU standards. (European Union responsibility)

→ Establish ground-breaking open European standards (TSI, ERTMS, EN) for planning, operation, construction and maintenance of rail transport systems at the international level
→ Prevent lock-in effects and hence the associated safety risks

3. Design national export funding to result in equal opportunities. (National responsibility)

→ Better safeguarding of strategic large-scale projects (export credit warranties, uncommitted loans)
→ Priority for foreign projects of strategic interest
→ New approaches to strengthening small and medium-sized enterprises on the global market

4. Strengthen matching facilities at national level for competition on equal terms. (National responsibility)

→ Strategic balancing of non-OECD compliant "Terms and Conditions"

5. Perform feasibility studies quickly as an enabler. (National responsibility)

→ Quick, unbureaucratic and neutral handling of feasibility studies

6. Further extend strategic flanking for exports. (National responsibility)

→ Strengthen market development, AMP, delegations and alliances
→ VDB foreign representations
→ Tailor-made consultation for small and medium sized enterprises

II. Drive liberalisation forward globally for greater freedom for investments, check case by case the strategic security interests of the EU regarding state-controlled direct investments.

1. **Strengthen the freedom of investment beyond national borders, negotiate reciprocal investment agreements.**
   - → Supranational agreements for the liberalization of investment markets worldwide
   - → Minimum equivalence with investment agreements
   - → Campaign for open investment markets

2. **al FDI level regulation (equivalence of openness) as a lever for greater investment freedom in the global rail market.**
   - → Evaluate an equivalence proviso for better FDI equilibrium

3. **Introduce European FDI screening for the rail critical infrastructure (CRITIS) as proposed by the EU commission with a sense of proportion.**
   - → Focus on security-sensitive state-controlled FDI
   - → Filter, not a barrier: transparent criteria for strategic safety of EU
   - → Inspection according to OECD principles: non-discriminatory, transparent, proportionate.

4. **Implement balanced AWV substantiation in Germany.**
   - → Implement ground-breaking AWV substantiation from 2017 equally conducive to investment freedom and screening in individual cases for critical infrastructures.

III. Implement fair rules for market access worldwide, strengthen industrial rail production in Germany and Europe coherently and with foresight.

1. Oppose excessive local content requirements (LCR) worldwide.
→ Strengthen the WTO in favour of free global trade and against growing protectionism
→ Consolidate free trade as a basis for successful globalisation in the rail industry
→ Supranational agreements against restrictive LCR in the rail market

2. Check existing moderate EU minimum added value regulations (Art. 85 Directive 2014/25/EU) for EU-funded projects in the rail sector as compulsory earmarking.
→ Earmark European taxpayers' money for European added value.
→ Evaluate legal implementation of the regulations in Article 85 for rail project public contract awards financed with
EU funding

3. Bindingly implement existing moderate EU minimum added value regulation (Art. 85 Directive 2014/25/EU) within Germany in the rail sector.
→ Application guidelines from the EU Commission for implementing the Article 85 regulation
→ In Germany, earmarking of taxpayers' money for EU added value, i.e. EU minimum added value regulation (50 percent) when awarding public contracts
→ Procedure should be coordinated as much as possible, particularly by Germany, France, Austria, etc.

4. Robustly negotiate fair market access at WTO level and in free trade agreements.
→ Consistently implement WTO-GPA (Agreement on Government Procurement)
→ Campaign for additional admissions to GPA as a fair international agreement
→ Bilateral FTA focus on opening of contract markets in the rail sector

5. Introduce International Procurement Instrument (IPI) without unwarranted collateral damage.
→ Price Adjustment Measure of the IPI with minimum threshold (20 percent)
→ IPI as an addition to existing EU regulations, not as a substitute

IV. Create the same rights for all in Europe, consistently implement market-oriented EU rules without privileges for non-European state enterprises.

1. Add an external dimension to EU state aid law to reflect the global market inside Europe.

→ No structural benefit for non-EU SOEs in Europe, external dimension in EU state aid law in case of unusually low offers
→ Lex loci solutionis to prevent distortions due to state-aided subsidies
→ Effective political trade protection measures (anti-dumping, anti-subvention)

2. Consider global market in the case of EU merger control.*

→ When examining mergers and takeovers, appropriate weighting for the global market environment, no disadvantages for European companies in global competition

3. Commission's Expert Group: develop and implement EU master plan for fair competition.

→ Rapidly develop a joint master plan in the "EU Commission's Expert Group on the Competitiveness of the Rail Supply Industry"
→ Joint responsibility for consistent implementation
→ Significant influence of EU commission, European Parliament, Germany and France for implementation

* The position shown here on EU merger control does not reflect the opinion of all VDB members.

V. Stay ahead as the leading provider and leading market for Rail 4.0, set priorities for innovations, progressive contract awards, cybersecurity and sustainability.

1. National innovation program Rail 4.0
Leading provider: Quickly implement a national programme for rail research.

→ Rapid implementation of the agreed national programme for rail research
→ Establish coherent research structures
→ Promote digitalisation, automation and energy efficiency

2. National innovation program Rail 4.0
Leading market: Redefine a progressive contract award culture for the 21st century (best provider, MEAT).

→ Modernisation of award process. Comprehensive implementation of the EU MEAT principle (Most Economically Advantageous Tender, Art. 82 of the Directive 2014/25/EU) in public procurements: price/performance ratio, quality criteria, aesthetics, lifecycle costs (LCC)
→ At least 60 percent sustainability for MEAT criteria
→ Best provider for rail 4.0 instead of cheapest provider

3. Digitalise infrastructure, ambitious roll out of ETCS.

→ Revolutionise infrastructure by means of ETCS and comprehensive digitalisation

4. Realise pilot projects for electromobility, climate protection and customer quality.

→ Pioneering spirit and technology premières in real model projects

5. Ambitiously strengthen power of innovation in the Standard European Railway Area.

→ EU research initiative S2R II: appropriate budget, easier access for small and medium-sized enterprises
→ EU strategy for protection of intellectual property and implementation of MEAT tenders
→ ETCS roll-out and fourth railway package as driver of innovation

6. Further develop cyber-security strategy for Rail 4.0 in Germany and the EU.

→ Comprehensive, coordinated cyber-security strategy
→ Strengthen core components for future cyber-security
→ Connect and coordinate national and European cyber-security strategies

7. Show sustainable responsibility (CSR) bindingly in contract awards.

→ Liability to CSR in public contract awards (PQ)

A Basic principles. For free and fair global competition.

The rail industry is a key industry. Rail 4.0 is generating the mobility of the future – for more climate protection and more customer quality. The rail industry in Germany leads worldwide and is highly successful. Free trade is the basis of this. Yet increasing market protection is threatening to slow this journey down. And where rail projects follow the lines of state export subsidies, free and fair competition is at risk. Open markets and fair ground rules – that is what is needed.

Global free trade creates wealth.

What Adam Smith, the founding father of economics, knew, is what the world has been experiencing for many decades now: openness creates wealth. Exports in the EU have created more than 30 million jobs in this way. In Germany the export quota – the relation of exports to the overall economic performance – is 46 percent. In countries like Belgium, Ireland, Slovakia and the Netherlands, it is even higher at over 80 percent. One of the high-tech sectors with the greatest export quotas in Germany is the rail industry. High-speed trains, regional trains, metros, trams, digital control and safety technology, intelligent service, track systems, components, sensors, automated freight trains – the most up to date, eco-friendly mobility on rails throughout the world has often been "Made in Germany".

Worldwide. At the cutting edge.

The rail industry in Germany is regarded as the best rail industry in the world. This top rating is based on quality: state-of-the-art technology, staff skills, entrepreneurial creativity, process know-how. And on open markets: global networking, free trade, open market access, successful cooperation with business partners around the globe.

A portrait in figures (2016): around 12 billion euros annual turnover, 50 percent export quota, 8 percent of turnover reinvested in research and development – and more than 50,000 highly qualified employees (directly employed) in Germany, who work hard every day for this success.

The rail industry is of great strategic importance worldwide. The rail industry is a ...

→ **Climate protection industry.** The UN climate goals of the Paris Agreement (COP21) can only be attained with modern rail transport. Limiting global warming to significantly below two degrees Celsius must succeed to protect the planet. Yet particularly transport is regarded as a problem, since traffic emissions today in Germany are higher than in 1990. They account for a fifth of EU and greenhouse gas emissions. There is still a huge gap between the requirements and reality. In addition, there are local health issues due to nitrogen oxide and ozone in numerous metropolitan areas. Decarbonisation requires emissions-free railways worldwide. For this reason, a strong rail industry is an asset for every industrial nation.

→ **Future industry.** Digitalisation is shifting the boundaries of what is technically feasible. Rail 4.0 is revolutionizing mobility from start to finish, from automated driving to digital train control, ensuring that mobility does not become a day-to-day test of nerves but rather enhances the quality of life of people. As a pioneer, the rail industry in Germany is defining global standards – primarily due to the unique cluster structure made up of system vendors and highly specialised medium-sized hidden champions.

→ **Key industry.** No competitive national economy can function without a modern rail system. It constitutes a critical infrastructure (CRITIS): relevant for supplies throughout the entire breadth of society. In digitally networked rail transport, cybersecurity must have the highest priority. Gaps in know-how endanger the protection of this highly complex, sensitive CRITIS. In the rail transport landscape of the 21st century, any region that does not have industrial rail core competences of its own will inevitably end up being strategically dependent on other regions.

Mind the gap.

Competition in the rail industry is extremely internationalised. The global market is the touchstone. The global rail industry market is particularly competitive. Today it is in general the domain of European industry: almost half of the (accessible) global market is “Made in Europe”. The rail industry in Germany alone has a share in the (accessible) global market of around 12 percent.

And in future? – Lazily hoping “things will work out OK” would be a negligent attitude. Successful competition assumes a level playing field. International ground rules that are identical for all (more or less). In sport this is plain to see: If one team sticks to certain rules on the playing field while the other team is playing according to different rules, the game cannot be a fair one. Free and fair global competition: the two are inseparable.

Too often however the status quo is different. The rail industry in Germany is increasingly encountering a skewed situation on the global market. With some contract awards, it is already 0:1 before the kick-off. Excessive state intervention, the fall-back into national protectionism, systematically closed markets, national preferential treatment with contract awards, the growing weight of state enterprises: economic reality is shifting. The consequence is a growing rift between the basic rules that apply to companies in the rail industry. State intervention distorts competition on the global market rather than ensuring equality of opportunities.

GROWING PROTECTIONISM:

Quo vadis, free and fair competition?

Is trade on the global rail industry market free and fair …

- when some regions are increasingly imposing local content requirements (LCR) of 65 percent or more while the EU (which expects zero percent localization) is losing production, technology, knowledge and jobs at the same time?
- when some states are turbocharging exports way beyond OECD guidelines so that non-EU enterprises with privileged access to state budgets are offering customers magnanimous discounts on credit conditions well below the market rate (interest of roughly 0.1 percent) whereas private competitors are not currently able to make offers of this nature on the market economy, such that competition for products is becoming absurd?
- when non-EU state enterprises can make 100% purchases of even security-sensitive companies in the EU rail industry without European investment screening while European companies by contrast are refused freedom to invest in some third countries?
- when non-European bidders use the – undoubtedly correct – openness of the European tender markets, potentially backed by subsidies in their home country yet European bidders by contrast are clearly discriminated against with awards of contracts in some non-EU states and can now only access 63 percent of the global rail market?
- when some states deliberately fund the innovative power of their rail industry, which they – correctly – define as a core industry, with R&D resources while in these places research programs and innovation-friendly contract awards for Rail 4.0 are still on hold?

European Parliament: "Competitiveness of the European Rail Supply Industry."

Precisely because of this background of imbalance on the global market, the European Parliament passed a highly regarded resolution in June 2016. This resulted in:

> ***"Competitiveness of the European Rail Supply Industry" (2015/2887(RSP))***
>
> *"The European Parliament (...) recognises the rail supply industry as a key industry for Europe's competitiveness and capacity for innovation; urges that measures be taken to ensure that Europe maintains a technological and innovative advantage in this sector (...). Calls on the Commission to ensure that EU trade policy is more consistent with industrial policy, so that trade policy takes account of the needs of European industry and the new generation of trade agreements does not lead to fresh relocations and further de-industrialisation in the EU."*

The question posed by the European Parliament is: Are the global ground rules for the rail industry still suitable? – The answer: less and less. The EP warns against de-industrialisation. With its resolution, the European Parliament is promoting fair competitive conditions for the European Rail Supply Industry. From the point of view of the VDB, this resolution constitutes a milestone: Rightfully, the parliament is urging the markets to be opened up and is pushing for a strategic industrial policy that has Europe's interests firmly in view.

Mind the gap. Outline of a strategy.

Complex questions require a variety of answers. It is precisely the firm commitment to global free trade that dictates the need for an objective analysis of market distortions caused by states. And a commitment to countering these. For high class industries do not come about by accident. Between 1995 and 2015 the industrial share of the EU gross added value shrank from 23 percent to 19 percent. No wealth without industry. Berlin and Brussels need to act prudently for the rail industry in order to prevent its top spot being endangered in this future industry.

The rail industry in Germany ...

→ stresses that **ambitious global climate protection** and local **clean air** will only happen with an excellent rail industry,

→ defines itself as a pioneer in a fascinating new era of mobility: **Rail 4.0** sees improving the quality of life for people worldwide as its raison d'être and is working towards this requirement with professionalism and passion,

→ is working towards the goal of retaining the title of most successful and sustainable rail industry in the world in 2025,

→ is relying on **innovative power** for emissions-free mobility, on the excellence of outstandingly qualified employees and is convinced that our country must not surrender its technological lead in the rail industry,

→ would like to point out that rail transport is critical for supplying society and is security-sensitive, that in particular digitally networked Rail 4.0 has the **highest strategic relevance** and that therefore losses of expertise in the rail industry would lead to one-sided dependencies on other regions – including losses of political sovereignty,

- → is committed to the **value structure** of free entrepreneurship in communal societal responsibility and takes bindingly sustainable corporate action to respect people and the environment in the spirit of the UN Global Compact,
- → as an export champion, realises every day worldwide **trusting, respectful partnerships** for sustainable local growth as a **win-win strategy,**
- → is committed to **Germany as a location** for research, development, production, employment and as a leading market for the Standard European Rail Area and counts on globally intermeshed production together with knowledge transfer as well as for profitable factories at home,
- → emphasises that the **global market** as the relevant market for the rail industry offers **fantastic opportunities** but **is increasingly skewed due to disparate ground rules,**
- → stands, as a global market leader, for the guiding principle of a **level playing field** for law-based free trade rather than national protectionism, for fair regulations instead of discrimination, for global cooperation instead of zero-sum thinking and is not critical of global competition but rather of its partial demolition by massive state interventions,
- → stresses that the ambitious **industry strategies** of other regions are per se legitimate and **respect** for different national structures and traditions is essential,
- → opposes **a lack of symmetry** due to unfair trading practices and market distortion due to planned economies in other regions as well as insufficient industrial strategy responses in Berlin and Brussels,
- → would like to point out with concern that undesirable developments might erode the market economy basis of the globalised rail industry and creeping **erosion of production and employment in the rail industry** is a threat in Germany and the EU,
- → demands **fair competitive conditions** for rail industry companies located in Germany and the EU, which research, produce, secure jobs, work sustainably and pay taxes here and expect that governments react to the changed realities on the global markets appropriately, free of ideology, quickly and with strategic foresight,
- → praises **new political courses** in particular pursued by the German government with the Coalition Agreement 2018, by the EU Commission with its Expert Group formed in April 2018 to enhance the competitiveness of the Rail Supply Industry and by important initiatives of the European and other parliaments,
- → rather than going on the defensive can and will remain at the fore for **climate-friendly innovative mobility** when it comes to fair political framework conditions in free global competition,
- → advocates a **differentiated culture of debate** that does not generalize but promises to find suitable political solutions for problems.

Based on the above, the rail industry in Germany considers it a matter of urgency for the governments in Berlin and Brussels to implement a mind-the-gap strategy for the rail industry. And the outline of this? – The government should …

- → in systematic impact assessments, sharpen its focus beyond national and European borders onto the global market and fundamentally reflect the global dimension of competition better (external dimension impact assessment),
- → act coherently in relevant political fields in order to strictly counter the lack of symmetry (mainstreaming).

Four maxims should apply here:

1) **Trust. Trust creates wealth.** Free trade benefits all stakeholders, a spiral of protectionism would massively damage everyone. Particularly the most important stakeholders in the rail industry – the EU, North America, China, Japan, South Korea – profit from trusting, open collaboration with a high level of respect. Reversing the liberal economical globalisation of the rail markets would be fatal. Government and industry should intensify dialogue and interaction for the benefit both of industry at home and of their global partners.

2) **Agreement. Reduce the gap by means of fair international ground rules.** The globalisation of the rail industry requires common principles. Free transfer of goods and capital, market-conform export funding is what counts. Multilaterally, a binding set of rules should be the goal (WTO, GPA). The community of values of the EU and OECD play a key role here. Bilateral FTAs should

3) **Responsibility. Reduce the gap by means of ground rules.** It will not always be possible to establish binding general rules for global trade successfully. Wherever (initially) a consensus cannot be reached, practical reasoning is required. Being open to the world does not mean being naive. Enlightened free traders should not consider themselves the guardians of a supposedly pure doctrine. Cooperation requires a partnership of equals. Strategically, governments need to represent the legitimate interests of the rail industry in the case of unacceptable distortions by securing a de facto minimum of balance on third markets and reciprocity with market access ("We have to get what we give." Jean-Claude Juncker). Oneway streets are unfair; stakeholders who are not prepared to offer reasonable access to their market can in future no longer assume they will retain unhindered access to the EU market.

4) **Responsibility. Reduce the gap using our own regulatory framework and an intelligent industrial strategy.** Other regions of the world have recognised the key role of the rail industry – and are targeting their actions. In Berlin and Brussels, reactions are required in terms of industrial strategy. In an era of rapid changes, time plays a key role. The focus should be on better framework conditions. Often the legal position is clear but there is a problem with implementation. In terms of ethical responsibility, the question is whether Germany and the EU are likely to lose ground with Rail 4.0 future technology – or stay ahead.

How can a mind-the-gap strategy be implemented? – The VDB provides specific recommendations for discussion in Part C. This illustrates a lack of symmetry in conditions for competition and measures are proposed in order to rebalance disparate competition. As Mark Twain remarked:

> *"Years from now we will be more disappointed by the things we did not do, than by the ones we did."*

It is the joint responsibility of government and industry to act. Part B is intended to provide an answer to the question: Why should this strategy be implemented? – The goal is the ability to exploit major new opportunities.

B Global megatrends. Embracing new opportunities.

Two – intermeshed – megatrends are shaping the future of the rail industry: digitalisation and globalisation. Both trends offer new and fascinating opportunities for the rail industry – assuming the structural framework is correct.

Digitalisation megatrend: Rail 4.0 – better for people.

Rail 4.0 constitutes a revolution in mobility. Digital rail creates one thing above all else: progress, which benefits people. And Rail 4.0 is a vision for the rail industry of tomorrow with a strong production base in Germany and Europe. The future has begun. Our portrait of Rail 4.0 in 2025:

Vision: zero emissions – for greater climate protection.

→ **Sustainably climate-friendly.** Climate research recently found strong evidence that the gulf stream is slowing down. Climate change is by no means fiction – nor should the Paris climate goals (COP21) be either. More than any other sector, the transport sector will define climate protection. Rail 4.0 is about creating emissions-free mobility for the future. The pressure to act has never been greater.

→ **Sustainably electric.** In Germany 90 percent of the traffic on rails is electric. This is the case today. 60 percent of track systems in Germany today are electrified. By 2025 this will be 70 percent.

→ **Sustainably renewable.** Today more than 40 percent of electricity for the railways in Germany is generated by renewable energy. In Switzerland, it is 90 percent and in Sweden 100 percent. The share of green electricity in rail transport in Germany is set to increase to 70 percent by 2030 to meet ambitious decarbonisation goals.

→ **Sustainably energy-efficient.** The energy requirements for self-driving underground trains "Made in Germany" are up to 30 percent lower because there is no need for superfluous start-up and braking (as already tested in London and Paris). Automated systems will be used in more and more metropolitan areas by 2025. Clean drive technologies, energy recovery, lightweight construction, new components – all this will optimise the energy footprint of tomorrow.

→ **Sustainable electric mobility without overhead lines.** Emissions-free electromobility on rails is also possible without an overhead line. Highly innovative battery, hydrogen and hybrid solutions are currently waiting at the starting line. The earlier market development of these begins, the greater the leverage for climate protection will be by 2025.

→ **Sustainably inter-modal.** Thanks to digital networking, transport modes are being seamlessly interlinked.

Transport is getting out of control. Climate protection – only possible with us.

What has transport contributed to climate protection in Germany to date? – At the end of the day, too little. For, despite all the gains in efficiency, absolute greenhouse gas emissions from transport are actually increasing. Between 1990 and 2016 the transport sector in Germany – in contrast to other large sectors – increased its greenhouse gas emission levels rather than lowering them. These were the findings of the Federal Office for the Environment (UBA). The reasons were the increase in HGV transport and the growing number of diesel passenger cars.

90 percent of mobility today is still based on crude oil. The result is that almost a quarter of greenhouse gas emissions in the EU stem from transport. For 95 percent of these emissions today, the street is the source. Rail is responsible for 1 percent. Digitalisation will increase this lead even further. Firstly, Rail 4.0 will achieve a high market share because it is inter-modal and more easily wins over customers. And secondly, it will enable a new level of energy efficiency.

Vision: state-of-the-art innovations – for more customer quality.

→ **Sustainably urban.** By 2030, 80 percent of the global population will be living in cities. By 2030, there will be 40 megacities on earth (with more than 10 million inhabitants). But will there be blue skies above these metropolises? Today, thick smog, ozone levels and ridiculously long traffic jams are leading to a collapse of urban mobility. Rail 4.0 will create tailor-made, clean urban mobility for the future. Rail 4.0 is globally climate-friendly – and yet compatible with health locally. In Germany too, where local motorised traffic is causing around two thirds of nitrogen oxide emissions (NOx) in inner cities. And this is where Rail 4.0 comes in: intermodally networked, highly flexible. In future, fully automated and semi-automated metros will be more closely timetabled with shorter intervals and will follow demand in real time. Waiting times? Overfilled trains? These will be things of the past.

→ **Sustainably quicker and safer.** An enjoyable travel experience begins at modern, safe stations where digital light systems direct passengers to coaches with free seats. There will be many different, unrivalled ways to use the time on board (new spatial concepts, infotainment). ETCS, which will be finally rolled out ambitiously by 2025, will create high-speed connections at almost 100 percent punctually between major cities – without plane travel. Train travel today is already extremely safe – the risk of accidents when travelling by car is 125 times higher. Digital infrastructure, safety technology, increasingly more refined sensors and new materials will level the track to the goal of zero accidents by 2025 for rail travel.

→ **Sustainably quiet.** Rail 4.0 will relieve the burden on those living nearby, because intelligent travel curves, innovative designs and tracks with high-tech maintenance have shown that travelling quieter is perfectly possible.

→ **Sustainably, barrier-free.** Innovative, often digital solutions enable a barrier-free travel chain for people with restricted mobility, for older people and for families with prams or pushchairs. Guidance systems via smart phone or acoustic and haptic information will complement the design of the infrastructure and vehicle interiors for people with disabilities.

→ **Sustainably beautiful.** Rail 4.0 is fun. Customers find virtually developed design exciting. This is happening today. An example: In Calgary, Canada, citizens voted on the design of their new urban railway via the Internet: “The mask” was the winner with 40 percent, a front design inspired by ice hockey. Popular, fresh, successful. And exemplary.

Example ETCS.
Global success “Made in Germany”.

The European Train Control System (ETCS) is the most modern train control and safety system in the world. It is increasingly being put into service: in China and Taiwan, Israel, India, Russia, Australia and New Zealand and as far afield as Brazil and Mexico. ETCS is developing into a global future standard “Made in Germany/in Europe”.

→ **Sustainably economical.** A “hidden champion” of Rail 4.0 is maintenance. Data-based predictive maintenance allows wear or defects to be detected before they occur. This will shift availability towards the 100 percent mark by 2025. Manufacturers are well aware of their responsibility for the overall lifetime of the product, for predictive maintenance, digital updates. With this new approach to products, lifecycle costs (LCC) will sink dramatically by 2025. Highly efficient, data-based rail logistics will provide eco-friendly relief for HGV transport with precision cargo monitoring, inter-modal timing and semi-automatic operation as well as moving the growing volume of goods worldwide. Greater commercial success will come about due to quality, which will win over customers. Rail transport in 2025 will not require the cheapest providers; rather, dynamic best providers in order to be competitive.

Cybersecurity – sovereign knowledge for the secure critical infrastructure of tomorrow.

Present-day rail systems are extremely secure. But Rail 4.0 will mean data-based networking. This creates new options – including cyberattacks (organised crime, secret services, espionage etc.). For this reason, social vulnerability will grow rapidly by 2025. How can the risk of hackers manipulating cloud IT, of trains being controlled or shut down via remote control be mitigated in the future? Robust cybersecurity precautions are the sine qua non of Rail 4.0. Data security, data integrity, data protection, data analysis, data platforms, data transfer – all this requires a basic degree of technological sovereignty in Germany and Europe. Only they who master the security architecture will be able to safely fend off cyberattacks and cascading risks. Government must make allowances for this by strengthening core competences for the rail CRITIS. Retaining technological control of Rail 4.0 will be a key issue of security policy in the year 2025. For whoever, in digital terms, is in the second tier when it comes to complex rail systems, will pay a price: loss of technical control and political sovereignty.

What is the meaning of a rail critical infrastructure?

Central parts of rail transport are a CRITIS because failure of the system or impairments to it would lead to dramatic bottlenecks in supplies or pose a danger to public safety. This includes stations, the rail network, traffic control and guidance systems, signal boxes, control centers, services for the transport of passengers and goods (§9; Appendix 7 of the BSI-KritisV). Major disruptions would affect society at virtually all levels. The economy: production and logistics processes, the mobility of workers. And the everyday life of the people: the ability to reach family and friends, cultural and social participation.

Strong production basis – leading provider and leading market for Rail 4.0.

The question is not whether Rail 4.0 will come by 2025 but where it will come from. A digital quantum leap can become a German and European success story. For sure, the first wave of digitalization (Internet) is strongly influenced by the USA and countries in Asia. But the second wave (Internet of Things, Industry 4.0, Mobility 4.0) will revolutionise industries in which Europe is the leader to date – and can stay as such. To be a pacesetter – anybody who wishes to shape Rail 4.0 must follow this path. Government and the industry sector have set off down this road together. An InnoTrans trade fair on the topic of the digital age and the "Rail Digital" future forum sounded the starting signal for this in Berlin in 2016. The "Memorandum of Understanding" – signed by the German Transport Minister, the head of Deutsche Bahn AG and the VDB President – marked the route for the first time:

> *"With digitalisation, we are designing the mobility revolution of the 21st century now. Particularly for the rail system, innovations like automation and the internet of things offer huge potential. Trains are becoming a digital mobility, information and communication platform for passengers. (...) Digitalised rail travel of the future should be "Made in Germany."*
>
> **Memorandum of Understanding (MoU) Rail Digital by BMVI, DB AG and VDB, Berlin, June 2016**

In 2018, decisive political directions for Rail 4.0 followed: With the German government's coalition agreement, with parliamentary initiatives, with the EU commission's Expert Group. The rail industry in Germany is counting on very close cooperation with government, operators and European industrial partners in order to make Rail 4.0 a reality for the people, with state-of-the-art production and premium jobs in Germany and Europe.

Globalization megatrend: Win-win strategy.

Not only technologies but also markets and the rail industry are changing rapidly. Without export – i.e. global cooperation – the rail industry in Germany would only be half as large as it is at present. It also profits decisively from globalisation. Solutions made in Germany are world-leading, both in the high-tech segment with complex specifications and with premium quality, and extremely reliable mid-level technologies (good enough). The decisive factor is that export successes should benefit all involved. The rail industry in Germany stands for reliable partnerships worldwide – and hence for sustainable success together.

FAIR PARTNERSHIP

The export philosophy of the rail industry in Germany.

The four pillars of fair partnership:

1) **Economic efficiency:** cheap acquisition price, calculable lifecycle costs (LCC), which are reliably optimized over 10, 20 and 30 years for trains, infrastructure and components. True cost pricing, rather than snapshot prices. Quality with unique price/performance ratio for a rail system that is highly efficient viewed throughout the year and which acquires significantly more customers.

2) **Energy efficiency:** climate-friendly, economical mobility due to excellent drive technologies, digitally optimised driving profiles, highly innovative materials, energy-saving components.

3) **Intelligent repair:** predictive method, open standards, reliable spare parts supply across the lifecycle for maximum availability and efficient operation without any lock-in effects.

4) **Cooperation:** sustainably created, fair cooperation, joint development of traffic concepts, dual apprenticeships of employees on site, project experience, reliability, transparency rather than a black box. In this way for instance emerging markets can build up their own competences and drive forward their economic development using German know-how.

In recent times, important new business partners such as in India, the Middle East, South America, South Africa and, to a certain extent, in the Asian-Pacific region joined the traditional partners of the rail industry in our country who are primarily in Europe in North America. The dynamism of this region is a global growth motor par excellence (particularly with vehicles; in addition, the EU, NAFTA and the service and digital train control market segments).

Fascinating markets for strong partnerships with a future. A few examples:

→ **In 2015 China commissioned more than 9,000 kilometres of new train routes.** This is more than the rail networks of Denmark, the Netherlands and Belgium combined. As part of the 13th five-year plan (2016 – 2020) around 480 billion euros are to flow into the high-speed rail network. This is roughly equivalent to Sweden's annual GDP. At the end of 2016, one of the longest highspeed routes in the world (Shanghai – Kunming, 2,250 kilometres) was inaugurated. The highspeed network, today the largest in the world at 20,000 kilometres, is set to total around 30,000 kilometres by 2020. Top marks for a fascinating market. For the VDB, the Chinese market has the highest priority.

- **India** is an extremely exciting market with the fifth longest rail network in the world (68,500 kilometres). India has identified rail transport as a motor for growth and the 2018/2019 budget made the Indian railway a priority. Indian Railways is planning investments in the region of 140 billion US dollars within five years. With high-speed projects (e.g. Delhi–Agra) India is creating new connections. Routes such as between Mumbai and Ahmedabad for example are currently being prepared. In many Indian metropolitan areas, local passenger transport is being modernised by ground-breaking rail projects in order to increase the quality of life. More than 10 metro systems (of more than 500 million US dollars volume each) are currently under construction or being opened. The VDB for example sent a delegation in early 2018 for the joint development of solutions.
- **South America.** Tren Bioceánico is a spectacular project: the construction of an approx. 3,700 kilometre long railway from the Atlantic port of Santos near São Paulo (Brazil) via the central Bolivian cities of Santa Cruz and La Paz as far as the port of Ilo in South Peru. Besides planning, construction and electrification of the infrastructure the "Panama Canal on rails" comprises of vehicles, control and safety technology – as well as training on site. Brazil, Bolivia, Peru and also Argentina, Paraguay and Uruguay are interested in its realisation. And the volume? – Around 10 billion US dollars. The VDB and its partner association SWISSRAIL founded the German/Swiss joint venture Bioceánico in 2017. The states from the region have in the meantime signed MoUs with Germany and Switzerland for this once in a century project.
- **South-East Asia.** Already at the end of the 1990s a high-speed route between Kuala Lumpur (Malaysia) and Singapore was proposed but was eventually put on ice. The proposal became part of the economic roadmap for Malaysia in 2010. Goals: shorter journey times and business synergies. In 2013 the flagship project was officially agreed between Malaysia and Singapore. The route will have a length of 350 kilometres. And the journey time? Will be lowered from seven hours at present to 90 minutes. The project with a value of approx. 17 billion US dollars is to be realised by 2026 – and is right at the top of the rail industry's agenda.

Asia Pacific accounts for 31 percent of the global rail industry, just behind Europe and in front of NAFTA, two core markets that remain extraordinarily important for the rail industry in Germany. Japan, South Korea and China are the conspicuous rail industry stakeholders here. The focus of attention is on China:

- **Highly successful win-win partnerships.** China is one of the largest rail industry markets in the world. It offers excellent opportunities for complementary partnerships, from which both
- **sides will profit immensely.** Numerous extremely successful co-operative projects between companies from Germany and China show: globalisation – done well – is a win-win strategy. Sustainable interaction is founded on trust, respect, dialogue, synergies and the ability to meet customer demands. China is "the place to be": For many OEMs and medium-sized rail industry suppliers (tier 1, tier 2 etc.) in Germany, the Chinese market, Chinese partners and also Chinese projects in third countries are often right at the top of the agenda. Both countries are moving closer. Containers can now be transported between Peking and Hamburg within around 16 days on a freight train line of more than 10,000 kilometres–twice as quickly as by sea.

SUCCESSFUL TOGETHER.

The VDB representation in China.

Hand-in-hand towards shared success. The rail industry has made a firm obligation to follow this approach in China. For this reason, the VDB maintains numerous partnerships with Chinese metropolises, at trade fairs, at forums and with journeys by delegations. And also for this reason, the VDB started a new chapter in German/Chinese partnership in May 2018 with the opening of its VDB representation in China.

The new VDB office will act as the **no. 1 address for the German rail industry in China**. At its fore will be the VDB Chief Representative for China, a highly renowned expert on both partners. The VDB representation underlines the great importance of the German/Chinese partnership and special mutual respect. More intensive dialogue will enable both partners to realise the best solutions together. VDB members, including many small and medium-sized hidden champions, will receive more active support on the Chinese market – and will be able to incorporate their leading solutions so that they are perfectly tailored to requirements.

The new office in Tianjin near Peking is setting **new standards in this way:** as a forum for exchange, for German/Chinese talks, for neutral expert consultations, for the common search for optimal collaborations, for technologies that often need to be customised for projects and as a competence centre.

Communication, dialogue, expertise: The VDB representation links the rail industry networks of Germany and China more closely. For it will serve both as a signpost in China pointing the way to the industrial structures of the railway industry in Germany – often based on medium-sized enterprises – and conversely as a link to decision-makers in the Chinese market.

The VDB representation in China is a new dimension in cooperation: the best possible German/Chinese matching processes, to the benefit of both partners – with both sides committed to modern rail passenger transport.

→ **New competitors.** Major partners can at the same time be major competitors. The Chinese state enterprise CRRC, which was formed in 2015 from the merger between CNR and CSR, is the largest rail industry enterprise in the world by far. The Chinese state is promoting highly promising future technologies with long-term prospects, which of course includes the rail industry. The vision of the "Made in China 2025" strategy defines the rail industry as one of ten focus industries. At the centre of this business strategy, which was initiated in 2015, is the transformation of China into the leading industrial power by 2049 at the latest. Goals for the Chinese rail industry are: firstly, to create national champions and replace technology imports by means of domestic production, where possible and desired, and secondly to boost exports in the high-tech rail sector. In 2016, China issued export credits for a record sum of 216 billion US dollars in total. The "Made in China 2025" strategy offers huge opportunities for the rail industry in Germany but without doubt many challenges too.

CRRC (China Railway Rolling Stock Corporation). In numbers:

Annual turnover. Approx. 30 billion Euro turnover. This makes the state-owned corporation (as of 2017) one and a half times the size of the three leading Western companies (OEMs) together with (around 21 billion euros). CRRC is characterized by a particularly large depth of value added. In addition to the CRRC, the State corporations CRSC (China Railway Signal and Communication) Corporation) and CRCC (China Railway Construction Corporation) dominate the Chinese railway sector.

Export order. By far the largest market is China. The Home market generates almost 90 percent of sales. The The export share is only around 10 percent. This is proportionally significantly less than in Germany. But the foresight of the "Made in China 2025" targets push CRRC strategically into exports ("Go-Global-Strategy"). The State promotes export projects with state financing. The Group also has access to large research capacities at state universities with a rail technology profile. By 2020, an export quota of 25 percent (then around nine billion euros) is the goal.

Continued on the next page →

← *Continued: CRRC in figures:*

Collaborations. As well as being competitive, the relationship with the CRRC is also complimentary. For years now, CRRC has been working very successfully with western companies. This applies equally to medium-sized suppliers and OEMs in the German rail industry. Collaborations have been multi-faceted: from the – often highly successful – joint ventures on the Chinese market to strategic cooperation agreements with OEMs in third markets in order to globally intensify collaboration within the framework of general competition with selected projects and segments.

Market presence. CRRC currently exports to 101 countries. Besides major projects such as in Australia, South Africa and Argentina, prestigious orders in the USA and Canada have caused quite a stir: In 2014, a contract was awarded for an order for 284 coaches (plus 120 coaches in 2016) for the underground in Boston; in 2016 for almost 850 coaches on the Chicago local passenger transport network. In 2017, contract awards followed for 64 coaches in Los Angeles, 45 in Philadelphia and for 24 coaches in Montreal. CRRC was able to attain market placements in the EU in 2016 in the Czech Republic (electric locomotives for passenger transport), in 2017 in the UK (maintenance wagons for the underground) and goods wagons and locomotives in Germany. In the EU CRRC maintains sales offices (in Vienna CRRC ZELC; also CRRC Shandong), partnerships, including with scientific institutes and is investing more and more in acquisitions.

Belt and Road Initiative: The New Silk Road.

A core element of China's globalisation strategy is its New Silk Road project (Belt and Road Initiative, BRI). This is financed primarily by the Silk Road Fund and the Asian Infrastructure Investment Bank (AIIB). The BRI consists of the Silk Road Economic Belt (SREB) on the land side and the Maritime Silk Road (MSR). The total volume of the BRI program is around 900 billion US dollars. Important building blocks of the "New Silk Road" are large-sized rail investments in Central Eastern Europe, which are also coordinated in the 16 + 1 forum. Prominently conspicuous is the high-speed connection from Belgrade to Budapest, which is funded by China, and the prospect of a rapid connection from the port of Piraeus (since 2016 also in Chinese hands) to the markets in Central Europe (China-Europe Land-Sea Express Route).

→ **New responsibility.** Since joining the WTO in 2001, China has more than tripled its share of global business (adjusted for purchasing power) to around 18 percent. According to the World Bank and the IWF, China is now the world's largest national economy – ahead of the USA, which had been in top position since 1872. Nominally and in terms of GDP per capita however, the USA is still at the fore. Since 2009, China has been the world champion in exports (ahead of the USA, Germany, Japan and the EU). Investments in R&D are at a similar level as in the EU. In 2016, Chinese foreign investments (Outward Foreign Direct Investment, OFDI) were around 170 billion US dollars. According to the data from Baker McKenzie, in 2016 around 94 billion US dollars – i.e. around half of Chinese FDI – went to North America (a rise of 189 percent in 2015) and Europe (a rise of 90 percent). Prior to 2008, it was still below one billion US dollars for both regions. This growth reflects "China's shift from commodity to technology and services sector acquisitions." According to Merics, Chinese FDI transactions in the EU in 2016 were around 35 billion euros (11 billion euros of which were in Germany). EU FDI in China reached around eight billion euros in 2016 (2015: 9.1 billion euros, 2014: 11.8 billion euros). The outstanding economic importance of the EU, the USA, China and Japan also for the rail industry, justifies a special shared responsibility for the global rail market.

The potential of both megatrends for the rail industry in Germany is huge. For sure, globalisation is intensifying competition. Yet it would be fundamentally wrong to question the idea of open markets for this reason. Quite the opposite, competition leads to the ability to compete. It is also legitimate for enterprises from other regions to aim to become the global leader. Anybody who is in the lead will be challenged – rail companies in Germany are standing up to this challenge very successfully. However: In the long term, these efforts can only bear fruit if the rules of the game guarantee a non-discriminatory market everywhere with fair competition. As former German Chancellor Helmut Schmidt once said:

> *“Markets are like parachutes:*
> *They only work if they are open.”*

C Mind the gap.
Acting for free and fair competition.

The global gap between the competitive conditions in the rail industries is growing. But in the rail industry the global market is the non plus ultra. For this reason, unequal ground rules subvert the competition.

Germany and the EU can and must act in order to reduce the gap. For this, a mind-the-gap strategy needs to be implemented: Government should incorporate an external competition dimension (globalisation, global market) in different political areas in a more structured fashion. Ground rules need to be globally coordinated, our own regulation framework updated and industrial employment in Germany and Europe strengthened.

Global competition in the rail industry is today indefensibly distorted on five levels due to a lack of symmetry in terms of conditions. In the following, the VDB recommends 25 political measures in order to at least approach a more level playing field again. The time frame for this is by no means unlimited however. The proposals are intended to provide impetus for political discourse – and for joint action.

We are seeking an open discussion.

I. Lack of symmetry in export funding.

What is the background?

OECD rules instead of competition for subsidies.

OECD members agreed on common standards for publicly supported export credits in 1978 in the OECD consensus. These apply to maximum validity periods, down payments, repayment modalities, minimum interest rates and minimum margins. Objectives for trade and development policy are the focus here. This framework is designed to prevent a spiral of subsidies. The EU has implemented this (per se legally non-binding) consensus in EU law. Yet in 1978, most relevant export nations were OECD members at the same time. The map of the world has since changed. Only one third of export funding worldwide today still complies with the OECD consensus.

Mind the gap: State funding of exports.

Various instruments are available for foreign trade funding to stakeholders in foreign trade (exporters, investors etc.). In part, stakeholders from non-EU-states can count on extremely favourable funding for foreign trade – thanks to generous coverage of exports, support and funding of foreign investments by state banks, state funds, state budgets. With some large volume foreign projects, government credits of billions (for buyers or sellers) apply at extremely attractive terms: minimum interest (0.1 percent) and minimum repayment, extraordinarily long repayment times. This goes way beyond pure funding and ranges from direct lending facilities and the promotion of uncommitted funding via turnkey packages (assumption of project risks during construction, operation, funding/investments) from export and development banks to excessively large, earmarked development aid. There is also talk of synchronised package solutions. Often there is little transparency here. In addition, surplus capacities influence export strategies. The PwC consultancy carried out market research on the EPC capability of German companies on behalf of the German Ministry for Economic Affairs for a public study, which was published in 2017. The result of this was that state financial loan instruments, which did not fall under the OECD consensus, were deliberately being used in some cases. Export credit agencies and development banks not subject to the OECD consensus were also contributing "significantly to the winning of EPC projects."

One thing is clear: A refinancing package that stems from private commerce cannot afford these discount terms. Yet the state-induced delta can be decisive for the awarding of contracts for major projects. Whoever wins major projects can strategically transpose their own standards into emerging markets, thereby feeling their way towards forthcoming projects. All this puts competition in third markets into an ominously skewed situation. The fact that occasionally a tender goes to competitors is no reason to complain.

However, where lavish state assistance is turning performance upside down, competition is no longer working. The crucial aspect is then not the best products, but the best subsidies. Lock-in effects arise, which reduce freedom of choice for the customers in the long term. Where competition for funding outdoes competition for products, the quality of the rail system suffers and as result its safety, reliability and competitiveness.

“No such thing as a free lunch.”

The saying “there is no such thing as a free lunch” – everything has its price – certainly also applies to the global rail market. Export products that are highly subsidised by the state may appear cheap to procure. But at what price? Lock-in effects are the other side of the coin. Firstly, these effects may mean incalculably high lifecycle costs, including safety risks. And secondly lead to technological dependencies, which potentially mean system and security-relevant political dependencies in the digital age of rail. Often it is the case that those who accept subsidies pay with economic sovereignty. Strategic short sightedness can be expensive.

It is for this reason that the rail industry in Germany stands by a clear strategy: the best solutions at the most economical price, without hidden risks in a sustainable and open partnership.

Export support for solutions made in Germany.

The rail industry in Germany – both large enterprises and hidden champions – is very export-oriented and extremely successful, with export quotas of more than 80 percent on the global markets. Every second job in the rail industry depends on exports. Despite the excellent German architecture of export and project funding and credit default assurance (KfW IPEX, Hermes bonds etc.), private companies cannot always secure competitive funding. For sure, it may be sensible, particularly with large projects, to act together with partners in a global context, to focus on consortia, supply or individual batches. But generally withdrawing from a role of responsibility from an export perspective and restricting oneself to niches cannot be a strategy that promises success for the future of the rail industry. For this reason, it is important in the case of strategically critical projects to significantly reduce the gap resulting from the scope and use of different funding instruments.

I. Lack of symmetry in export funding.

What can politicians do?

Discipline state-controlled export funding by means of global ground rules, enhance cooperation partnerships with third countries for rail projects.

1) Aim for global, market-conform rules (gentlemen's agreement) for export funding.

→ **Global ground rules – for a new gentlemen's agreement.** The governments in Berlin and Brussels will not be able to compensate for this lack of symmetry on third markets completely. There should be no competition for subsidies by export credit agencies when it comes to export funding. Outside of the regulatory scope of the OECD consensus, respect for national structures is of course a must. But a new gentlemen's agreement is required for export competition in the rail sector to be fair: Conventions on the state funding of exports that are internationally respected. In the medium term, the aim should therefore be to jointly agree with non-OECD members market-conform and WTO-conform supranational guidelines for state export credits (validity period, maximum collateral, minimum interest rates, transparency etc.). Germany and the EU should campaign for harmonisation of this type. The OECD-consensus and the chapter on the rail infrastructure provide benchmarks for this. The International Working Group on Export Credits (IWG), which was formed in 2012, should be effectively supported.

→ **Adaptation of OECD rules for the rail infrastructure.** As part of further negotiations on a review of the OECD rules RSU (Sector Understanding on Export Credits for Rail Infrastructure) which commenced in 2018, Germany should campaign for the maximum credit validity period to be increased from 14 years to 18 years. As a result, the credit validity period would come closer to the product lifetime.

2) Intensify political commitment to ground-breaking open EU standards.

→ **Government for open standards.** Politicians should campaign more for the promotion of open European standards (TSI, ERTMS, EN) at international level, as they offer third states valid benefits over the product lifecycle and in the planning and operation of the rail system. For the regions by contrast, not having this means a risk that is often incalculable because dependencies due to lock-in effects such as during operation or maintenance can become hugely expensive – in addition to endangering safety.

3) Design national export funding more effectively so opportunities are equal.

→ **Export credit guarantees and uncommitted financial loans.** Germany should revise the handling of export credits in order obtain greater leeway with strategic projects in the future. Benchmarks are provided by Switzerland and the Scandinavian countries for example with their reasonable interpretation of the order value eligible for coverage. Another important factor is the use of the option of export credit guarantees and uncommitted financial loans with 100 percent assurance for foreign projects in the strategic interest of Germany, now under consideration. This is frequently the case with rail transport projects. This option can considerably simplify refinancing and should apply both to turnkey projects and for projects managed by a consortium. System competence with major projects abroad remains of outstanding importance because system providers often shape the perception of Germany as a technology supplier, opening the door for small and medium-sized firms. Flexible ongoing development of an intelligent industrial strategy for further promoting exports is work in progress.

→ **Options for synergetic parallel financing of development aid and exports.** Future options for supporting parallel financing of development aid both for commercial development of recipient countries and added value in Germany should be evaluated without bias.

→ **Approaches for global support of small and medium-sized enterprises.** With state-covered credits, new approaches to projects in third markets should be considered so that in particular small and medium-sized enterprises from the German rail industry can be supported even more effectively on the global market on a project-by-project basis.

4) Strengthen matching facilities on a national level for equal competition.

→ **Equal competition.** In strategically relevant individual cases, it must be possible to offer competitive financing terms in case of non-OECD conform financing by non-OECD members. Legally this is permitted by the OECD by means of a notification. The German government has rightly resolved to create a matching facility for high-volume, low-interest credits issued by the KfW (at CIRR terms, Commercial Interest Reference Rate). Firstly, sufficient endowment from budget funds at national level (national funds) and secondly a practical, realistic reference size for matching and thirdly justifiable use of budget funds for the project are decisive for the effect on the export markets. Overseas projects in the strategic interest of the Federal Republic of Germany should first and foremost be determined qualitatively.

5) Perform feasibility studies quickly as an enabler.

→ **Quick, unbureaucratic, neutral.** A sufficiently endowed budget item for feasibility studies for foreign projects should be quickly deployed by the German Ministry for Economics. For these studies, tenders need to be issued, contracts awarded and the studies carried out in very short order. It is important that studies of this type are commissioned at government level because only in this way will the independence of the technology providers be formally guaranteed. Prospective customers in third markets expect a reproducible, neutral procedure. Feasibility studies are a prerequisite for the ability to win above all large or medium-sized rail projects. Feasibility studies will often outline future technological paths for a project.

6) Further expand strategic support for exports.

→ **Successful together.** Government support for overseas projects on site is most relevant. Joint government and business delegation trips help here in particular – including many strategic and sustainable alliances with partners from other nations. Commitment to this highly successful practice must be continued.

→ **The VDB representation in China.** The VDB offers successful consultation services, particularly for the small and medium-sized enterprises in the rail industry. With the opening in 2018 of the VDB representation in China, a new era began. The VDB representation stands for a new dimension in German/Chinese partnerships for mutual benefits – and for sustainable rail transport.

→ **Market consultation and market development.** Many new collaborations between the VDB and embassies and the impartial consultation offered by German chambers of commerce abroad (AHKs), which should be structurally strengthened, are of fundamental relevance, particularly for the small and medium-sized enterprises in the markets. The valuable market development program by the German Ministry for Economic Affairs and Energy requires reasonable funds in order to provide an even stronger footprint for medium-sized enterprises from the rail industry in foreign markets.

→ **Financing of medium-sized enterprise in the rail industry.** Small and medium-sized enterprises in the rail industry should be supported more effectively in financing matters, for example by means of offers of targeted consultation and standardized contact partners for KfW financing.

→ **Funding of foreign trade fair program (AMP).** The exemplary funding of international rail industry trade fair events makes communal VDB stands possible and is also extremely important for small and medium-sized enterprises. Trade fair cooperation with European partner associations too is increasingly gaining relevance. The excellent foreign trade fair program (AMP) of the German Ministry for Economic Affairs and Energy and the AUMA needs to be extended further and its budget increased.

→ **Government intervention for a state-of-the-art design for contract awards.** Government and business should provide their thoughts and comprehensively highlight methods for customer quality in public tenders – i.e. including the price/performance ratio and lifecycle costs (MEAT awards). This is also the only way in which the best, most economical and sustainable solutions for the region can really win against the competition.

II. Lack of symmetry in market access for investments (FDI).

What is the background?

Foreign investments and prosperity.

Foreign Direct Investments (FDI) generate growth, strengthen added value, create jobs, connect markets and provide very important impulses, particularly in technology-intensive sectors like the rail industry. FDIs, also from outside of Europe, are in the fundamental interest of Germany as a rail industry location. They are most welcome. Germany must remain attractive for FDI. The protectionist concept that a national economy can retreat into a cocoon is fundamentally flawed. The opposite is true: globalization thrives on openness – particularly when it comes to investments. In 2015, existing FDI in the EU amounted to 5.7 billion euros – the highest amount worldwide. FDI guarantees around 7.3 million jobs in the EU. Freedom of investment is the lifeblood for globally interconnected companies and is indicative of a dynamic, competitive economy. Entrepreneurs and shareholders have the right and the freedom to sell their private property, guaranteed by the constitution. At the same time, individual FDI projects can be of public interest where they are relevant to security. To be able to assess individual cases, the option of investment screening procedures exists in Germany and in other leading industrial countries.

Mind the gap: Disparate opening of markets for FDI.

It is in the EU's own interest to be open – but this openness must not be a one-way street. As a rule, FDI serves to improve the global competitive position of a company, for example to deliberately close know-how gaps by means of acquisitions or to generate scaling effects in order to attain a top position globally. These opportunities must not be distributed unequally. A basic amount of reciprocity is only fair. This means that companies from Germany and the EU should be able to invest in the rail industry in other regions of the world, just as freely as companies from these regions, quite rightly, do here. Yet this does not always reflect reality. Rail industry investors are perceivably discriminated against by one-sided hurdles:

- → No full takeovers, barriers with WFOE and barriers to company start-ups
- → Restrictive obligations to joint ventures (minority position, knowledge transfer)
- → Complex, drawn out, unpredictable bureaucracy

And there is a further lack of symmetry between the EU and other economic regions: Investment screening procedures are in place there to maintain security policy interests in individual cases but in the EU, at European level, there are none. Legal procedures of this type for foreign trade are so far found uniquely at national level – in Germany regulated in the foreign trade law (AWG) and the foreign trade ordinance (AWV).

Market openness, fairness, legitimate security interests.

The global openness of investment markets should be at the very top of the agenda in Berlin and Brussels. FDI generates wealth worldwide. In the EU, continuing an open investment climate and having a screening facility are not a contradiction where security-sensitive transactions by non-EU investors are planned. Rather, one thing calls for the other. The European Commission has therefore proposed that a framework for strategic FDI screening be created at European level. Civilian security aspects – as established in the USA – with a European reference is a topic which, in accordance with the will of the Commission, requires discussion. Such an approach would be appropriate and fundamentally sensible for, in individual cases, the loss of industrial core competences in CRITIS key technologies may be of concern for future security policy.

OECD-"FDI Regulatory Restrictiveness Index 2016". On the status quo of liberalisation.

The OECD publishes the "FDI Regulatory Restrictiveness Index" regularly. This measures restrictions to FDI in 62 countries. Zero indicates maximum openness. Results of the OECD for 2016: Most EU states open their doors to foreign investors. France, Italy, UK, Germany, Spain, Portugal, the Benelux countries, all Baltic countries, the Czech Republic, Hungary, Slovakia, Romania, Greece, Ireland, Sweden, Finland, Denmark all have an index value below the OECD average of 0.07. Conversely, according to the OECD, high hurdles to foreign investors exist in some regions, for example in South-East Asia (Indonesia, Philippines, Myanmar), China and Saudi-Arabia, with indexes above 0.30. But also New Zealand, South Korea, Canada, Australia and the USA are accordingly above the OECD average. The OECD index is designed to encourage further liberalisation.

Commission proposal on FDI screening at EU level for the critical infrastructure of rail.

Why is the EU Commission planning the option of FDI screening at EU level?

In September 2017 (COM(2017) 487), the EU Commission presented some differentiated proposals because it assessed the status quo in the EU as being unsatisfactory and wanted to be sure that strategic and civilian security interests and the public order of the EU were being taken into account. For the FDI screening framework, in accordance with the will of the Commission, a cooperation mechanism between national and European level is to be established. The prerequisite: The interests (security, public order) of several member states or of the EU, as a whole, are affected. In the words of the commission: *"Foreign direct investment is an important source of growth, jobs and innovation. However, we cannot turn a blind eye to the fact that in certain cases foreign take-overs can be detrimental to our interests."* (press release by EU Commission dated September 2017).

Does the Commission proposal conflict with investment freedom?

No. The goal is to create transparency, to be able to differentiate between the standard case and the – admittedly very rare – exceptional case of FDI that is relevant to security policy.

What FDI screening options are available to date at EU level?

None. The EU has no European screening mechanism whatsoever. A European perspective is also lacking if a non-European state enterprise is planning to make a 100 percent purchase of what may be a security-critical, system-relevant high technology company in the EU. EU merger regulations (Art. 101 and 102 TFEU) do not cover this gap, since it is not a matter of cartels but of public security. According to the Commission national screening mechanisms are also highly fragmented – and only present in round half (12) of EU member states. Transparency of FDI in Europe and national screening is deserving of considerable improvement. There is a lack of coordination in FDI monitoring.

Is there a law on FDI screening in other leading economic regions?

Yes. In the USA, screening for security aspects – including civilian security aspects – is common practice (Committee on Foreign Investment in the US, CFIUS). All leading economic areas – Australia (Foreign Investment Review Board, FIRB), China, Japan, India, Canada – have provision for FDI screening.

What exact procedure is the Commission proposing?

The Commission is proposing a right to a consultative statement of opinion and a right to information for the Commission and member states. To do this, the commission has investigated two options. Option 1: Screening mechanism at EU level only. Option 2: EU framework for screening in member states by means of harmonised minimum criteria and a cooperation mechanism. Option 2 has been evaluated as feasible. From Article 8 of the proposal: "If a member state considers that a foreign direct investment planned or made in another member state might affect its security or public order, it may address the other member state in which this investment is planned or has been made regarding this matter. These comments are at the same time to be forwarded to the Commission." The process is to apply analogously for the Commission (Art. 9).

Should an EU screening option in future replace national screening?

No. Questions of national security including FDI screening are clearly a matter of national responsibility. This can be derived, as the Commission stresses, from European Law (Art. 346 paragraph 1 b and Art. 65 paragraph 1 b of TFEU). Where the legitimate interests of several states or of the entire EU are affected, this is scarcely applied at present however. From the point of view of the Commission, a certain convergence of standards, a framework and better networking at European level are required. An overall picture of FDI (models), that has not previously existed, ought to be reached in the EU.

Why do state FDIs play such a major role in EU screening?

Traditionally around 80 percent of global FDI originates from countries that rely little on companies under state ownership and mostly limit their subsidies to companies that safeguard public goods. FDI by companies and by capital investors then inherently follow market economy based criteria: FDIs here are a business case. This also applies normally for FDI originating from the state. It is a welcome means of funding. But in individual cases, these FDIs might not be corporately motivated but rather by a targeted political strategy. If a state is in the driving seat, the EU must not turn a blind eye to its strategic interest. In exceptional cases, a company purchase in the high-tech rail industry sector controlled by a non-EU state can lead to a loss of security-critical know-how and consequently to losses of control with the CRITIS rail system. In such cases neither a naive laissez-faire attitude nor exaggerated intervention would be recommended; rather, responsibility with a sense of proportion and foresight.

Do state FDIs generally lead to distortions of competition?

No. Investments are good for the locations and companies involved. Experiences with company purchases by state enterprises or sovereign wealth funds are also extraordinarily positive across the board. Though it is a fundamental market economy principle for the competitive order of the domestic market that companies are usually in private ownership i.e. neither owned by an EU state or a non-EU state, comparable takeovers by European states in Europe would probably be relevant for state aid law. Yet from a competitive point of view, it is important in practice that no market distortions occur in the EU's rail industry market due to subsidies. Such distortions might lead to highly subsidised pre-product chains with little added value in the EU (company takeovers for final assembly). For this reason, transparency is particularly important.

Do state FDIs in the rail industry generally lead to losses of knowledge?

No. FDIs promote knowledge gains as a rule. The idea that knowledge can be shielded with protectionist measures is misleading. The global exchange of knowledge is very valuable providing respect for intellectual property is maintained. Advances in knowledge cannot generally be preserved, but only ever newly won, time and again.

Might a law on screening encourage investors at EU level?

Yes, providing it is implemented correctly. A understandable procedure at European level with transparent standards can increase reliability for non-EU investors. Excessive bureaucratic screening procedures on the other hand would constitute disproportionate, unacceptable intervention. A screening law must create legal certainty and must not lead to unnecessary restrictions to investors.

II. Lack of symmetry in market access for investments (FDI).

What can politicians do?

Drive liberalisation forward globally for greater investment freedom, examine the strategic security interests of the EU in the case of individual state-controlled direct investments.

1) Urge freedom of investment and reciprocal agreements on investment.

- → **Strengthen open investment markets.** The EU and Germany must also issue a clear rebuff in case of FDI protectionism to further increase the attractiveness of the investment location and campaign multilaterally for investment freedom. Protective barriers against foreign investors are causing high levels of economic damage and disadvantaging rail industry companies from Germany and Europe.
- → **Investment agreement for a minimum level of reciprocity.** The EU and Germany must insist emphatically on bilateral and multinational investment agreements with the goal of eliminating discrimination and ensuring equal treatment for both foreign and domestic companies.

2) Unbiased consideration of the option of a European or national FDI mirror ruling (equivalence of openness) as leverage for greater investment freedom on the global rail market.

- → **Equivalence proviso with FDI.** The option of direct investments is a deciding factor for the development opportunities of the rail industry companies. For this reason, a minimum amount of balance is essential. A lack results in competitive disadvantages. For this reason, an approach based on the phrase "do ut des" should be examined, without prejudging the outcome: "I will give you something when you give something to me." An equivalence-of-openness rule ought to follow OECD criteria. A examination should be made of whether this reciprocal approach might contribute to reducing actual imbalance, push forward liberalisation and strengthen the European negotiating position for open investment markets in the rail sector.

3) Introduce European FDI screening for the rail critical infrastructure (CRITIS) as proposed by the EU Commission, with a sense of proportion.

→ **Commission proposal for a European foreign trade policy.** A right to prior investment screening at EU level – in conjunction with national responsibility – was demanded by the European Parliament, called for by Germany, France and Italy in February 2017 at government level and proposed by the European Commission in September 2017. Germany should now constructively campaign for appropriate realisation of this for the rail CRITIS. FDI screenings are the state-of-the-art for large industrial states including in Germany, France, the UK and Italy. Whoever wants more Europe, should consider this option, but not just nationally. The EU must be open and attractive for FDI. The market economy foundation of the EU is formed by investment freedom and right of ownership. FDI creates growth and ensures Europe will remain a location with a future. But state controlled FDIs are (in terms of state aid law) state interventions. Enlightened foreign trade policy should not close its eyes to the possibility of state controlled FDI that is detrimental to the EU. Protecting the EU's strategic interests is a responsibility that the Commission emphasises.

→ **A filter, not a barrier.** Screening procedures must serve to detect rare exceptional cases. The goal here is a European filter not a barrier.

→ **Limitation:**

- **Rail critical infrastructure (CRITIS).** For the key rail infrastructure, an unbureaucratic, moderate European FDI screening framework is a sensible idea in order to be able to assess clearly in individual cases whether security-relevant interests of the EU are affected and the (political) dependencies of non-EU states are a threat. Digitally networked, the rail system must in future increasingly attend to matters of cybersecurity, data security and control sovereignty.
- **Individual cases, not standard cases.** Credible EU screening should evaluate specific individual cases neutrally and consultatively (case-by-case) – without placing FDI generally under suspicion.
- **Subsidiarity:** EU screening law is no substitute for the prerogative of member states, but rather complements this – where the legitimate interests of several EU countries or the EU as a whole are affected. New bureaucratic structures are not required.
- **State investments.** First and foremost, this should concern state or state-subsidised non-EU transaction plans on the domestic market. The usual transparency obligations should also be applicable for state-owned enterprises (financial reporting, non-financial information, auditing).
- **No endless procedures.** If no evaluation takes place within two months, the transaction shall be regarded as approved. Never-ending stories would damage investors and the EU.
- **No redundancy.** Duplication, bureaucratic loopholes and disproportionate intervention must be strictly rejected.

Continued on the next page →

← Continued from 3): Introduce European FDI screening for the rail critical infrastructure (CRITIS) as proposed by the EU commission with a sense of proportion.

→ Transparency of criteria:

- **Stakeholders at EU level.** Similar to the CFIUS, a European Committee on Foreign Investment would be conceivable which – as in the USA – takes into account civilian security-relevant aspects. The EU's screening mechanism must however interconnect at national and European level. The cooperation model should be the result of rapid consultation. Yet at the same time, non-disclosure protection should be maintained for companies.
- **Evaluation.** The FDI monitoring in the EU envisaged by the Commission should take place quickly and on an ongoing basis in order to obtain the full picture, particularly in CRITIS sectors. The coordination group should commence its work promptly under the chairmanship of the Commission with the representatives of the member states – and where applicable the sectors.
- **Market economy OECD principles.** Undefined screening items would be a path to interventionism. There would then be not less but more state intervention in the EU. For this reason, the following OECD principles must by necessity apply:
  a) Non-discrimination
  b) Transparency and predictability
  c) Proportionality
  d) Responsibility
- **Transparent criteria.** At EU level, it should essentially be possible to merely check the innocuous nature of planned takeovers cumulatively in the rail CRITIS as part of investment screening law or else assess them negatively where necessary
  a) when a non-EU buyer is trying to purchase a share of at least 25 percent of the voting rights (blocking minority) in the target company which is located in the EU and
  b) if in addition the buyer is a state enterprise (or partly so) or the planned investment is enabled or facilitated by the state subsidies of a third country i.e. in conflict with the rules of the market economy and
  c) if, in addition, based on criteria to be defined, a specific and documented danger exists to the public order or to the civilian security interests of several member states or of the EU, in particular because, with an FDI, a third country is pursuing a strategic industrial policy aimed at key functions of the rail CRITIS in the EU and will lead to the loss in the EU or in several member states of security-sensitive technological core competences, or a loss of control with (digital) information critical for securing supplies or endangers the cybersecurity of the rail system.

→ The above considerations are sector-specific and apply to the rail industry only.

4) Further substantiation of the AWV and balanced implementation in Germany.

→ **Moderate changes to the foreign trade law (AWV).** The German federal cabinet rightly modified the AWV in 2017 in order to substantiate national FDI screening for key infrastructures against the background of German security interests. This essentially ground-breaking substantiation should now be implemented so that, in individual cases, the protection of national security interests in the rail CRITIS can be a subject for screening. For this evaluation, the extensive technological competence necessary must be ensured. At the same time general investment freedom and attractiveness for FDI should not be harmed. Its signal effect must be positive for investors, due also to a predictable and transparent procedure.

III. Lack of symmetry in market access for trade and public contract awards.

What is the background?

Open markets as a driving factor for globalisation.

The EU is the most open market in the world for public procurement. The WTO process and European integration with the internal market have led to a degree of liberalisation that has never been seen before. Above all this has created one thing: wealth. Global competition for the best solutions has one key prerequisite: open markets. According to OECD studies, no economic area worldwide is generally as open as the EU. A similar picture is given by the 2017 Open Markets Index (OMI) by the International Chamber of Commerce (ICC), which mapped the openness of a country and the regulatory framework applicable there for trade up to the end of 2015. Out of the 30 most open countries, 18 are accordingly members of the EU and 20 members of the EEA. According to the Commission, the EU opened public tenders to non-EU-bidders (members of the WTO-GPA) with a market volume of 352 billion euros in 2012. This means that 85 percent of the EU's tender market is open. The accessible market in the USA on the other hand comprises only 178 billion euros (32 percent) in Japan 27 billion euros (28 percent). Particularly Germany but also the EU overall are characterised in the rail sector by largely accessible public procurement, which is understood as being in their own interest. This must stay that way. For globalisation thrives on openness not on protectionism.

Mind the gap: Market closure, national champions, and coerced localisation.

Equal market access as offered by the EU is not always granted in the same way in non-EU countries. Yet openness without reciprocity can be detrimental to jobs in countries with open markets. Excessively restrictive local content requirements can damage the industrial substance if they enforce an (irreversible) transfer of production and technology. And a dominance on the domestic market that is reinforced by protectionism not only guarantees orders at home but also strengthens exports. Bidders from Germany and the EU are discriminated against if, in some regions, markets or market segments are systematically protected by the state by means of

- → restrictively high Local Content Requirements LCR, which are greater than 50 percent
- → a lack of transparency in procurement processes with unclear award criteria
- → procurement areas that are completely closed to foreign companies
- → rigid obligations to embark on joint ventures as a prerequisite for being able to participate in public tender processes at all
- → pressure to engage in joint ventures, in which local companies hold the majority (e.g. 50 percent plus 1 vote) and foreign companies being pressed into a minority role, contact award regulations that prohibit foreign companies as a subcontractor with direct contact to the end customer
- → knowledge transfer such as requirements for local transfer of technological knowledge as an entry ticket for joint ventures and procurement processes
- → insufficiently open access to funding programs (R&D) in the target country
- → state subsidies and protection for local high-tech industry.

Protectionism and the shrinking global market. "World Rail Market Study" (2016) by Unife and Roland Berger. Results.

- **Worldwide market still 63 percent open.** Roland Berger and Unife determined the openness or closure of markets in the World Rail Market Study. With sobering results: In 2012, 73 percent of the global rail market was openly accessible. In 2014, it was 68 percent. In 2016, it went down by a further 5 percentage points. Only 63 percent of the global market volume is now accessible. In the service market it is 52 percent, for vehicles it is 68 percent, infrastructure 69 percent, control and safety technology (Rail Control) 81 percent.
- **The Asian Pacific market is still 32 percent open.** A closer look at the EU market and the non-EU market shows how the gap is growing wider. Accessibility in the EU in 2012 was 75 percent according to the study, in the non-EU market 71 percent. And in 2016? – In the EU, it was still 74 percent. In the non-EU market, it was just about 57 percent still. Decreasing market opening is particularly significant in the Asia-Pacific region, according to the study. The accessible market share in the Asia Pacific region has halved, from 64 percent in 2012 to merely 32 percent in 2016. The Asia Pacific region has a market volume of 50.1 billion euros according to the study. 16.3 billion euros of these are accessible – but 33.8 billion euros are not. "In China, Japan and South Korea, accessibility has proven to be lower than originally estimated," according to the study.
- **Mind the gap.** A closer look at the important rolling stock market. In 2012, the EU was still 100 percent open for rolling stock. The same was true in 2016. The market openness for the Asia-Pacific region in 2012 was 76 percent of the rolling stock market, in 2014 it was still 58 percent – in 2016 it was 31 percent.

European added value.

Because the liberalisation of markets generates wealth, the opening of procurement markets in the rail sector worldwide is an imperative. To achieve this, Germany and the EU should respect reciprocity more than in the past, for only in this way will equal opportunities arise. Restrictive obligations for localisation have proven harmful in terms of location policy for the rail industry to a particular extent. In some market segments of the rail sector LCR is today 65 percent (e.g. USA), 75 percent (e.g. partly for metro trains in China), in some cases 80 percent and higher (e.g. partly for metro trains in China), in some cases 80 percent and higher (e.g. partly in Australia, Brazil, China, India, Russia, Turkey) and for various primary products it is even 100 percent. Viewed against this background, the European Parliament demanded in its resolution dated June 2016, that the Commission campaign vigorously against excessive LCR, for reciprocal market access and for production in the EU.

> ***The European Parliament (...)***
>
> *(...) calls on the Commission and the Member States to remind contracting authorities of the existence of a provision, in the context of the revised European Framework on Public Procurement, which makes it possible to reject bids if more than 50% of the value is added outside the EU (Article 85 of Directive 2014/25/EU),*
>
> *(...) calls on the Commission to ensure that future trade agreements (including the ongoing negotiations with Japan, China and the USA) and the revisions of existing trade agreements include specific provisions which significantly improve market access for the European RSI (Rail Supply Industry), especially with respect to public procurement, including tackling the problem of increased localisation requirements and ensuring reciprocal access to foreign markets for the RSI."*

Germany and Europe must not ignore the LCR development in other regions. For LCR imposed from above puts jobs in industry at risk. The EU needs to find answers to this. And it has: Applicable EU law (Art. 85 of the Utilities Directive) provides for the option of a moderate minimum added value requirement in the EU (50 percent). This is precisely what the European Parliament is campaigning for. This provision should be applied at least as long as no headway is made on negotiations with other regions on relaxing LCR. The EU has in place an instrument that is well-balanced and fit for purpose. And yet: National implementation is stalling.

Why are restrictive localisation obligations harming the rail industry?

What are Local Content Requirements (LCR)?

Obligations to localisation stipulate what percentage of the value of a product needs to be added in the country or region in which it is sold.

Does criticism of extremely high LCR generally mean criticism of worldwide localisation?

No. Quite the opposite. Globally intertwined addition of value is the backbone of globalisation. Collaborations with the local supplier industry too and the training of employees locally has long since been an obvious basis for the export successes of the rail industry in Germany. Needless to say, numerous companies are localising their production around the globe. Where however the freedom for businesses to make decisions is replaced by rigid governmental specifications with high LCR quotas, isolation increases and the global network of added value is disjointed.

Can we measure moderate LCR and restrictive LCR by the same yardstick?

No. Moderate promotion of local industrial added value and of jobs can be legitimate with state contracts – where taxpayers' money is also invested. Localisation can also promote the development of emerging markets. In this respect it would be wrong to demonise LCR across the board. Yet restrictively high LCR acts as a hard barrier to market entry and is counter to open competition as a project-based investment regulation.

Are very high LCR quotas compatible with open globalisation?

Essentially, no. As non-tariff trade barriers (NTB) restrictive LCR is contrary to the spirit of the WTO, of Article III of the GATT (General Agreement on Tariffs and Trade) and the GPA (Governmental Procurement Act). Today, complex production processes are organised globally, go beyond national borders and intermediate products constitute the largest percentage of goods traded worldwide. It is precisely the global value chains (GVCs) of the rail industry – i.e. the division of labour and free trade – that extremely high, discriminatory LCR as a planned economy measure can fracture. Instead of open globalisation, there is a threat of artificial parcelling.

Does exaggerated LCR have a particularly hostile effect on small and medium-sized enterprises?

Yes. Small and medium-sized enterprises in the rail industry that are successful in exports can often not afford to have production spread throughout the world for individual projects. The business model in Germany as an export nation is based on a first-class, medium-sized sector, which exports but does not necessarily localise.

Why are restrictive LCR plus a severe lack of symmetry a programme for creeping erosion of the rail industry substance in Germany and the EU?

Reciprocal effects from imposed LCR on the one hand and the complete eschewal of all localisation in the EU on the other are leading to the danger of creeping de-industrialisation. For this reason:
Firstly, project-based displacement effects. When a new factory is built locally for a rail project in accordance with LCR obligations, it can substitute for capacities at previous locations. In this way investments are being controlled by the state for direct

displacement of production. What matters is not the efficiency of a factory; rather its location. But that alone is not necessarily sufficient for compliance with a high LCR quota. A supplier industry would then have to be established and consolidated locally. This requires transfer of knowledge and technology. Conclusion: Utilisation of plants in Germany and the EU is worsening. And a brain drain is starting.

Secondly, prolonged displacement effects. The new LCR-compliant plants will, after a project is completed, also be available in future on the global market as (surplus) capacity. This can damage production in other regions in the long term. And what's more: it may well be sensible in terms of business (or also politically desirable) to use newly established value-added structures at a location with an LCR shield in order to supply markets from this location which are entirely without localisation requirements, like the EU. For where no local added value is necessary, local production can simply be partially replaced by imports. Conclusion: Incentives may arise for contracting entities to turn their backs on Germany and Europe after the project has run its course.

Thirdly, indirect displacement effects. As long there is no localisation requirement in Germany and the other EU countries, a further effect may kick in. Non-EU providers might participate in public tenders in Germany or the EU with products that are manufactured almost entirely outside of the EU. The lion's share of production will then not be subject to EU state aid law. This will only apply to production percentages in the EU. Conclusion: Aggressively subsidised, extremely cheap non-EU offers would then be possible, winning EU tenders without subsidy screening.

For instance: Buy America – Bye bye Europe in the rail industry?

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With its "Buy America" ruling, the USA has set up very high localisation hurdles for the transport sector. For vehicles, the following requirements apply:
"(...) the cost of components produced in the United States is more than 60 percent of the cost of all components and final assembly takes place in the United States (§ 661.11 Rolling Stock Procurements Buy America Requirements)."

So only if a) at least 60 percent (since 2018 even 65 percent, starting from 2020, 70 percent) of the value is added in the USA and what is more b) final assembly of the product takes place in the USA, is successful participation in public tenders possible. Value addition in Germany and the EU is therefore under pressure.

New investments for projects in the USA are often sensible. Investments are also arranged by the state and in this way directed out of the EU and into the USA. The most recent US contract awards document that large – in particular state – enterprises can build new factories locally. Yet in particular small and medium-sized enterprises from the rail industry are seeing themselves confronted with investment requirements with which they cannot always comply. The underlying philosophy of the GPA stands for liberalisation – yet these rules do not.

III. Lack of symmetry in market access for trade and public contract awards.

What can politicians do?

Coherently implement fair rules for market access worldwide, strengthen industrial rail production in Germany and Europe with farsightedness.

1) Oppose excessive localization obligations (LCR) worldwide.

→ **For open markets, against a mosaic of LCR.** Germany and the EU should conduct dialogue with partners in the context of the WTO urging them to desist from restrictively high, state-induced LCR. Excessive localisation requirements can be just as damaging as a reasonable degree of them is legitimate. A regional LCR mosaic is threatening to damage the liberal foundations of the globalised rail industry. Neither a spiral of increasingly high LCR obligations nor imbalanced one-sided obligations that place the burden on Europe should be allowed.

2) Check whether existing moderate EU minimum value creation provisions (Art. 85 Directive 2014/25/EU) for EU-funded projects in the rail sector can result in mandatory earmarking.

→ **Inspection of minimum added value with EU funding.** Examination of minimum added value with EU funding. Early in 2018, a bridge construction project in Central Eastern Europe was awarded to a non-European state enterprise. This project was however 85 percent financed using EU funds: 350 billion euros. When rail projects are financed from EU programs – i.e. using the European taxpayer's money, the EU minimum added value regulation should apply bindingly in accordance with European law. The possibility for legal implementation, for example in the notice of subvention, needs to be checked.

EU minimum added value regulation. Implement European and German law.

Does the EU sector guideline expressly prescribe the regulation as an option?

Yes. Article 85 of the Sector Directive (Directive 2014/25/EU) states the following:
„(1) This Article shall apply to tenders covering products originating in third countries with which the Union has not concluded, whether multilaterally or bilaterally, an agreement ensuring comparable and effective access for Union undertakings to the markets of those third countries. It shall be without prejudice to the obligations of the Union or its Member States in respect of third countries.
(2) Any tender submitted for the award of a supply contract may be rejected where the proportion of the products originating in third countries, as determined in accordance with Regulation (EU) No 952/2013 of the European Parliament and of the Council, exceeds 50% of the total value of the products constituting the tender."

Does German law provide for national application of the EU regulation?

Yes. The Sector Ordinance (§ 55 Section 1 SectOrd) states:
"The ordering party for a supply contract may reject offers in which more than 50 percent of the goods originates from countries that are not party to the European Economic Area Agreement and with which no other agreements on reciprocal market access are in place. Countries and regions with which agreements of this type exist are announced by the Federal Ministry for Economics and Energy in the Federal Gazette."
However compliance with the regulation in case of equal value offers is stipulated in § 55 paragraph 2 (according to European Law): *"Where there are two or more offers according to the award criteria that are of equal value, the offer that cannot be rejected in accordance with paragraph 1 should be preferred. The prices are to be regarded as being equal if they do not differ from one another by more than 3 percent (...)."*

Why Article 85 of the sector guideline is no quid pro quo approach.

The EU regulation differs from the highly protectionist LCR in two ways. Firstly, by the moderate, non-discriminatory threshold (50 percent), by extension in relation to the EU as a whole. And secondly by the fact that it addresses individual countries with which the "Union has not concluded an agreement, whether multilaterally or bilaterally." International contracts for reciprocal liberalisation are therefore unaffected. International contracts for liberalisation therefore remain unaffected.

Why Article 85 of the Utilities Directive is not a path to national protectionism

European law creates a mechanism that can indeed be implemented nationally in the member states for contract awards in the rail sector. However, the regulation expressly refers only to added value in the EU as a whole. Half of the total value of a product should be "Made in Europe". The EU is the reference, not the national markets. The minimum added value regulation interlinks European taxpayers' money to European jobs more effectively. And the regulation significantly strengthens the EU's negotiation position in order to promote open award markets ethically and responsibly throughout the world.

3) Bindingly implement existing moderate EU minimum added value provision (Art. 85 Directive 2014/25/EU) in Germany in the rail sector.

→ **Application guidelines for national implementation of the EU minimum added value regulation in the EU domestic market.** Governments in Germany and the EU are responsible for strengthening the knowledge base, added value and jobs. Eschewing all forms of localisation would effect a gradual erosion of the industrial railway basis – as long as restrictive LCR is in effect in other regions. At the same time, the EU must not introduce any restrictively high LCR. Markets must remain open. In this area of tension, the EU Utilities Directive (Art. 85) provides an optional balanced rule:
A threshold of 50 percent added value share made in Europe for publicly funded – from taxpayers' money – awards for rail projects in the EU. The European legal basis is also in place. The European Commission should urgently hand the member states application guidelines for implementing this sensibly balanced EU regulation.

→ **Earmarking taxpayers' money, binding implementation in Germany.** Taxpayers' money for public projects in Germany should flow to a reasonable degree into production, competence and income in the EU. It is difficult to justify to taxpayers why their money is not being reinvested in European employment (earmarking). In national implementation for the rail sector, Germany should assume a leading role in an alliance, possibly with other core markets such as France and Austria. Specifically:

- For public tenders in the rail sector, the EU minimum added value regulation, an option under German law, should be applied consistently. This is part of the political obligation.
- To this end, the government could also bindingly prescribe this regulation as an export condition by means of national law, compliance with which would be imperative for tenders by public and industry sector contracting partners in the rail sector (cf. § 129 Law against restrictions to competition, GWB).
- Alternatively, the national legislators could make provision for corresponding obligatory export terms in their national contract award laws.
- The very tight price corridor for ex-post audit should be modified from 3 percent at present to 5 percent in accordance with the Sector Ordinance (§ 55 Fig. 2 SectOrd). Germany should campaign for this at EU level.

→ **Round table.** A working group should be set up very soon in the Federal Ministry for Economics and Energy in order to advise on specific options for the drafting of this law and for developing a broad consensus.

Why Germany must act.

Implementation of EU minimum added value regulation according to Article 85 of Sector Directive – pros and contras.

Goals	Contra option (don't act).	Pro option (act)
Strengthen open, transparent and competitive national and European award markets.	✓	✓
Prevent national protectionism by national LCR in the EU that distorts competition.	✓	✓
Improve balance with other regions of the world with LCR, limit negative business incentives against investments in the EU.	✗	✓
Retain national and European taxpayers' money in part (50 percent) for added value and jobs in the EU as a whole (earmarking).	✗	✓
Prevent subsidised extremely cheap imports from non-EU regions without subsidy screening in the EU domestic market, strengthen fair competition with subsidy screening in the EU.	✗	✓
Counter the erosion of industrial rail production, job losses and know-how in the EU.	*Tendentially* ✗	✓
Strengthen leverage for negotiating reciprocal market openings rather than excessive one-sided LCR in other regions.	✗	*Potentially* ✓

4) Robustly negotiate fair market access with WTO and in free trade agreements.

→ **"Pacta sunt servanda" (agreements must be followed): WTO Agreement on Government Procurement (GPA).** All leading trading nations should become party to the WTO Agreement on Government Procurement. Important WTO members (such as Russia, India, China, Brazil) have not joined the GPA. The GPA needs to be implemented consistently. The following should apply to all parties of the GPA: Agreements need to be observed – at all government levels, in accordance with the spirit of the contract.

→ **"We have to get what we give" (J.-C. Juncker): Reciprocal market access (FTA).** The EU procurement markets offer companies from third countries – correctly so – almost entirely open access. But it is not plausible if the other side provides insufficient openness. Besides the LCR there are other discriminatory hurdles impeding access. The EU and the Federal Republic of Germany should strongly urge for open contract award processes. The new generation of trading agreements has high potential for this. The commission is rightly pursuing the clear line of only agreeing to a free trade agreement for the rail industry if it promises freer trade. Since 2000, the EU has focused on public procurement with FTA. Positive examples are the EU's FTA with Canada (CETA), Vietnam and, in particular, with Japan. A free trade agreement between the EU and Mexico is also about to be concluded. The agreement contains, among other things, a ban on export subsidies and provisions that are designed to limit the negative effects of other subsidies. The EU should continue to work towards the vision of both tariff and non-tariff trade barriers being eliminated: non-discriminatory treatment for all bidders, reproducible criteria, no forced joint ventures, equal access to relevant information.

For example: FTA with Japan – a milestone for free trade.

The Operational Safety Clause

The EU is open for companies from Japan. And rightly so. For example, a leading Japanese manufacturer in the UK was able to win an order of billions for around 600 coaches for British intercity transport. Before that, it won a contract for passenger trains in the south of England too. But according to Unife, contract awards on the Japanese market are so far only 2 percent open. The barrier currently considered most effective is called the Japanese Operational Safety Clause (OSC). This operational safety clause leaves far too much room for interpretation in the rail sector. For example, with reference to the OSC, earthquake protection for trains is disputed, although these are already used reliably in California. According to estimates, the degree of market opening for rolling stock in Japan regressed further between 2014 (approx. 25 percent) and 2016 (0 to 5 percent). According to the one-year package, which is designed to provide detailed information for public orders in Japan, the negotiations were primarily concerned with the OSC, which acts as a non-tariff trade barrier.

Breakthrough thanks to EU-Japan FTA

In July 2017, the EU and Japan were able to agree a free trade agreement (JEFTA). It is envisaged that the OSC will be scrapped on the Japanese side with a transition period of one year after the agreement comes into force. As a result, a major hurdle preventing market access will then have been eliminated for European companies. This represents a breakthrough. Initial resonance has been noticeable on the market. Now it is important that this is implemented consistently.

5) Introduce the International Procurement Instrument (IPI) without unwarranted collateral damage.

→ **New ground-breaking instrument.** The European Commission is rightly striving for a more effective lever in order to motivate an opening of procurement markets in third countries. The new approach of the IPI, proposed by the Commission in 2016, is entirely correct in its objectives. It is particularly ground-breaking in that it also relies on rational modes of action.

→ **No unwarranted collateral damage: cancel Article 17 of the IPI draft.** In Article 17 of the IPI draft, provision is at present needlessly made for removing the central pillar of the European architecture for fair procurement markets: Articles 85 and 86 of Directive 2014/25/EU (minimum added value). Removing these articles would be irresponsible. The IPI would firstly inflict alarming damage the EU's negotiation position with third states which apply restrictive LCR, sending entirely the wrong signal and thereby eliminating the basis of the declared objective. And secondly, the IPI would allow upheavals in the rail industry location of Europe that could be prevented with Article 85. The IPI would then do more harm than good. It would even be counter-productive to a level playing field in international procurement. Collateral damage of this type would be intolerable. The IPI can only work if EU regulations additionally support it. Article 17 of the IPI draft therefore simply needs to be scrapped.

→ **Price adjustment: Change Article 8 of the IPI draft.** The price adjustment measure envisaged in the IPI is fundamentally correct, but not in terms of magnitude. A price adjustment of a maximum of 20 percent on the domestic market should be possible with orders upwards of 5 million euros. This penalty would probably not be sufficiently effective to motivate third states to open up procurement markets. A minimum threshold of 20 percent would be suitable for the market, which ought to be manageable for contract awarding entities.

IV. Lack of symmetry in the competitive framework in Germany and the EU.

What is the background?

Funding guideline for market-based competition.

European state aid law is constitutive for the EU's market-based order and for Germany's too. The legal provisions (Art. 107 – 109 TFEU) strictly regulate the prerequisites under which EU member states may grant funding (subsidies) to companies. This includes both direct subsidies and grants, as well as indirect discounts for companies such as the lowering (or de facto non-collection) of taxes and social security payments or cheap loans and bonds.

Essentially, EU law (Art. 107 section 1 TFEU) makes provision for a ban on funding. Exceptions can be made if funding can be coordinated with the EU domestic market. An EU member state must essentially notify the Commission in advance of any planned new measures relevant for funding. The commission in its role as a "guardian of contracts" is responsible for a strict state aid law. All this is totally correct.

Mind the gap: Producing little in the EU can be a structural advantage on the EU domestic market.

In the European domestic market, non-European bidders from the rail industry can obtain a skewed advantage by obtaining government grants in their home countries. This is because for EU awards, European state aid law does not take into account funding that is granted by non-EU states. EU state aid law in fact acts in this regard as though the world ends at the EU border, an external dimension is lacking. This has serious consequences: EU state aid law provides no option for combatting financial benefits that a third country provides to an industrial rail bidder, who competes for public tenders in the EU. This distorts the competition to the detriment of European bidders, even within the EU itself. A strict state aid law is required with an external dimension. No de-facto bonus should be permitted for non-EU bidders in the EU.

Fair competitive conditions.

An open market requires a strict EU state aid law which applies to everyone. So, for the benefit of globalisation: Whoever bids in the EU's rail market must observe the legal requirements for state aid there with transparency. In order to be able to potentially react to unfair disadvantages in individual cases, Trade Defence Instruments (TDIs) are in addition fundamentally important to the EU ex post. However, since nobody is generally interested in escalating an argument with trading partners, TDIs are only a reactive last resort in specific cases.

European state aid law and the external dimension.

Why should EU state aid law be updated for globalisation?

EU state aid law successfully ensures fair competition in the EU domestic market. It must be strictly applied. Wanting compromises here is an attack on the foundations of the EU. EU state aid law must however be strengthened. For at present it has a blind spot: it ends at the borders of the EU. In contrast to global trade. And the global rail industry market. In these times of globalisation, this can result in unintentional, yet striking, distortions to competition.

Where exactly in the status quo is competition distorted?

Only funding from EU member states is legally considered to be funding (according to Art. 107 Fig. 1 TFEU). Screening can therefore only be applied if an EU member state grants subsidies to a company (including to third country companies or a subsidiary of this, which is located in the EU). However, funding that is granted by a non-EU-state is not covered. Competitive advantages that arise on the EU domestic market for bidders due to funding granted in third countries therefore go undetected. At best, retrospective approaches might be considered.

What might this lack of an external dimension for procurement mean in practical terms?

With EU procurement in the rail sector a two-class system might arise.

Class A: Companies with high added value in the EU – and rightly with strict subsidy screening by the EU commission and courts.

Class B: Companies with a high added value in non-EU states – and in this respect without effective screening of funding. A company that mainly produces beyond the EU borders and receives subsidies there has therefore an unfair advantage when bidding on the European market.

What might the consequences of non-EU state aid be in the EU?

In case of a high percentage – above 50 percent in particular – of non-EU value addition, subsidies might disrupt price competition with tenders for rail projects in the EU. Especially if simply the cheapest provider is being sought at the lowest procurement price. Based on this mechanism, European taxpayers' money could flow via public tenders into subsidised non-European locations – simply because subsidies are available there, not because of superior production. European added value, jobs and even security-critical expertise would be weakened. It is worth noting however that this would not be because of an open and fair tender competition in the EU, but precisely because of its absence. This cannot be European policy.

The EU Trade Defence Instruments (TDI) … and their limitations.

What are EU TDIs aimed at?

EU trade defence instruments are aimed at acting against improper trading practices within the framework of WTO law.

What does dumping mean?

In the EU goods are considered dumped when firstly a company sells the goods on the export market at a lower price than on its own domestic market, secondly when considerable damage arises to the EU business sector which produces goods of the same type, and thirdly the price difference leads directly to (imminent) damage. The EU can then impose anti-dumping measures against imports (ad valorem duty i.e. percentage of import value, specific duty, price obligation).

What is a subvention?

Subventions are state financial aid or price support (for production, export or transport) that benefit a third country company when exporting goods into the EU. Where imported goods benefit from a – specific – subvention, this can damage the relevant business sector in the EU. The causal nexus needs to be verified. In this case the Commission can carry out an anti-subvention investigation and, if necessary, make provision for protective measures (cf. codified law (EU) 2016/1036 dated 8 June 2016 and (EU) 2016/1037 dated 8 June 2016).

Why would TDI only have a limited effect in the rail industry?

TDIs mostly have a retrospective effect. The damage has already been done. An application by the affected business sector to the Commission is always required before a procedure is initiated. Possible retaliatory measures from third countries against the business sector from which the complaint originated and the limitations of specific evidence provided in the third country need to be regarded with utmost caution here. There is currently some discussion as to whether it should be possible to initiate an investigation without an application by the business sector and the degree to which the EU's Lesser Duty Rule should be applied in the future. Even if TDIs can be applied in individual cases – they cannot compensate for structural distortions to competition.

IV. Lack of symmetry in the competitive framework in Germany and the EU.

What can politicians do?

Create the same rights for all in Europe, consistently implement market-oriented EU rules without privileges for non-European state enterprises.

1) Add an external dimension to EU state aid law, reflecting the global market in Europe.

→ **Market economy instead of subventions.** EU state aid law safeguards the constitution of the market economy: The state must not distort competition unfairly; rather, act as a neutral adjudicator. The domestic market must be open. In doing so, the state aid law must apply equally for each rail industry company that participates in public tenders in the EU. If double standards are applied in the EU domestic market when judging subventions, this will create a structural bonus for non-EU companies. For this reason, an external dimension needs to be added to the state aid law – so globalisation can be strengthened. Germany should campaign for this. One approach is the lex loci solutionis. This states that EU law is applicable for whoever makes offers in the EU. The same laws apply for all – there is no advantage but also no disadvantage for EU providers in the EU marketplace.

The lex loci solutionis. In the EU, European law applies – to everyone.

What does the lex loci solutionis say?

The lex loci solutionis reflects the external dimension of globalisation by insisting on the same rules throughout the EU. In terms of public procurement in the rail sector, this means: whoever bids in the EU market must observe the legal requirements there for state funding with transparency and verify their compliance in the country of origin. EU state aid law will then apply without discrimination in the European marketplace.

Can the lex loci solutionis be implemented?

Probably not quickly but essentially it can be done. For example, EU data protection law is shaping it already today: This applies equally to non-EU companies wherever they are active in the domestic market (Art. 3 VO (EU) 2016/679). Customers in Europe also know their position with regard to data protection. No disadvantages arise for European companies due to any lax regulations in third countries.

Does the lex loci solutionis restrict competition?

No. Quite the opposite: If non-European stakeholders profit from subventions in third countries in the European market, this would undermine competition. Especially if there are no localisation standards whatsoever. The lex loci solutionis provides a compass for the rules of equal competition.

→ **An external dimension in state aid law with unusually low offers.** The Sector Ordinance (SectOrd) stipulates for the Federal Republic of Germany: In case of unusually low offers in contract awards, the bidder must essentially verify that the granting of state aid is legitimate. They therefore bear the onus to provide evidence of this. This agreement is correct and is in line with European rules (Directive 2014/25/EU). However: this is only applicable for state aid provided by EU member states (and EEA and EFTA). Unusually low offers on the other hand that arise due to state aid in third countries are not covered. Non-EU bidders can deviate from EU state aid law with EU tenders as they wish according to this provision. These are unfair conditions. For this reason, German and European Sector Contract Law should be modified (SectOrd and Directive 2014/25/EU). All bidders must, in case of an unusually low offer, provide evidence that the criteria for EU state aid law have been complied with and government subsidies are not a causative factor in the offer. Other reasons for unusually low offers (§ 54 Abs. 2 SectOrd) must be checked carefully.

State aid. The Sector Ordinance states:

§

> *"Should the customer ascertain that an offer is unusually low because the bidder has received state aid, the customer shall reject the offer unless the bidder can prove within a certain deadline that state aid has been legitimately granted."*
>
> **(§ 54, para. 4, SectOridnance; in implementation of Art. 84 of the Directive 2014/25/EU).**

→ **An external dimension in state aid law with tender submissions (prequalification).** An unbiased investigation needs to be made as to whether legal provision reliably exists to make compliance with the rules of EU state aid law – similar to compliance with other legal areas – a suitability criterion in the qualification system for a bidder for public procurements. This criterion for participation would be the most reproducible solution for fair competition. Stipulating transparent screening of compliance with EU state aid rules based on objective and non-discriminatory criteria would be conceivable. Non-EU enterprises too, which bid in the EU, should appropriately reveal from the outset any ownership relations, financing and subsidies.

→ **Trade defence instruments.** Effective trade defence instruments are in the interest of the industry. However, a balance always needs to be found between the various industrial and commercial interests. For instance, a high protective duty on raw materials and products that the rail industry imports can be negative for the rail industry.

→ **Global set of rules.** The EU and Germany should aim to create international state aid laws at WTO level in the framework of GATT validity. These efforts must not result in any of their own measures that are effective being abrogated.

2) Take global market into account in EU merger control.*

→ **EU Merger Control.** Europe has a strict and efficient merger control policy in place. It is a firmly established component of a liberal economic order. The danger of a position that dominates a market segment, with corresponding potential for abuse, needs to be checked substantially, carefully, in a way which promotes innovation and stringently with a highly efficient process.

→ **The global market in view.** The Commission should accord suitable weighting to the global environment when monitoring mergers and takeovers. For in many rail industry segments, European companies are competing with non-EU enterprises, which (for now) have low market shares in the EU but are supported globally as national champions by their governments. Advantages due to mergers and acquisitions (scaling effects, knowledge and network gains, market access, diversification) are central to the future opportunities for companies. European champions must – in compliance with competition norms – be able to position themselves on the global market in such a way that they can be or remain globally competitive.

→ **Thoughts on a level playing field.** One scenario: In the product market X, a large (by European standards) medium-sized enterprise is still too small on a global scale. The medium-sized EU company (SME) is now striving towards a takeover in Europe. In its specific market segment, it needs to face to a powerful non-EU competitor on the global stage – one that perhaps dominates the market in parts of the world – and which also wishes to become active in the EU. The European SME encounters investment barriers in third countries. If now, in this example, in the SME's product segment X, the global market is the standard for competition, it is important that the Commission does not just consider the market conditions in the EEA/EU. For if it does, the EU may prevent this SME purchasing a company in the product market X in the EU, which might be essential for its global competitive position. At the same time, in this scenario, the non-EU provider can simply purchase a company in the EU, thereby acquiring a share of the market in Europe and extending its global dominance. In this scenario, this would be doing a disservice to competition. Essentially substantial and open evaluation of the market environment is of major importance. BusinessEurope – European Industry's main association – describes this fundamental thought-provoking impulse for the entire industry: *"By not taking into account the global market environment and dynamics in its substantive assessment and by focusing on actual effects in Europe or on narrow geographical markets, the Commission creates an uneven playing field and puts European undertakings at a disadvantage in global competition and ultimately also in Europe."*

* The position shown here on EU merger control does not reflect the opinion of all VDB members.

3) Commission's Expert Group: Develop and implement EU master plan for fair competition.

→ **Commission's Expert Group on the Competitiveness of the Rail Supply Industry (CEG).** Following the resolution of the European Parliament in 2016, the Commission formed a high-ranking expert group to consider the competitiveness of the rail supply industry in Europe in April 2018. This is a milestone. The Commission has thereby created a group that is drafting a vision for the rail industry of the future in the EU, is campaigning for equal competitive conditions and is deriving specific measures from these. The Expert Group is of strategic importance. In this group, the VDB represents the rail industry in Germany, in very close coordination in particular with the European umbrella association Unife and its French partner association FIF. Value addition on the domestic market, updated contract awards, standards, small and medium-sized enterprises, innovation promotion (Shift2Rail), support for young people – a great deal of leverage is available to Europe to create a strong rail industry.

→ **Develop an agenda – and share the responsibility for implementing it.** The goal must now be to develop a common detailed agenda quickly – and share the responsibility for the actual changes. The European Commission, the European Parliament and member states with a rail industry profile – most of all France and Germany – are particularly important for its implementation.

V. Lack of symmetry in innovation funding.

What is the background?

Rail 4.0. For climate protection. For customer quality.

Rail enabled the industrialisation of Germany in the 19th century. Rail sparked the economic miracle of the still young Federal Republic of Germany in the 1950s. And now Rail is now being reinvented. Rail 4.0 will create the best rail transport that there has ever been. This goal is being guided by the innovation agenda of the rail industry in Germany. Today it has a clear technological lead in global terms. Yet to further this, ambitious joint efforts are required for research, development, testing, and realisation.

MISSION FUTURE.

Rail 4.0 – the digital agenda of the rail industry in Germany.

- **More climate protection.** Electrification, electromobility free of overhead lines (battery, fuel cell, hybrid), renewable energies, highly efficient drive technologies, automatic driving – Rail 4.0 represents the "zero emissions" vision. Globally for climate protection – locally for healthy mobility.
- **More customer quality.** Very few waiting times, customised connections, almost 100-percent punctuality, superb travelling experiences, fascinating design, inter-modal networking, virtually zero accidents, modern stations – Rail 4.0 is creating a class of customer experience that has never existed before. For operators, Rail 4.0 provides dramatically higher performance capability, radically more intelligent maintenance, extremely high availability, significantly lower operating costs, energy consumption and lifecycle costs – and yet: more and more quality.

Mind the gap: Promoting innovation.

Some regions of the world promote the innovative power of national rail industry champions with immense government funding and a powerful university back-up that is often difficult to access for foreign companies, unlike EU programs. This is essentially legitimate. By contrast, Germany's rail research programme actually shrank in 2013. This was negligent. Without a targeted innovation programme for rail, the companies that develop, produce and launch products in Germany will be fundamentally disadvantaged. In the medium-term, this can lead to the loss of expertise, highly skilled workers and qualified personnel in our country. For this reason, the German government has now set new ambitious priorities with its coalition agreement 2018: a national research program for rail, pilot projects, digitalisation of the infrastructure. These are landmarks for Rail 4.0 Made in Germany. From the point of view of the rail industry, the coalition agreement will be a master stroke provided it is implemented correctly and quickly. National and European innovation promotion are inextricably intertwined. The EU's Shift2Rail programme provides important impulses for research and development in the rail industry in Europe as part of Horizon 2020. Yet innovations only benefit people if they are launched onto the market. Tenders with an unchanging fixation on the cheapest price do not serve this purpose. Digital dynamics require compatible, progressive calls for tenders. In other regions of the world, cybersecurity is of the highest political significance as the elementary basis of the digital transformation – a better orchestrated procedure in Germany and the EU is urgently required here for Rail 4.0.

Corporate Social Responsibility (CSR).

Innovations require values. Sustainability is part of the ethos of the rail industry in Germany. Those who provide sustainable products to the people must themselves stand for corporate standards of environmental protection, social responsibility and respect for human rights. Anything else would demonstrate a lack of credibility. CSR provides orientation, particularly for the digital transformation. Social responsibility with a clear ethical compass is the reality lived by the rail industry in Germany. And this is binding.

COALITION AGREEMENT BETWEEN CDU, CSU AND SPD 2018. | QUOTATIONS.

Blueprint for Rail 4.0 in and from Germany.

Research and development

> *"We want to create an independent research program for rail transport and seize the initiative to establish a German centre for rail transport research, which is to be set up as a practice-oriented, technical scientific research institute."*

Digitalisation and ETCS

> *"We want to push forward with the digitalisation of rail, even on highly frequented urban rail routes and support the development of the European Train Control System (ETCS), electronic interlocking stations and the upgrading of locomotives by the German government. We want to support the automation of freight transport and autonomous rail traffic by research and funding."*

Sustainable climate-protective mobility

> *"Mobility policy is subject to the Paris climate protection agreement and the climate protection plan 2050 of the German government." "In cities that are particularly affected, we want to promote (...) mobility plans to reduce harmful substances (...). We want push on with the immediate 'Clean Air 2017–2020' programme."*

Rail electromobility

> *"For rail transport we want to set up a comprehensive funding program, which will comprise both the electrification of routes and the procurement of vehicles as well as the recharging/tanking infrastructure. We want to support regional passenger rail transport with investment subsidies for fuel cell hybrid locomotives (...) and support the construction and operation of hydrogen filling stations." "By 2025 we plan to electrify 70 percent of the rail network in Germany."*

Digital rail pilot projects

> *"We want to support (...) digital test areas on road (...), rail and waterways (...)."*

Infrastructure

> *"We want to develop an instrument by means of which customers can rapidly realise comprehensive rail transport projects of particular significance (...)" "We want to win over the states, municipalities and Deutsche Bahn for a 'thousand railway stations' funding program." "We also want to reduce obstacles to mobility." A key project in this is (...) (the) funding of disabled access to railway stations."*

Rail pact

> *"To (...) increase competitiveness (...) we want to further pursue the lowering of track access charges. We will evaluate the railways regulation law." "We want to implement the measures of the rail freight transport master plan in the long term." "We want to conclude a new service and financing agreement with DB AG (LuFV III)." "We will push forward with the implementation of the 'Deutschland-Takt'." "Punctuality, good service and high quality must be the hallmarks of railways in Germany. With a rail pact between government and business, we want to gain twice as many rail customers by 2030 and, among other things, shift more freight transport to the more environmentally friendly rail."*

V. Lack of symmetry in innovation funding.

What can politicians do?

Staying ahead as the leading provider and leading market for Rail 4.0, implementation of a market-oriented policy for innovations, progressive contract awards, cybersecurity and sustainability.

1) National innovation program Rail 4.0 leading provider: Quickly implement a national programme for rail research.

→ **Leading provider.** The German government must quickly implement the ground-breaking Rail 4.0 national research program as set out in the Coalition Agreement 2018. It should:

- be coherently structured across the areas of activity
- be sufficiently funded over five year periods
- be aligned to national goals, particularly the high-tech strategy and climate protection policy of the German government (clean mobility)
- focus on the pre-competitive foundations of automation, digitalisation and energy efficiency
- strengthen core competences which are relevant for the understanding, control, monitoring and protection of the digital rail system of tomorrow in order to guarantee cybersecurity that is made in Germany
- orient itself to the approach of the Shift2Rail (S2R) European research initiative and the German government research programmes for other sectors (like aviation)
- provide powerful support for research, development and testing i.e. from fundamental research, to applied research and the demonstration of new technologies, where testing periods (including licensing) also need to be covered in order to promote mature market innovations in an unbiased way
- be unbureacratically structured so that both system manufacturers, rail companies and small and medium-sized enterprises in the rail industry can participate without an unacceptable amount of effort
- work together with practice-oriented, technical scientific research institutes which the German government should set up and develop as a high-performance research structure, also for the rail sector, if necessary within the framework of existing institutions for project control, as defined in the coalition agreement
- quickly implement these measures because time is a critical factor
- be supported by bundled resources in the ministries and clear control structures, as defined in the coalition agreement
- be interconnected with European funding (S2R, Horizon 2020 and FP9)
- be accompanied by tax-related research funding

Our research agenda for Rail 4.0. Selected topics.

- Hybridisation of vehicles, electromobility, battery and fuel cell technology, mobile accumulators (renewable energies on non-electrified routes)
- Sensors for rail vehicles, locomotives, traction units (such as optimisation of obstacle detection) and freight wagons (condition and cargo monitoring such as impacts, weight etc.),
- Technologies for data security, data analysis, artificial intelligence and data protection, cyber security
- Further progress with control and safety technology
- Smart cities and clean mobility (inter-modal networking, traffic management, traffic software (apps)
- Automated driving in passenger transport, data-based assistance systems
- Automation of shunting, driving and cargo handling, automatic coupling of freight wagons, development of new logistics concepts for the movement of goods on rail that are currently incompatible with rail
- Lightweight construction materials, materials and production technologies like construction methods (e.g. multi-material design), joining technologies (e.g. for components made of different materials) and new materials
- Energy-efficient auxiliary units (e.g. air conditioning systems)
- Digital optimisation of travel comfort (control systems on stations, networked stations, real-time information, online infotainment on board etc.)
- Digital assistance systems for disabled access mobility
- Precise, ongoing recording and analysis of data, evaluation methods for the field data of infra-structure and rolling stock, in order to optimise predictive maintenance and LCC, digital spare part detection
- Optical, thermal, acoustic and electronic condition monitoring
- Noise protection technologies for rail vehicles, combined transport terminals and infrastructure
- Social effects of digitalisation and automation, modification of requirements and training methods for staff and trainees
- Three-dimensional design and simulation methods, virtual product development, process optimisation, 3-D printing and digital manufacturing procedures

2) National innovation program Rail 4.0 leading market: Redefine a progressive procurement culture for the 21st century.

→ **Leading market.** Germany is today – closely networked with its European neighbours – a leading global market for efficient, attractive rail transport. Yet for this to also apply to Rail 4.0, innovations must be realised today with tomorrow in mind. Sustainable contract awards, market impulses and true cost pricing are decisive.

→ **Conducive framework conditions.** A fair cost framework (halving of track access charges) and the 'Deutschland-Takt': These goals have now been defined in the coalition agreement, as demanded by the rail sector associations. Because the German and European rail markets are closely networked, European collaboration plays a key role. Particular focus is required on the funding of inter-modal mobility solutions, which will shape the digital future. Likewise, reasonable internalisation of external transport costs creates effective incentives, both economically and ecologically. The cost framework for rail must be fair.

→ **More customer quality. The MEAT principle – more benefits for taxpayers' money.** Germany should be both a leading provider and leading market for Rail 4.0. Innovations improve people's quality of life and decide the future competitiveness of sustainable rail as a whole. Yet rail transport needs better structural incentives for innovations. Applicable law already provides for precisely this, with the MEAT principle (Most Economically Advantageous Tender). The concept is that taxpayers' money should be invested in the best possible way. For this reason, the price/performance ratio, quality and the lifecycle assessment should carry more weight in modern contract awards.
Progressive tender processes can contribute decisively to an ecologically and economically sustainable development. For this reason, MEAT is regulated both in European (Art. 82 Directive 2014/25/EU) and German contract law (§ 52 SectOrd). The Commission and European Parliament are now campaigning urgently for this to be implemented. The cheapest provider principle does not fit to the digital age. Wherever the lowest procurement price is the only criterion that ultimately counts in contract awards (cheapest provider), innovation will be undervalued. Only with MEAT can the market be ramped up successfully for Rail 4.0. It needs the best providers. Rail cannot afford to let innovative ideas slip by. The best rather than the cheapest provider is needed – and this is what MEAT means.

A progressive culture of contract awards in detail

- **More quality, more pioneering spirit (Best Price Quality Ratio, BPQR).** In future, two – at least two – non-price related quality criteria should carry a total weighting of 30 percent with contract awards. Tenders require greater pioneering spirit. The goal is to find innovations that are economically viable and implement these. For customers, for climate protection. Only if quality criteria are weighted appropriately in contract awards will each euro of taxpayers' money be optimally invested. Not only the cheapest price should be paramount, but above all the best price/performance ratio should also count (BPQR). Quality, creativity, aesthetics, customer experience – all these require more leeway in future tenders. Aspects that are relevant for success are for example the product quality, service quality, innovative power, a sustainable strategy (maintenance, reliability, availability, LCC, environmental consequences), system competence (product portfolio, supplier management system, technical customer support), performance (project management experience, references, financial stability), performance key figures (based on transparent key performance indicators, KPIs), logistics competence (supplier chain management), aesthetics (customer-oriented design, customer experience). What are known as soft criteria will in future also be more relevant to any success with customers. If, for example, the design of a tram suits a city particularly well and its people find it attractive, rail will gain new customers. Non-price criteria, which do not generally lead to any differentiation between offers because all bidders are equally obliged to state the maximum (e.g. shortest fault rectification time), are not meaningful quality criteria and ultimately the contract award will revert to the offer price alone.
- **More sustainability.** Lifecycle costs (Life Cycle Costs, LCC). LCC should in future be evaluated as an award criterion rated at around 30 percent. Public tenders must create true cost pricing by weighting the lifecycle considerably more consistently beside the initial purchasing price. Only when LCC are considered will actual costs be taken into account (TCO, Total Costs of Ownership). LCC above all means energy costs, operation, maintenance, management responsibility. The procurement law makes provision for this option and there are also methods for calculating the LCC (Capital Value Method). Innovations may initially cost somewhat more in order for them to pay back economically across the lifetime of the project – and provide added value for customers.
- **More responsibility (Corporate Social Responsibility, CSR).** In future CSR must be a binding prerequisite for tenders (PQ) – providing this is determined efficiently and meaningfully. For MEAT, tenders should also be sustainably fair. The Commission and European Parliament point out that public tenders – i.e. when taxpayers' money is invested – must go hand-in-hand with social responsibility for employees. Respect for social standards and fair pay must be an integral element. In addition, there is the ecological footprint, economic efficiency and respect for international treaties.
- **More disruption (first movers).** Procurement cannot level out the leading positions of companies with (initially) unique innovations. Whoever categorically rejects first movers as single sourcing, is discouraging ground breaking innovations.
- **More intelligence (Predictive Maintenance).** The networking of industry and operators allows huge gains in maintenance efficiency. Depending on the project it may be sensible to transfer responsibility for maintenance to the manufacturer. Availability models can be mapped using a variety of different contracts.
- **More efficiency (modular concepts).** Customisation and flexible, custom-fit configuration of trains can be highly efficient based on modular concepts and standardised interfaces and can be implemented in a short delivery time.

§

MEAT (Most Economically Advantageous Tender). In European and German contract award law.

Sector guidelines

> ***Article 82 Directive 2014/25/EU. Contract award criteria.***
>
> *"(1). Without prejudice to national laws (...), contracting entities shall base the award of contracts on the most economically advantageous tender.*
> *(2). The most economically advantageous tender from the point of view of the contracting entity shall be identified on the basis of the price or cost, using a cost-effectiveness approach, such as life-cycle costing in accordance with Article 83, and may include the best price/quality ratio, which shall be assessed on the basis of criteria, including qualitative, environmental and/or social aspects, linked to the subject-matter of the contract in question. Such criteria may comprise, for instance:*
> *(a) quality, including technical merit, aesthetic and functional characteristics, accessibility, design for all users, social, environmental and innovative characteristics and trading and its conditions (...)."*

The sector ordinance defines the "most economically advantageous tender", not the "cheapest":

> ***§ 52 SectOrd. Award and award criteria***
>
> *"(1) The award shall be granted to the most economically advantageous tender according to § 127 of the law against restrictions to competition.*
> *(2) The most economically advantageous tender shall be determined based on the best price/performance ratio. Besides the price or the costs, qualitative, environmentally-based or social award criteria can be taken into account (...).*
>
> ***§ 53 SectOrd. Calculation of lifecycle costs***
>
> *(1) The ordering entity can specify that the award criterion of "Costs" be calculated on the basis of the lifecycle costs for the goods or services."*

→ **Realise a progressive award culture. Round table for modernisation of contract awards.** At the end of 2017, the Commission ascertained: Modernisation of the award process is proceeding very slowly. 55 percent of calls for tenders in the EU follow the principle of cheapest provider. For this reason, the Commission and the European Parliament are campaigning for MEAT tenders. The following points are important:

- **Sector dialogue round table.** Communal action is the key to legally compliant and ambitious implementation of MEAT principles. For this reason, the German government should, together with states, customers and the sector, aim to set up a round table that works towards consistently reinforcing the principle of best provider rather than cheapest provider in detail in public awards that are financed by taxpayers' money. A contract award based on added value (Art. 85 Directive 2014/25/EU) should also be implemented in this format.
- **European Guidelines:** At European level, sector dialogue is required in particular within the framework of the Commission's Expert Group. Harmonisation of European and national guidelines for MEAT is key. The EU should establish the MEAT principle with public procurement financed from EU funds (CEF, Structural and Investment funds) in the rail sector and provide incentives for this.
- **Best practices and training:** For implementation, model MEAT tenders – legally compliant and innovation-friendly – at regional, national and European level are essential, as well as the training of staff at entities issuing tenders and help desks for operative consultation. The EU Commission and the German government bear political responsibility for ensuring that legitimate options are translated into real change.
- **Innovation partnerships.** This procedure, which has been permissible since April 2016 (§ 18 SectOrd, Art. 49 Utilities Directive), is intended to enable the joint further development of innovative solutions during the award process and to close the gap between a prototype and the procurement of a mature market product. Wherever weaknesses exist in this procedure, these need to be amended.
- **Monitoring.**The German government and the Commission should evaluate the use of MEAT with a high level of transparency, assess statistically and develop indicators.
- **International anchoring** In FTA negotiations, the Commission should campaign for sustainable awards based on the MEAT principle.

Upgrading rail transport for tomorrow.
Europe for MEAT. The EU Commission and European Parliament demand this.

EU Commission

In the "Renewed EU Industrial Policy" (COM(2017) 479) public awards are highlighted "as a driver for smart, sustainable and innovative technology." With the "Public Procurement Strategy" (2017) also, the Commission is campaigning for the MEAT principle in order to realise strategic awards: "Public Procurement can be an important driver of competitiveness of European Industry." Main topics from the point of view of the Commission:

→ Public Procurement of Innovation (PPI). Innovation-friendly awards, quality

→ Green Public Procurement (GPP). Eco-friendly, sustainable awards

→ Socially Responsible Public Procurement. Awards that integrate social requirements such as fair pay for employees.

European Parliament

> ***From the "Resolution on the competitiveness of the European Rail Supply Industry" (2015/2887(RSP)):***
>
> *"The European Parliament calls for a swift implementation of the 2014 EU public procurement directives; reminds Member States and the Commission that these Directives oblige contracting authorities to base tendering decisions on the Most Economically Advantageous Tender (MEAT) principle, focusing on life-cycle-costs and environmentally and socially sustainable products and thus contributing to prevent wage and social dumping as well as potentially strengthening the regional economic structure; calls on the Commission and the Member States to generally promote the whole life-cycle cost (LCC) analysis as a standard practice in long-term investments, to give guidance to contracting authorities and to monitor its application."*

3) Digitalise infrastructure, roll out ETCS ambitiously.

→ **European ETCS roll-out.** Without ETCS, no Rail 4.0 in Europa: The Standardised European Railway Area (SERA) assumes cross-border digital train control. Regionalism with train control systems – in part associated with changes of engine drivers at the border – is not compatible with the 21st century. For this reason:

- The **European Deployment Plan (EDP)**, which defines specific goals for the roll-out of ERTMS/ETCS, must be implemented as mandatory in the core network corridors (CNC).
- Europe needs a train control system ETCS that is interoperable in practice. The European Railways Agency (ERA) and the Federal Railway Office (EBA) as well as other national safety agencies and assessors must therefore have resources at their disposal in order to ensure the **practical interoperability** of ETCS (Baseline 3) in the EU.

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← *Continued from 3) Digitalise infrastructure, roll-out ETCS ambitiously:*

→ **Digitalisation of infrastructure.** ECTS is also the core of an extensively digitalised infrastructure in Germany. ETCS is the platform for Rail 4.0. The coalition agreement now outlines this path for the first time:

- **National ETCS extension plan.** The feasibility study for area roll-out of ETCS and DSTW/ESTW (digital/electronic interlocking stations) needs to be completed quickly. Germany then needs an implementation program as prescribed in the coalition agreement. Ambitious targets should define equipping 80 percent of the entire rail network with ETCS Level 2 and DSTW by 2030. A technical target vision needs to be defined for this. A contract over several years between the German government and infrastructure operators, in which long-term, reliable means are interconnected with binding, demanding service obligations (LuFV ETCS) would make sense. Germany must comply with its ETCS obligations in accordance with EDP.
- **On-board ETCS.** The government must also fund investments in on-board equipment (On-board Units, OBU) as rightly specified in the coalition agreement. For only if trains have ETCS on board can the digital infrastructure develop its full potential. ETCS shifts infrastructure functionality into the vehicle.
- **DSTW.** As now planned, digital and electronic interlocking stations must be installed across Germany. Most interlocking stations in operation are incompatible with ETCS level 2. DSTW/ESTW digitalises operational control, increases punctuality and lowers costs (fewer light signals, cables etc.).
- **Further track electrification.** The continuing electrification, which is now planned and has a target of 70 percent of the rail network by 2025, requires better use of regenerative energy.
- **Extension of bandwidth.** Fibre-optic networks and full wireless coverage along the rail routes are essential and must be funded by government where necessary.
- **Stations and level crossings.** With the planned “thousand stations” programme, German government, state governments and municipal governments will contribute to the stations being modernised and digitalised for customers (control systems, video surveillance, Wi-Fi, inter-modal passenger information etc.). The German government should contribute to implementing electronic level crossings quickly.
- **Digital planning.** The German government should continue to support digital solutions for optimal efficiency in planning (digital planning cycle, version management), in construction and in the process chain (e.g. digital amendment management) and in operation (e.g. assignment of tracks at short notice). Building Information Modelling (BIM) should be used as soon as possible. The planning and building acceleration law planned by the German government is correct here, including its fast channel for individual projects.

→ **Licensing and updates.** Digital infrastructure requires digital trains. To better support the upgradability of trains with digital technologies including software (upgrades), certification processes must both guarantee safety and also keep up with the pace of digital transformation. Government, the Federal Railway Ministry (EBA), the European Railway Agency (ERA) and the industry sector all face the same challenge in this case.

4) Realise pilot projects for electromobility, climate protection and customer quality.

→ **Highly innovative flagship SPNV 4.0.** National and state governments should vigorously support pilot projects under real conditions. State-of-the-art innovations can be tested in bundles in test areas and experienced by customers as fascinating demonstrations of performance. They should be accompanied by a scientific evaluation. Digitally optimised processes and parallel integration of fully automated operation can create regional/local rail passenger transport without waiting times and with the greatest energy efficiency. With the increase in budget for the municipal transport financing law (GVFG), the German government can also contribute to the success of this effort. At the same time the legal framework should be checked. While fully automated driving is regulated in the BOStrab (Ordinance on the Construction and Operation of Street Railways), satisfactory regulations are not present in the EBO (Ordinance on the Construction and Operation of Railways). As a rule, the future will be characterised by partially automated operation.

→ **Electromobility pilot regions.** Electromobility on rails, free of overhead lines with battery-powered and fuel-cell powered trains as well as hybrid technologies is opening up entirely new opportunities for climate-friendly mobility. Worldwide. The rail industry in Germany is the clear pioneer in this field worldwide. The German government now wishes to initiate a comprehensive funding program, which will accompany the procurement of vehicles as well as the recharging/refuelling infrastructure. This is of utmost importance. Using the "Sustainable mobility for cities" fund and the "Clean Air 2017 – 2020" programme, the market is to be ramped up for zero emission technologies. For without debuts in model regions, solutions for clean mobility will not leave the starting line. Suitable calls for tenders should define zero-emission criteria regardless of the technology. The German government's "National innovation programme for hydrogen and fuel cell technology" (NIP) (2016 – 2026) must be implemented so that it is closely related to practice.

→ **Digital, quiet logistics.** The Rail Freight Transport (SGV) master plan, agreed by sector and government in 2017, defines mains topics for digitalisation, data platforms and the latest locomotives. In 2017, the pilot started to set up digitalisation and automation of train formation in rail freight transport. Further projects must follow, such as for universally electrically mobile, automated inter-modal logistics chains for the supply of metropolitan regions. Today noise is often – understandably – the Achilles' heel of rail freight transport. But it is possible to make this quieter. Freight wagons with silent technology, high-tech rail grinding etc. will ease the burden on residents. The Coalition Agreement therefore defines important tools, in particular the innovation bonus. Noise from tracks will be halved by 2020. However, this must be followed by new, more ambitious limits in Europe. The rail industry in Germany is specialised in innovations for better noise protection. These will need to be tested both in the lab and in the real world.

5) Ambitiously strengthen the innovative power in the Standard European Railway area.

- **EU research initiative Shift2Rail (S2R).** The EU finances S2R with 450 billion euros; the industry contributes 470 billion euros. S2R bundles rail industry research in Europe with common goals, responsibility and organisation. Besides national strategies, the reinforcement of European research programs is extremely important. The S2R II continuation of the program after 2020 will soon have to be prepared with the sector, suitably equipped and become more easily comprehensible for small and medium-sized enterprises in the rail sector.
- **Protection of intellectual property.** Technology transfer and infringement of intellectual copyright laws in some regions can weaken the edge that has been acquired in competence. A check needs to be made at EU-level as to how the law can be used to globally safeguard intellectual property more effectively in the future. The strategy for the protection and implementation of intangible property rights in third countries, passed by the European Parliament in 2015, offers some sensible approaches in this regard.
- **EP 4.** Besides the roll-out of cross-border train control (ETCS, ERTMS), the efficient and reliable licensing of rail vehicles is above all a driving force for the Standardised European Railway Area (SERA). With the Fourth Railway Package, the legislator is reorganising vehicle licensing worldwide and tightening the rules for interoperability and safety. The ERA is becoming a strong registration authority for vehicles and ERTMS route components in Europe.

6) Further develop a cyber-security strategy for Rail 4.0 in Germany and EU.

- **Cybersecurity.** The threat of cyber security is growing. Overall, cyberattacks are increasing exponentially. According to estimates, the economic damage caused by cyber criminality increased fivefold between 2013 and 2017. Worldwide damage is calculated to be around 500 billion euros for 2017. In some European countries, it amounts to around 1.6 percent of the gross domestic product. In 2017, 8.4 billion networked devices were in use – 31 percent more than in 2016. By 2020, this is set to exceed the 20 billion mark.
- **Rail 4.0 and cyber security – two sides of the same coin.** Digital rail transport requires adequate cyber security because critical infrastructures and sensitive data must be protected. Today rail transport is extremely safe, also in terms of digitally security. Yet digitalisation means networking – and thus increased vulnerability to cyberattacks in the future. The rail system of the future will rely on the generation (e.g. sensor systems in components), transfer (real-time transmission) and analysis (such as intelligent maintenance) of data. Anyone who maliciously breaks into network data systems, distributes manipulated data or blocks the transfer of valid data, can virally infect the rail system. Data platforms with defined interfaces must be extremely secure. And Rail 4.0 is digitally (remotely) controlled and monitored – with Automatic Train Operation (ATO) or ETCS (Level 2 and 3) without fixed trackside signals. Besides a robust cybersecurity architecture, control autonomy is essential. The EU Commission writes in its communication on cyber security of September 2017: "A failure to protect the devices that will control our transport networks, (...) could have devastating consequences and cause huge damage to consumer trust in emerging technologies."

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→ **National cyber security strategy Rail 4.0.** The German government should quickly convene an expert commission to develop a coherent Rail 4.0 cybersecurity strategy for the future. Cyber defence capabilities must always be one step ahead of cyberattacks. Government, industry, operators, BSI and the German Railway Authority must together tackle this social challenge in a more consistent and synchronised manner. Existing, tried-and-tested, highly resilient solutions in the sector need to be further developed, particularly for the future mobile radio standard (5G), for future data platforms and for the protection of passengers' personal data. In this way, the public perception of the basis of trust will be strengthened. Technological innovations for detecting cyberattacks and reliably fending these off are of utmost relevance. Funding research and training young experts also has an important place on the agenda. A close network of state, operators and industry will ensure the exchange of information on incidents and new findings. Cybersecurity must become a more pronounced, integral part of all the links in the value-added chain of Rail 4.0. In a multi-disciplinary, comprehensive approach, the consequences of political decision-making options for the security of Rail 4.0 must be evaluated as a central building block for national stability and economic sovereignty in the cyber area.

→ **European responsibility.** The national cyber security strategy must be closely linked to a Rail 4.0 European cyber security strategy. In accordance with the will of the Commission, both cyber diplomacy and international collaboration are to be furthered. Germany and Europe need to have the technological know-how available to detect cyberattacks on the digital rail system, repel and prevent them. For this reason, a cyber security strategy must clearly focus on the core technological components of the EU. This criterion must also apply to the development of the Standard European Railway Area (SERA). In its communication on cyber security, the Commission writes: "The effect of foreign acquisitions on critical technologies – of which cybersecurity is an important example – is a key aspect in the framework for the screening of foreign direct investment in the European Union, which aims to enable the screening of investments from third countries on the grounds of security and public order." Rail 4.0 is a highly sensitive system which people rely on in their day-to-day lives. For this reason, cyber security affects the well-being of all of society.

7) Bindingly reflect sustainable responsibility (CSR) in contract awards.

→ **CSR as a sustainable standard for all.** Good innovations create added value and reflect values. Corporate sustainability is an ethical obligation. Only in this way will digital innovations be reflected in what is socially desirable. For this reason, CSR should not be something to be softened or distorted so that it becomes a façade. Credible CSR requires:

- **Transparency.** CSR standards must apply equally to all bidders (including non-EU) and be subject to plausible transparency obligations.
- **Liability.** In Germany, there must be a prospect of successful CSR auditing as a mandatory prerequisite for participation (PQ) in public tenders. Rather than being mere window dressing, CSR must count.
- **Substance.** Quality statements must contain substance. The principles of the UN Global Compact must apply.
- **Efficiency.** CSR-auditing must be meaningful, unbureaucratic and non-discriminatory. It must not lead to futile and superfluous work. A CSR Rail Standard can ensure effective processes with no lock-in effects.

CORPORATE ETHICS.

What we advocate.

The rail industry in Germany is committed to an obligation of sustainability. Without question. For this reason, it is a trailblazer for Corporate Social Responsibility. It's not about shiny advertising logos. It's about substance. About fundamental ethical values, which initially provide a compass for digital innovations. And about the measurable social responsibility of companies. For this reason, CSR means specifically in accordance with UN Global Compact:

→ **environmental change** (particularly greenhouse gas emissions, water consumption, renewable energies)

→ **employee rights and social responsibility** (in particular work conditions, no discrimination, guarantee of equal opportunities, fundamental standards or international labour organisation (ILO), social dialogue, respect for trade union rights, occupational health and safety)

→ **respect for human rights** (no human rights violations and promotion of human rights in one's own sphere of influence)

→ **fighting corruption** (incl. blackmail and bribery)

The basis for CSR is the economic success of companies – thanks to a long portfolio of sustainable mobility solutions going back many years. Credible CSR requires public and also critical dialogue from society. And in the digital age, reliable handling of data. CSR taken seriously – demanding, binding, relevant for contract awards: The rail industry in Germany is campaigning for this for one simple reason. Out of conviction.

Glossary

AMP Auslandsmesseprogramm des Bundes

The Federal Ministries for Economics and Energy (BMWi) and for Food and Agriculture (BMEL) support German companies that participate in trade fairs abroad. Trade fairs in which the German government is involved are summarised in the "Auslandsmesseprogramm des Bundes" (the German government's Trade Fair Programme) and published by AUMA.

ATO Automatic Train Operation

ATO is fully or partially automated train operation where the on-board computer takes control of the train.

AUMA Ausstellungs- und Messe-Ausschuss der Deutschen Wirtschaft e.V. (Association of the German Trade Fair Industry)

As the Association of the German Trade Fair Industry, the AUMA represents the interests of exhibitors, hosts and visitors to trade fairs.

AWG Außenwirtschaftsgesetz (German law on foreign trade)

The German law on foreign trade regulates the transfer abroad of foreign currency, goods, services, capital and other commercial commodities. The subject matter regulated by the foreign trade law is strongly influenced by European Law.

AWV Außenwirtschaftsverordnung (German Foreign Trade Ordinance)

The German Foreign Trade Ordinance is an ordinance on the implementation of the German law on foreign trade. It contains the approval, procedural and registration specifications as well as corresponding laws on criminal offences and monetary penalties.

ATC Automatic train control

Automatic train control is a system that adjusts routes fully automatically for trains, for example by setting points.

BAA Buy America Act

The Buy America programme describes stipulations for transport companies in the USA, so they purchase vehicles manufactured in the country. Limits and calculation methods are offered based on deliveries from abroad, which also need to be adjusted from time to time. The legal basis is provided by the Surface Transportation Assistance Act 1982. Section 165 of this (49 U.S.C. §5323 (j)) also known as the Buy America Act.

GDP Gross Domestic Product

The gross domestic product specifies the total value of all goods manufactured as end products during one year within the borders of a country's national economy after deducting all advance payments.

BNetzA Bundesnetzagentur

The Bundesnetzagentur or BNetzA (Federal Network Agency) is the German regulatory authority for the electricity, gas, telecommunications, post and railway markets. It is a government agency of the German Federal Ministry of Economics and Technology and headquartered in Bonn, Germany. The highest German regulatory authority, its tasks include the upholding and promotion of competition in what are known as network markets. A further task it has is the moderation of arbitration processes. The Federal Network Agency is also a certification agency according to the Signaturgesetz (Signature Law).

BOStrab Straßenbahn-Bau- und Betriebsordnung (Tram Construction and Operation Ordinance)

The Tram Construction and Operation Ordinance contains regulations on the construction and operation of trams.

BRI Belt and Road Initiative

The BRI is a core element of China's globalisation strategy and aims to establish a "New Silk Road". Important elements here are major rail investments in Central Eastern Europe and a high-speed connection from Belgrade to Budapest funded by China as well as the prospect of a rapid connection of the port of Piraeus to markets in Central Europe.

BVWP Bundesverkehrswegeplan (Federal Transport Infrastructure Plan)
The Federal Transport Infrastructure Plan is an investment framework plan and planning tool by means of which the German government prepares future construction projects for road, rail and water traffic carriers. The German parliament uses it as a basis to decide upon planned requirements for the individual traffic carriers.

CFIUS Committee on Foreign Investment in the US
The CFIUS is a cross-area committee of the US government for the screening of foreign investments in the United States. It examines the effects of foreign investments in American companies on national security.

CIRRs Commercial Interest Reference Rates
A reference interest rate specified by the OECD for its member states as a minimum interest rate for state funded financing of investment commodity exports and associated services in developing countries. It corresponds to the credit costs for prime domestic borrowers plus an additional charge of 100 base points. A uniform CIRR rate applies for the Euro zone.

CNC Core Network Corridors
CNC is the abbreviation for core network corridors: There are nine EU network corridors, which connect the European capitals, large conurbation areas and logistics nodes. The majority of transport on the EU domestic market is realised via these corridors.

COP21 UN Framework Convention on Climate Change, 21st Conference of the Parties
The UN climate conference took place in Paris in 2015 as the 21st UN climate conference and simultaneously the 11th meeting on the Kyoto protocol from 30 November to 12 December 2015. In this conference, a climate protection agreement was approved as a result of the Kyoto protocol.

CSR Corporate Social Responsibility
CSR describes the contribution of a company to sustainable development. CSR covers ecological, economic and social responsibility. The principles of CSR were stipulated in the UN Global Compact in 1999, a global treaty that was concluded between corporations and the UNO in order to design a more social and ecological globalisation.

Directive Directive of the European Parliament and of the Council
In European law, Directives are legal acts by the European Union and as such are part of secondary union law.

DSTW Digitales Stellwerk (digital interlocking station)
A digital interlocking station is a system for setting points and signals as necessary. Commands from the dispatcher are transmitted digitally via network technology. Individual connections to the individual track elements required previously are no longer necessary. A digital interlocking station enables the control of signals and points at significantly greater distances.

EBA Eisenbahn-Bundesamt (Federal Railways Office)
The Federal Railways Office is an independent German authority for Federal Traffic Management. In Germany, it is the authority responsible for the supervision of railways and the approval authority for domestic railway infrastructure companies mainly under the ownership of the German government and for German and foreign railway companies that operate across Germany.

EBO Eisenbahn-Bau- und Betriebsordnung (Ordinance for the Construction and Operation of Railways)
The Ordinance for the Construction and Operation of Railways is an ordinance for the construction and operation of standard gauge railways in Germany. Vehicles and rail systems must meet high safety requirements.

EC European Commission

ECG RSI Commission Expert Group on the Competitiveness of the Rail Supply Industry
Formed at the start of 2018.

EDP European Deployment Plan
The ERTMS European Deployment Plan (EDP) is a schedule for the implementation of ERTMS in order to guarantee rapid implementation of ERTMS in the European main corridors (EC 2017/6 dated 5 January 2017).

EN European Norm
European Norms are provisions that have been ratified by one of the three European committees for standardisation.

EPC Engineering, Procurement and Construction
EPC is applied to construction projects Germany. For the most part EPCs are major projects, which are handed over as turnkey solutions.

ERA European Union Agency for Railways
The European Union Agency for Railways serves to strengthen the safety and interoperability of rail traffic in the EU. As part of the Fourth Railway Package, the agency is to assume key responsibility for safety certificates of rail traffic companies and the certification of vehicles for cross-border use.

ERTMS European Rail Traffic Management System
ERTMS is the future system for the management and control of rail traffic on the routes of the Trans-European Networks (TEN). ERTMS comprises of the components ETCS and GSM-R.

ETCS European Train Control System
ETCS is a fundamental component of the future standardised European railway traffic control system. In the medium term, ETCS is to replace the more than 21 different national train control systems in Europe.

EEA European Economic Area
The European Economic Area is an enhanced free trade zone between the European Union and European Free Trade Association (EFTA).

FDI Foreign Direct Investment
Foreign Direct investments are asset investments made abroad by a domestic investor. As well as capital, knowledge and technology also flow with FDIs.

FIF Fédération des Industries Ferroviaires
French Railway Association

FTA Free Trade Agreements
A free trade agreement is a contract according to international law to ensure free trade between the contracting states. The contract partners remove any trade obstacles between them but practice an autonomous free-trade policy towards third countries.

GPA Government Procurement Agreement
The Government Procurement Agreement or GPA for short is an international agreement between individual contract states of the WTO, which regulates access to public tenders. The GPA came into force on 1 January 1996.

ICC International Chamber of Commerce
The International Chamber of Commerce is an international, non-governmental organisation whose task is to support and fund worldwide trade and globalisation.

ILO International Labour Organization
The International Labour Organisation is a United Nations special organisation whose remit is to promote social justice and human and labour rights.

IPI International Procurement Instrument
The IPI is a trade instrument from the EU Commission aimed at opening public procurement in third countries to European companies. It is also designed to provide the EU with more leeway for negotiations on access to foreign public procurement markets.

IWG International Working Group on Export Credits
The IWG is an international working group to which, as well as China, the USA and the EU and all other OECD states belong. The IWG pursues the goal of developing new global standards for state-supported export credits.

SME Small and Medium-sized Enterprises
SME is a collective designation for companies that do not exceed specific limits with regard to number of employees, turnover or balance total. They are generally classified independently of the chosen legal form or ownership structure.

CRITIS Critical Infrastructure
According to the EU Directive 2008/114/EC a critical infrastructure is a system that is of essential significance for the upholding of important social functionality, health, safety and the commercial or social well-being of the population.

LCC Life Cycle Costs
Lifecycle costs are the costs of a product or a service across its entire lifetime. All costs in all lifecycle phases are recorded i.e. planning, development, procurement, manufacturing, sales, site visits with maintenance and operating costs.

LCR Local Content Requirements

State localisation obligations describe the regional value-added share when creating a product, which is added to by the provision of local and national supplier parts or work performed at the assembly site.

MEAT Most Economically Advantageous Tender

The MEAT criterion enables procurement authorities to take into account, besides the price, criteria that include the quality, price-performance ratio, design and sustainability of an offer when awarding tenders. MEAT is defined in the EU Directive 2014/25/EU, Art. 82 (2).

MIC 2025 Made in China 2025

MIC 2025 is a strategic plan from the Chinese government. Its goal is to be a leader worldwide in defined key industries, to replace imports and promote exports.

MoU Memorandum of Understanding

A MoU defines the basic points for a joint approach. It is a basic agreement, which is not legally binding and cannot be enforced in a legal action before court.

NAFTA North American Free trade Agreement

The NAFTA is an economic agreement between Canada, the USA and Mexico and forms a free-trade zone on the North American Continent. With the coming into force of the free-trade agreement, numerous duties were scrapped and many more postponed for a period of time.

NIP National Implementation Plan

The National Implementation Plan ETCS of the Federal Ministry of Transport, Building and Urban Development specifies the deadlines for the upgrade of German railway routes with ETCS in the period until 2023 and describes the migration strategy of the German government from both a technical and financial point of view.

Non-EU SOE Non-EU state-owned enterprises

SOEs are public companies from EU third countries that are in majority or full ownership of the state or one of its authorities.

NTB Non-Tariff Barriers to Trade

Non-tariff barriers to trade are indirect protectionist measures to restrict foreign trade which are not customs duties, levies or export subsidies. They make market access difficult for foreign providers.

OECD Organisation for Economic Cooperation and Development

The OECD is an international organisation with 35 member states that are committed to democracy and the market economy. Most OECD-members belong to countries with a high per capita income and are considered to be developed countries.

OECD consensus

Consensus between the member states of the OECD to observe certain minimum standards with publicly supported export credits (with validity periods of more than two years). The purpose of this agreement is to curtail international subsidy competition, in which individual states obtain competitive advantages for their export economy by granting export credits subsidised from public funding.

OEM Original Equipment Manufacturer

An OEM is a (usually very well-known) manufacturer of trains. Close cooperation between OEMs and small and medium-sized enterprises in the value-added chain is of key importance for joint success.

OMI Open Markets Index

The OMI is a publication by the International Chamber of Commerce that empirically illustrates the openness of an economy's market. The report focuses on four areas, which are measured based on 23 indicators: perceived openness of trade, trade policy measures, openness to foreign direct investments and trade-friendly infrastructure. The OMI is intended to serve as a guideline for governments worldwide.

OSC Operational Safety Clause

The OSC is a clause that was debated during the EU-Japan free trade agreement. The clause allows Japanese rail companies to exclusively favour domestic manufacturers during public calls for tenders. The OSC was dropped from the finalised free trade agreement.

PQ Pre-Qualification

Pre-Qualification is precompetitive suitability test during which potential suppliers prove their expertise, performance capability and compliance based on special prerequisites regardless of a specific call for tender.

S2R Shift 2 Rail

Shift2Rail is a joint technology initiative in the rail sector, which is a public/private partnership within the European Research Framework Program HORIZON 2020.

SectOrd Sector Ordinance

The sector ordinance describes the award of orders in the area of transport, drinking water supply and energy provision (SectOrd). It is part of German procurement law.

SOE State-Owned-Enterprise

Public companies (also known as state enterprises) are companies organised according to public law or private law in the majority or full ownership of the state.

TCO Total Cost of Ownership

TCO describes the total costs of an operation including all costs incurred from investment goods. As well as procurement costs, all aspects of later use (energy costs, repair and maintenance) are included.

TDI Trade Defence Instruments

TDI are trade protection instruments, which protect European companies against excessive competition by market participants from other parts of the world. The EU uses these instruments to curtail the flooding of its markets with low-price goods and in case of unfair subsidies or the shifting of trade flows in order to restore equal competitive conditions.

TSI Technical Specifications for Interoperability

In order to ensure a secure and interoperable, i.e. technically compatible, European Rail System, what are known as Technical Specifications for Interoperability (TSI) are in place. These contain the requirements and inspection procedures for interoperability components and subsystems.

UFC Unrestricted financing credits

UFCs are loans from banks domiciled in Germany to foreign debtors. They are used to fund projects abroad that are worthy of funding or commercial ventures that are in the particular interest of the German government. UFCs are not restricted to German deliveries or services.

Unife Union des Industries Ferroviaires Européennes

Unife is the European Railway Industry Association.

WFOE Wholly Foreign-Owned Enterprise

WFOEs are companies that are entirely in foreign ownership. WFOEs are an important investment instrument for many investors.

WTO World Trade Organization

The World Trade Organization is an international organisation that is responsible for the liberal control of trade and commercial relations. With its 164 members at present, the WTO is, besides the IWF and the World Bank, one of the central international organisations that negotiates trade and commercial policy with a global reach.

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