



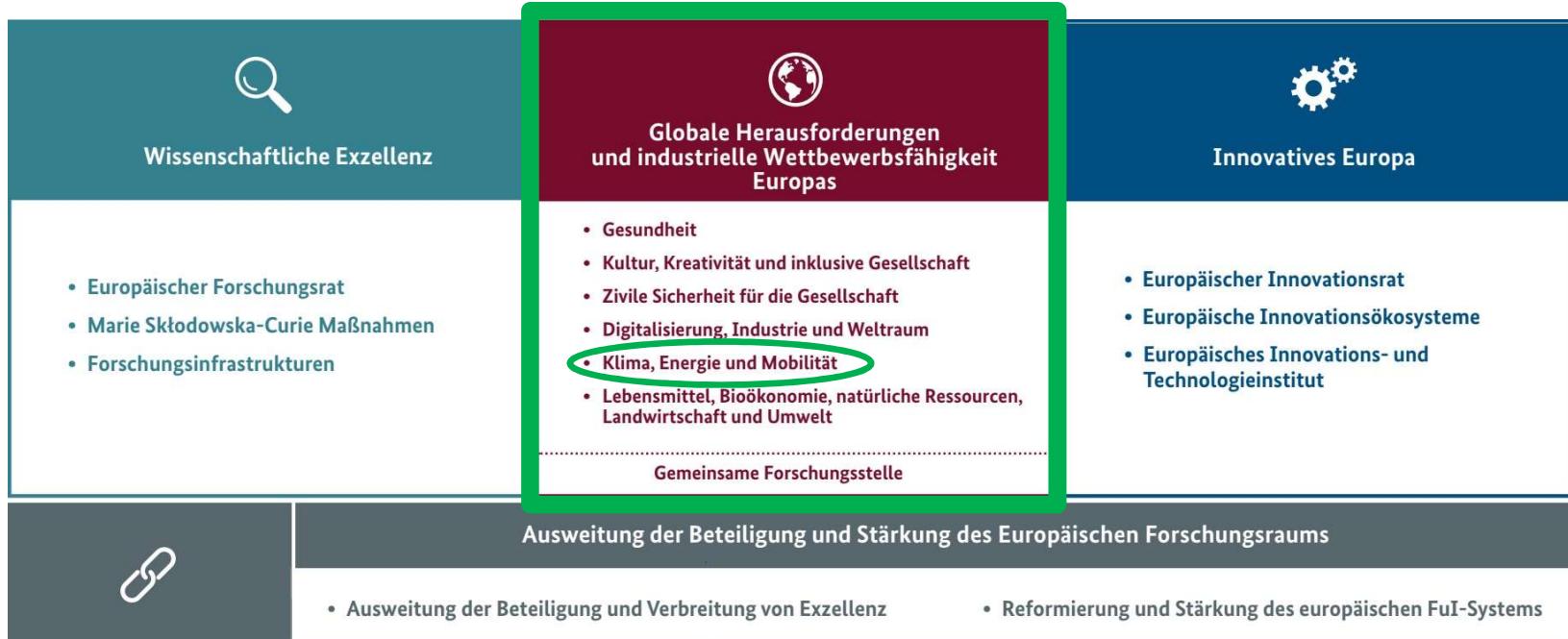
Horizon Europe für Transport und Mobilität

Eine Online-Veranstaltung der BayFOR, 18. März 2021

**David Doerr, Nationale Kontaktstelle Klima, Energie, Mobilität
TÜV Rheinland**

horizont2020.de

Struktur



Pfeiler II: Globale Herausforderungen und industrielle Wettbewerbsfähigkeit Europas



Ziele:

- Beitrag zur Bewältigung globaler Herausforderungen, zur nachhaltigen Entwicklung gemäß Agenda 2030 und Pariser Klimaschutzabkommen
- Wissensgewinn durch Forschungsförderung
- Förderung jeglicher Formen von Innovation



Komponenten des Pfeiler II: Sechs Cluster

- Gesundheit
- Kultur, Kreativität und inklusive Gesellschaft
- Zivile Sicherheit für die Gesellschaft
- Digitalisierung, Industrie und Weltraum
- Klima, Energie und Mobilität
- Bioökonomie, Lebensmittel, natürliche Ressourcen und Umwelt



Das Rahmenprogramm



Cluster 5 - Klima, Energie und Mobilität

Klimaforschung und Lösungen für den Klimaschutz:

- Klimarelevante Forschungsvorhaben, die durch bahnbrechende Technologien und wissenschaftliche Lösungen dazu beitragen, den Übergang zu einer treibhausgasneutralen und widerstandsfähigen Gesellschaft und Wirtschaft zu beschleunigen.

Beispiele:

- Klimamodelle, Verbesserung von Prognosekapazitäten, Instrumente für die Risikobewertung, z.B. im Hinblick auf Dürren oder Überflutungen
- Maßnahmen zur Verbesserung der Luft- und Wasserqualität, z. B. in städtischen Gebieten



Cluster 5 - Klima, Energie und Mobilität

Förderung von Vorhaben, die eine effizientere, sicherere, nachhaltigere und wettbewerbsfähige Energieversorgung entwickeln

Einige Beispiele:

- Neue Lösungen für intelligente Netze und Energiesysteme
- Leistungsfähigere Technologien im Bereich erneuerbarer Energien, innovative Energiespeichersysteme
- Energieeffiziente Städte und Gemeinden
- *Nicht:* Forschungs- und Innovationsaktivitäten zur Energiegewinnung aus nuklearen Energiequellen (Fusionsforschung, Kernspaltung) – diese werden im Euratom-Programm ergänzend zu Horizont Europa durchgeführt



Cluster 5 - Klima, Energie und Mobilität

- Gefördert werden können Lösungen für klimaneutrale und umweltfreundliche Mobilität für alle Verkehrsträger bei gleichzeitiger Steigerung der globalen Wettbewerbsfähigkeit des EU-Verkehrssektors.

Beispiele:

- Sichere, nahtlose, intelligente, integrative, belastbare, klimaneutrale und nachhaltige Mobilitätssysteme für Menschen und Güter,
- Digitales Netz- und Verkehrsmanagement, einschließlich multimodalem Netz- und Verkehrsmanagement und fortschrittlicher Satellitennavigationsdienste



Transport und Mobilität in Cluster 5



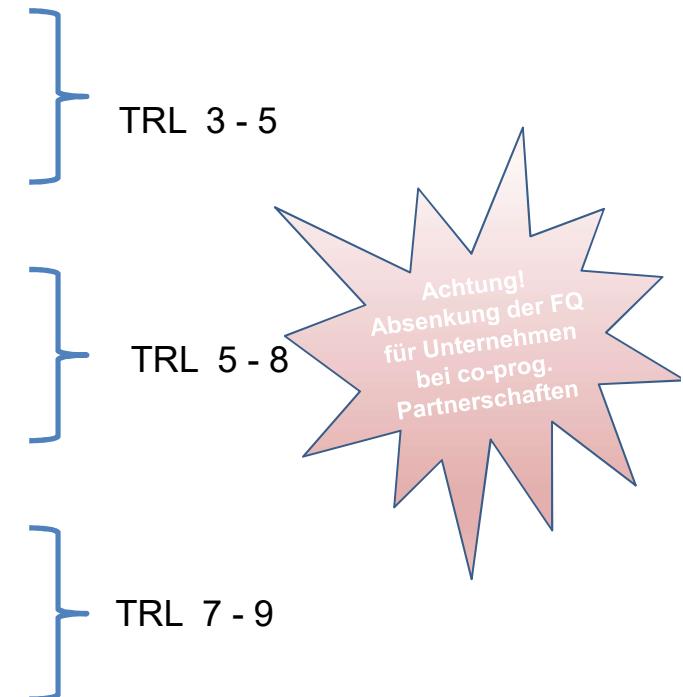
Photo by Laurie Decroux on Unsplash

Förderinstrumente

Indirekte Kosten:
25% der direkt
geförderten Kosten



- **RIA – Research and Innovation Action**
 - neues Wissen und Entwicklung neuer Technologien
 - Förderquote 100 % der direkten Kosten
- **IA – Innovation Action**
 - Demonstration neuer Technologien und Lösungsansätze
 - Förderquote 70% (non-profit organisations: 100%)
- **CSA – Coordination and Support Action**
 - Standardisierung, Verbreitung, Vernetzung, Studien...
 - Förderquote 100%



6 „Destinations“



Aufbau des Arbeitsprogramms Cluster 5

1. Climate sciences and responses
2. Cross-sectoral solutions for the climate transition
3. Sustainable, secure and competitive energy supply 2021-2024
4. Efficient, sustainable and inclusive energy use
5. Clean and competitive solutions for all transport modes
6. Safe, resilient transport and smart mobility services for passengers and goods



Mobilität (Cluster 5) – zwei Handlungsfelder

Clean and competitive solutions for all transport modes

- Zero-emission road transport
- Aviation
- Enabling low-carbon, clean, smart, and competitive waterborne transport
- Impact of transport on environment and human health

Safe, Resilient Transport and Smart Mobility services for passengers/goods

- Connected, Cooperative and Automated Mobility (CCAM)
- Multimodal and sustainable transport systems for passengers and goods
- Safety and resilience - per mode and across all transport modes



Destination 5: Clean Competitive Solutions for all Transport Modes

Zero-emission Road Transport

- Accelerated uptake of affordable, user-centric solutions (technologies and services) for road-based mobility in Europe
- Affordable, user-friendly charging infrastructure concepts and technologies that include vehicle and grid interaction;
- Demonstration of innovative use cases for the integration of zero-emission vehicles and infrastructure concepts for the road mobility of people and goods;
- Life-cycle analysis tools and skills for the effective design, assessment and deployment of innovative concepts in road vehicles and mobility services in a circular economy context.

2ZERO



Diese Informationen sind vorläufig und unverbindlich!!

Destination 5: Clean Competitive Solutions for all Transport Modes



2ZERO – Schwerpunkte in 2021

- **Nextgen vehicles:** Innovative zero emission BEV architectures for regional freight haulage
- **Nextgen EV components:** Integration of advanced power electronics and associated controls
- System approach to achieve optimised **Smart EV Charging** and V2X flexibility in mass-deployment conditions
- **LCA and design for sustainable circularity** - holistic approach for zero-emission mobility solutions and related battery value chain



Diese Informationen sind vorläufig und unverbindlich!!

Destination 5: Clean Competitive Solutions for all Transport Modes



2ZERO – Schwerpunkte in 2022

- **Modular multi-powertrain zero-emission systems for HDV (BEV and FCEV)** for efficient and economic operation
- **Nextgen EV components:** High efficiency and low cost electric motors for circularity and low use of rare resources
- New generation **of full electric urban and peri-urban buses (e-BRT)** to strengthen climate-friendly mass transport



Destination 5: Clean Competitive Solutions for all Transport Modes



Aviation

- Disruptive gains by 2035, with up to 30% reduction in fuel burn and CO2 between the existing aircraft in service and the next generation
- Disruptive technologies entering into service by 2035 as well as 2050, e.g. new energy carriers, hybrid-electric architectures, next generation of ultra-high efficient engines and new aircraft configurations
- New technologies for significantly lower local air-pollution and noise
- Increased understanding of aviation's non-CO2 climate impacts
- Maintain global competitiveness and leadership of the European aeronautics industry and the whole aviation ecosystem
- Protect the passenger and increase the resilience of the aviation ecosystem to external shocks (e.g. health issues, manufacturing, operations, cybersecurity)
- Deliver an EU policy-driven planning and assessment



Diese Informationen sind vorläufig und unverbindlich!!

Destination 5: Clean Competitive Solutions for all Transport Modes



Aviation – Schwerpunkte

2021

- Greenhouse gas aviation **emissions reduction technologies** towards climate neutrality by 2050
- **Next generation digital aircraft transformation** in design, manufacturing, integration and maintenance

2022

- Towards a **silent and ultra-low local air pollution aircraft**
- **Digital aviation technologies** for new aviation business models, services, emerging global threats and industrial competitiveness
- **European Aviation Research Policy** in support to EU policies and initiatives



Aviation – Partnerships

- European Partnership Clean Aviation (EPCA)
 - Successor of CleanSky initiative
 - accelerating the development, integration and validation of climate-neutral aviation technologies (TRL 4-6), for earliest possible deployment
- European Partnership for Integrated Air Traffic Management (IATM)
 - Successor of SESAR (Single European Sky)
 - Research to support evolving demand for using European air space
 - Focus on digitalization, automation and AI



Destination 5: Clean Competitive Solutions for all Transport Modes

Waterborne Transport

- Increased and early deployment of climate neutral fuels and significant electrification of shipping
- Increased overall energy efficiency and drastically lower fuel consumption of vessels
- Deployment of innovative port infrastructure needed to achieve zero-emission waterborne transport
- Enable clean, climate-neutral and climate-resilient inland waterway vessels by 2030
- Strong technological and operational momentum towards achieving climate neutrality and the elimination of all harmful pollution to air and water
- Achievement of smart, efficient, secure and safe integration of maritime and inland shipping into logistic chains, facilitated by full digitalisation and automation
- Facilitation of fully automated shipping (maritime and inland) and efficient connectivity



Diese Informationen sind vorläufig und unverbindlich!!

Destination 5: Clean Competitive Solutions for all Transport Modes



Waterborne Transport – Schwerpunkte in 2021

- Enabling the safe and efficient on-board storage and integration within ships of large quantities of ammonia and hydrogen fuels
- Enabling the full integration of very high power fuel cells in ship design using co-generation and combined cycle solutions for increased efficiency with multiple fuels
- CSA identifying waterborne sustainable fuel deployment scenarios
- Innovative on-board energy saving solutions
- Hyper powered vessel battery charging system
- Assessing and preventing methane slip from LNG engines in all conditions within both existing and new vessels
- Digital Twin models to enable green ship operations
- Proving the feasibility of a large clean ammonia marine engine



Diese Informationen sind vorläufig und unverbindlich!!

Destination 5: Clean Competitive Solutions for all Transport Modes



Waterborne Transport – Schwerpunkte in 2022

- Exploiting electrical energy storage systems and better optimising large battery electric power within fully battery electric and hybrid ships
- Innovative non-battery electric energy storage systems on-board vessels
- Exploiting renewable energy for shipping, in particular focusing on the potential of wind energy
- Transformation of the existing fleet towards greener operations through retrofitting
- Seamless safe logistics through an autonomous waterborne freight feeder loop service
- Computational tools for shipbuilding



Destination 5: Clean Competitive Solutions for all Transport Modes



Impact of transport on environment and human health

- reduction of road vehicle polluting emissions (regulated, unregulated and emerging) from both existing and future automotive fleets
- prevention of smog episodes in Europe
- better understanding of the health impacts of air and noise pollution.
- monitoring of the environmental performance and the enforcement of regulation (detection of defeat devices, tampered anti-pollution systems, etc.) of fleets of transport vehicles
- reduction of noise emitted by L category road vehicles



Diese Informationen sind vorläufig und unverbindlich!!

Destination 5: Clean Competitive Solutions for all Transport Modes



Impact of transport on environment and human health

Schwerpunkte 2021

- Development and demonstration of cost affordable and adaptable **retrofit solutions** for tailpipe and brake polluting emissions
- **Assessment of noise and particle emissions of L category vehicles from real driving conditions**

Schwerpunkte 2022

- Prevent smog episodes in Europe: **Air quality impact of engine-emitted volatile, semi volatile and secondary particles**



Mobilität (Cluster 5) – zwei Handlungsfelder



Clean and competitive solutions for all transport modes

- Zero-emission road transport
- Aviation
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- Impact of transport on environment and human health

destination 5

Safe, Resilient Transport and Smart Mobility services for passengers/goods

- Connected, Cooperative and Automated Mobility (CCAM)
- Multimodal and sustainable transport systems for passengers and goods
- Safety and resilience - per mode and across all transport modes



Destination 6: Safe, Resilient Transport and Smart Mobility Services for Passengers and Goods



Connected, Cooperative and Automated Mobility (CCAM)

- Accelerated uptake of innovative inclusive, user-oriented, shared and well-integrated mobility and logistics concepts and services for passengers & freight enabled by CCAM
- Validated safety for trusted CCAM technologies and systems
- Improved robustness and resilience of CCAM systems and services
- Safe and efficient co-existence between automated and non-automated “conventional” traffic for a long transition period of mixed traffic
- Reduced transport emissions and congestion by increased efficiency of transport flows (people and goods) and better use of infrastructure capacity
- Seamless, affordable and user-oriented mobility and goods delivery services for all
- High public acceptance and adoption of CCAM
- European leadership in the development and deployment of CCAM systems and services



Diese Informationen sind vorläufig und unverbindlich!!

Destination 6: Safe, Resilient Transport and Smart Mobility Services for Passengers and Goods



Connected, Cooperative and Automated Mobility (CCAM)

Schwerpunkte 2021

- More powerful and reliable on-board perception and decision-making technologies addressing complex environmental conditions
- Common approaches for the safety validation of CCAM systems
- Physical and Digital Infrastructure (PDI), connectivity and cooperation enabling and supporting CCAM
- Cyber secure and resilient CCAM
- Analysis of socio-economic and environmental impacts and assessment of societal, citizen and user aspects for needs based CCAM solutions
- Framework for better coordination of large-scale demonstration pilots in Europe and EU-wide knowledge base



Diese Informationen sind vorläufig und unverbindlich!!

Destination 6: Safe, Resilient Transport and Smart Mobility Services for Passengers and Goods



Connected, Cooperative and Automated Mobility (CCAM)

Schwerpunkte 2022

- European demonstrators for integrated shared automated mobility solutions for people and goods
- Reliable occupant protection technologies and HMI solutions to ensure the safety of highly automated vehicles
- Human behavioural model to assess the performance of CCAM solutions compared to human driven vehicles
- Integrate CCAM services in fleet and traffic management systems
- Artificial Intelligence (AI): Explainable and trustworthy concepts, techniques and models for CCAM



Destination 6: Safe, Resilient Transport and Smart Mobility Services for Passengers and Goods



Multimodal and sustainable transport systems for passengers and goods

- Upgraded and resilient physical and digital infrastructure for clean, connected and automated multimodal mobility;
- Sustainable and smart long-haul and urban freight transport and logistics, through increased efficiency, improved interconnectivity and smart enforcement;
- Reduced external costs (e.g. congestion, traffic jams, emissions, air and noise pollution, road collisions) of urban, peri-urban and long distance freight transport as well as optimised system-wide network efficiency and resilience;
- Enhanced local and/or regional capacity for governance and innovation in urban mobility and logistics.



Diese Informationen sind vorläufig und unverbindlich!!

Destination 6: Safe, Resilient Transport and Smart Mobility Services for Passengers and Goods



Multimodal and sustainable transport systems for passengers and goods

Schwerpunkte 2021

- More efficient and effective multimodal freight transport nodes to increase flexibility, service visibility and reduce the average cost of freight transport
- New delivery methods and business/operating models to green the last mile and optimise road transport
- Climate resilient and environmentally sustainable transport infrastructure, with a focus on inland waterways



Diese Informationen sind vorläufig und unverbindlich!!

Destination 6: Safe, Resilient Transport and Smart Mobility Services for Passengers and Goods



Multimodal and sustainable transport systems for passengers and goods

Schwerpunkte 2022

- Logistics networks integration and harmonisation through operational connectivity to optimise freight flows and drive logistics to climate neutrality
- Urban logistics and planning: anticipating urban freight generation and demand including digitalisation of urban freight
- Smart enforcement for resilient, sustainable and more efficient transport operations
- Accelerating the deployment of new/shared mobility services for the next decade
- Advanced multimodal network and traffic management for seamless door-to-door mobility of passengers and freight transport
- Smart and efficient ways to construct, maintain and decommission with zero emissions from transport infrastructure
- New concepts and approaches for resilient freight transport and logistics networks against disruptive events (including pandemics)



Destination 6: Safe, Resilient Transport and Smart Mobility Services for Passengers and Goods



Safety and resilience - per mode and across all transport modes

- Improved reliability and performance of systems that aim to anticipate and minimize safety risks, avoiding risks and collisions, and minimizing injury
- 50% reduction in serious injuries and fatalities in road crashes by 2030
- Reduction of distraction of road users and of human errors
- Drastic reduction of road fatalities and serious crash injuries in low and medium income countries in Africa
- Ensure healthy passenger shipping by preventing and mitigating the spread of contagious diseases and infections
- Saving lives following crash of an aircraft (post-crash survivability)
- Ensure safety through aviation transformation
- Decrease number of accidents and incidents due to organisational/human/automation factors and external hazards in all phases of flight



Diese Informationen sind vorläufig und unverbindlich!!

Destination 6: Safe, Resilient Transport and Smart Mobility Services for Passengers and Goods



Safety and resilience - per mode and across all transport modes

Schwerpunkte 2021

- Testing safe lightweight vehicles and improved safe human-technology interaction in the future traffic system
- Radical improvement of road safety in low and medium income countries in Africa
- Controlling infection on large passenger ships
- Safe automation and human factors in aviation – intelligent integration and assistance



Diese Informationen sind vorläufig und unverbindlich!!

Destination 6: Safe, Resilient Transport and Smart Mobility Services for Passengers and Goods



Safety and resilience - per mode and across all transport modes

Schwerpunkte 2022

- Predictive safety assessment framework and safer urban environment for vulnerable road users
- More resilient aircraft and increased survivability
- Safer navigation and tackling containership fires



Destination 2



Cross-sectoral solutions for the climate transition

- A competitive and sustainable European battery value chain
- Communities and cities
- Emerging breakthrough technologies and climate solutions
- Citizens and stakeholder engagement



Partnerschaften mit Bezug zur Mobilität (1)

Partnerschaft	Implementierung	Vorgängerinitiativen	Themenzugehörigkeit	Beginn
Towards Zero-emission road transport (2ZERO)	Co-programmed	European Green Vehicles Initiative (EGVI)	Mobilität	Voraussichtlich 2021
Connected, cooperative and automated mobility (CCAM)	Co-programmed	-	Mobilität	Voraussichtlich 2021
Zero-emission waterborne transport	Co-programmed	-	Mobilität	?
Batteries: Towards a competitive European industrial battery value chain	Co-programmed	-	Energie, Mobilität	Voraussichtlich 2021



Partnerschaften mit Bezug zur Mobilität (2)

Partnerschaft	Implementierung	Vorgängerinitiativen	Themenzugehörigkeit	Beginn
Transforming Europe's Rail System	Institutionalised	Shift2Rail	Mobilität	Voraussichtlich 2021
Integrated Air Traffic Management	Institutionalised	Single European Sky Air Traffic Management Research (SESAR)	Mobilität	Voraussichtlich 2021
Clean Aviation	Institutionalised	Clean Sky (I & II)	Mobilität	Voraussichtlich 2021
Clean Hydrogen	Institutionalised	Fuel Cells and Hydrogen Joint Undertaking (FCH JU)	Klima, Energie, Mobilität	Voraussichtlich 2021
Driving urban transitions to a sustainable future (DUT)	Co-funded	JPI Urban Europe	Klima, Energie, Mobilität	Voraussichtlich 2021



Das NKS System: Information und Beratung

Nationale Kontaktstellen (NKS)

- Informieren, beraten, unterstützen bei Antragstellung und Projektimplementierung:
 - ➔ telefonisch, schriftlich, persönlich
 - ➔ kostenlos und vertraulich
- Werden offiziell bei der Europäischen Kommission benannt und vom BMBF und BMWi finanziert
- Liefert als Expertinnen und Experten fachlichen Input für politische Beratungen und Hintergründe

Das Netzwerk der Nationalen Kontaktstellen

- Alle NKS sind in einem Netzwerk organisiert ([Überblick](#) für H2020)
- NKS für jeden Bereich von Horizont Europa: Netzwerk stellt sich gerade neu auf
- „Guiding Principles“ als gemeinsame Arbeitsgrundlage
- Gemeinsame Geschäftsstelle angesiedelt im EU-Büro des BMBF im DLR-PT
- Gemeinsamer Internetauftritt: www.horizont2020.de
- Ab 01.01.2021 www.horizont-europa.de

Kontakt

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Beantwortung noch offener Fragen