

THE GERMAN HYDROGEN RCS ROADMAP

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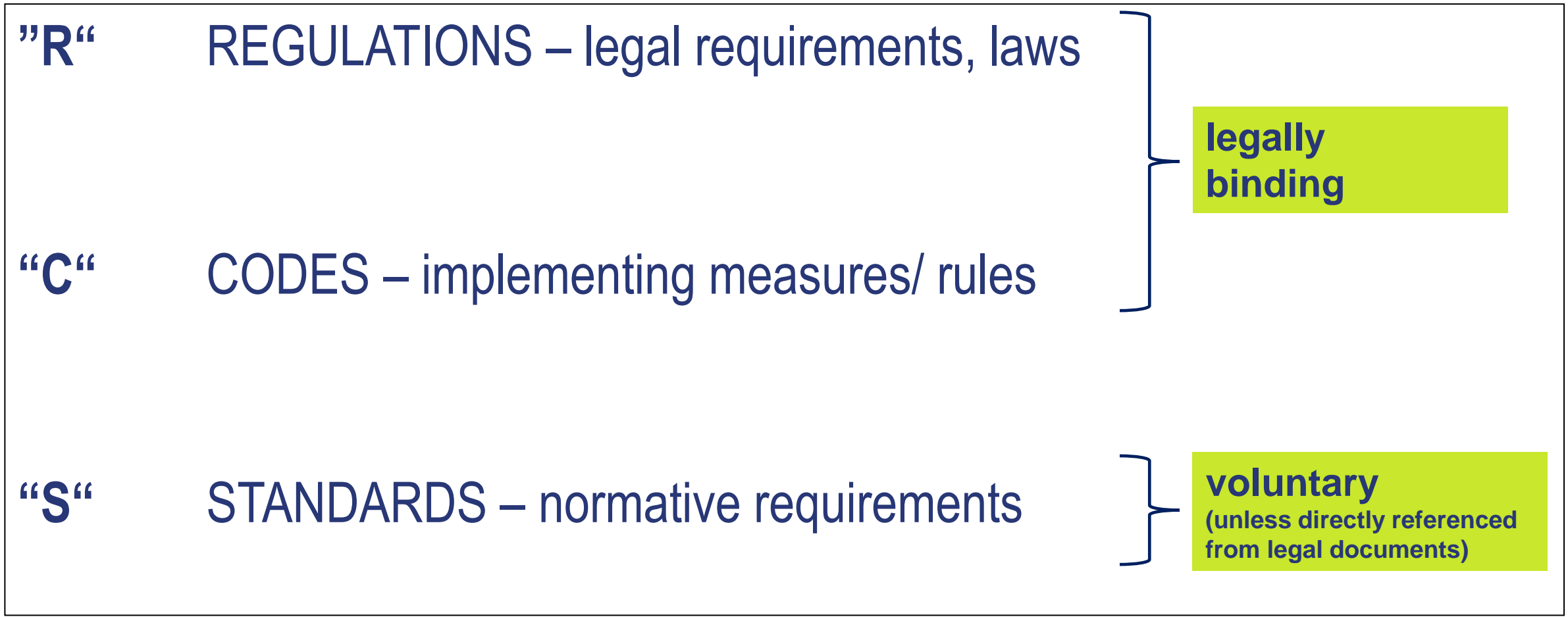
Die Deutsche H₂-RCS-Roadmap 2025

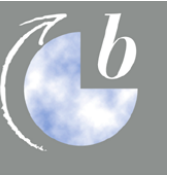
RCS-Regulations, Codes & Standards
Regelwerke, Durchführungsbestimmungen
& Normen im Bereich Wasserstoff (H₂)

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Short introduction into “RCS”





Motivation – the regulatory framework changes

- H₂/FC “RCS” increasingly will be determined internationally
- Technology and market developments will be influenced increasingly from outside Europe (especially from Asia)
- Standards gain importance as regulatory element (EU “New Legislative Framework”)
- **German & European interests must continue to be given international consideration by intensively pursuing “RCS” activities by German actors in international bodies**

RCS – Regulations, Codes & Standards



Implementing Regulations & Standards

Hierarchy

High



UN Regulation

EU Implementing Regulation

EU Regulation

EU Directive

German Law

German Legal Ordinance



Low

Level of detail

Low



High

In the case of direct reference from the regulations, a specific standard can become legally binding. Example: AFID, Annex

Technical Rules
> TRBS

Standards

Industry Guidelines

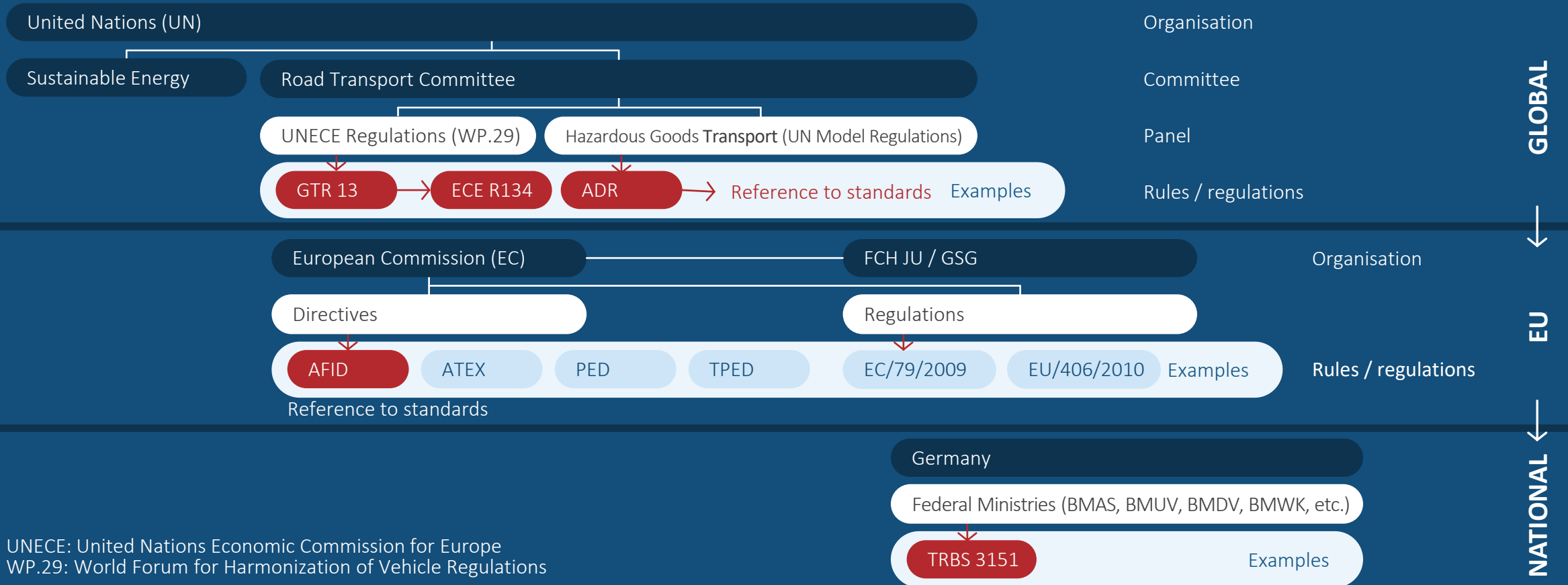
LEGALLY BINDING

NOT LEGALLY BINDING
(unless otherwise stated in the regulations)

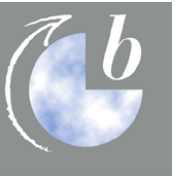
Rules & Regulations



The subject of RCS is complex, internationally oriented and subject to continuous further development and constant change. | In addition to UN regulations, European Regulations or Directives also represent applicable law in Germany and are implemented in national laws.



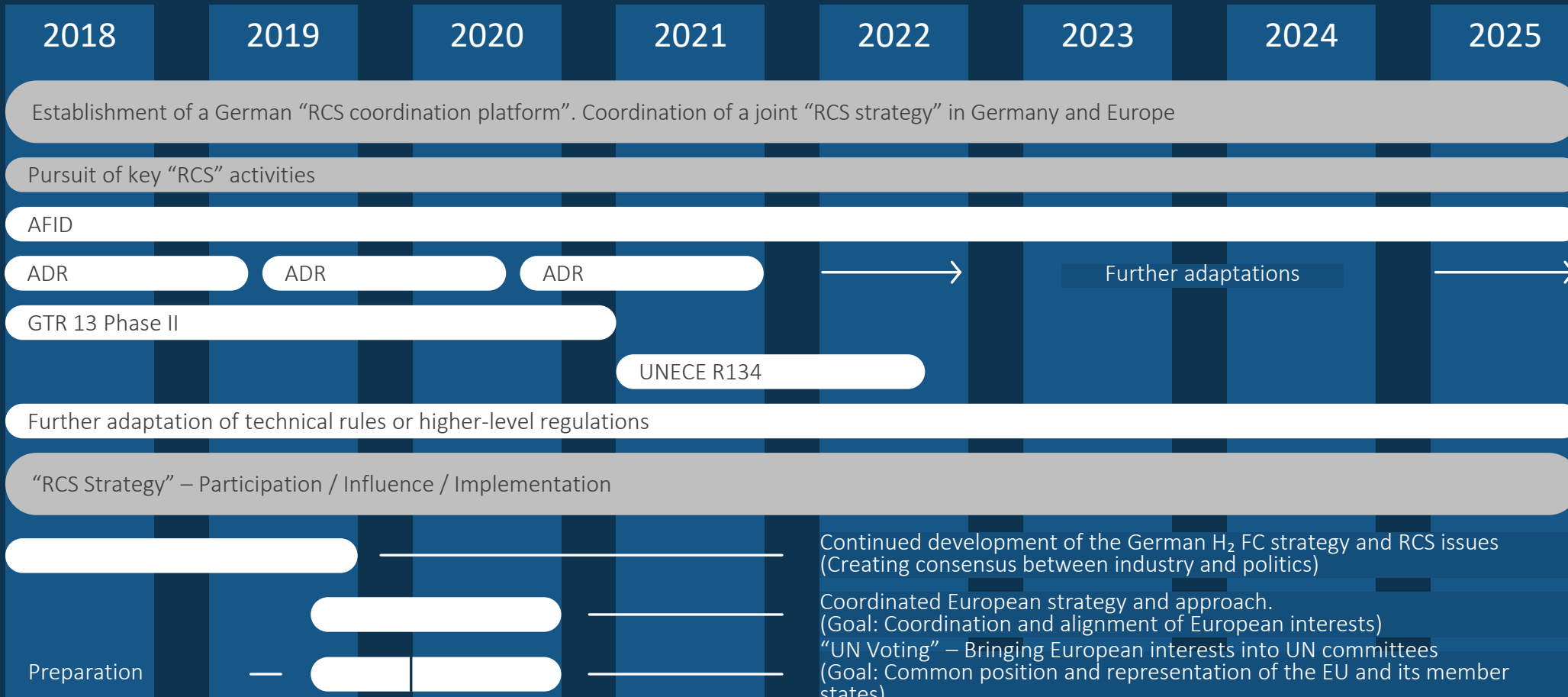
UNECE: United Nations Economic Commission for Europe
 WP.29: World Forum for Harmonization of Vehicle Regulations



Identified need for action - examples

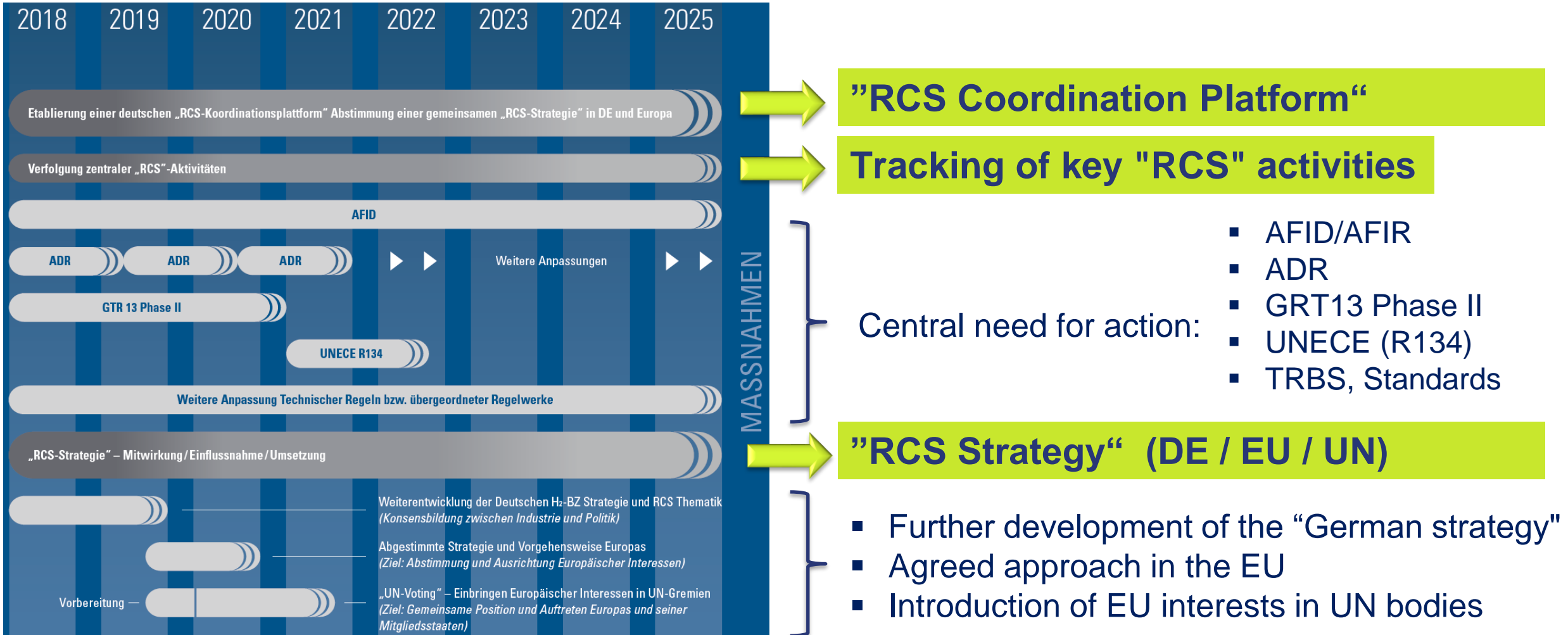
- **AFID – Directive 2014/94/EU (development of infrastructure for alternative fuels)**
 - Among other things, coordination of a European strategy, increased monitoring of international activities, support in the development of standards (to be replaced by **AFIR** from 2023 onward)
- **Global Technical Regulation GTR13 Phase II, approval of H₂ vehicles**
(adaptation of UNECE R134 and replacement of EC/79/2009 and EU/406/2010 – effective from July 2022)
 - Elimination of international differences (e.g. between Europe & Japan & China to prove material compatibility)
- **ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road**
 - The ADR annexes will be revised regularly in every 2nd odd year (2019, 2021, 2023, etc.)
- **H₂/FC standards & TRBS - Technical rules for operational safety** (implementing BetrSichV)
- **Onsite electrolysis** - clarify if it has to remain subject to pollutant emissions regulations (BImSchG, IED)

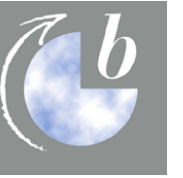
The German H₂ Roadmap 2025



MEASURES

Recommendations for a "German H₂ Roadmap 2025"

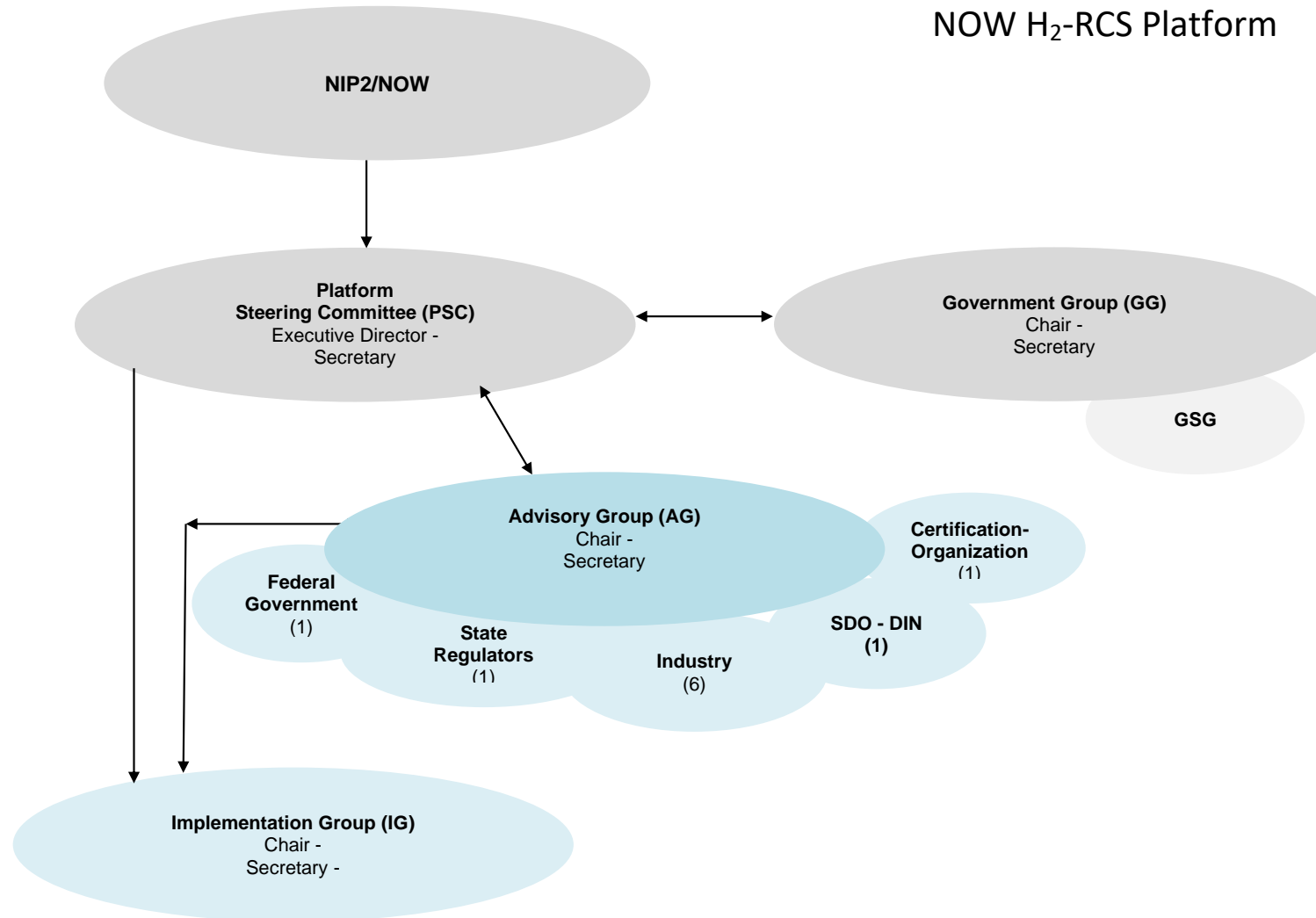
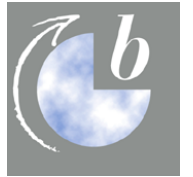




Tasks of an H₂-RCS coordination platform

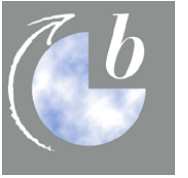
- Observation of (international) developments and trends
- Regular coordination with the actors & coordination of a common position "DE"
- Development of a uniform "EU position / voice"
- Coordination of RCS activities in Europe (CleanHydrogen JU)
- Cooperation with the "GSG" (Government Support Group) & European EU member states
- Influence / participation in European and international standards developments

Structure and bodies of an H₂-RCS coordination platform



Outlook:

Breakthrough & mass market H₂/FC in the transport sector



- By 2025:
Development of H₂ infrastructure in Europe (AFIR)
- From 2024/25:
Broader market launch of fuel cell vehicles
(example: Japan/Korea - fuel cell cars, China - buses/trucks, Europe – trucks, coaches)
- From 2030:
Widespread use of H₂/FC in road traffic
- **Europe offers an attractive market for H₂/FC**
(with H₂ from renewables, GHG and air pollutants can be successfully and economically reduced)

Outlook: RCS for H₂/FC will be determined internationally



- In addition to regulations, standards are also becoming increasingly international. (Example new standards 2017: ~75% international, only ~20% European)*
- H₂/FC are being developed worldwide, particularly in Asia and North America. This is reflected in important regulations and standards for H₂/FC .
- In the future, more active participation in committee work will be required, especially EU, UNECE, ISO, IEC, CEN, CENELEC.
- For this reason, the governments of the EU member states increasingly have to coordinate with each other (e.g. GSG).
- Due to the requirements of the EU New Legislative Framework approach, a stronger representation of German experts in all relevant international standardization/regulatory committees is required.
- Since the content of this is actually sovereign, regulatory work or support, extensive financial support for RCS development, especially for SMEs, must be provided by the ministries.

* Source: ICE/DKE GSG = Government Support Group

Thank you for your attention!



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