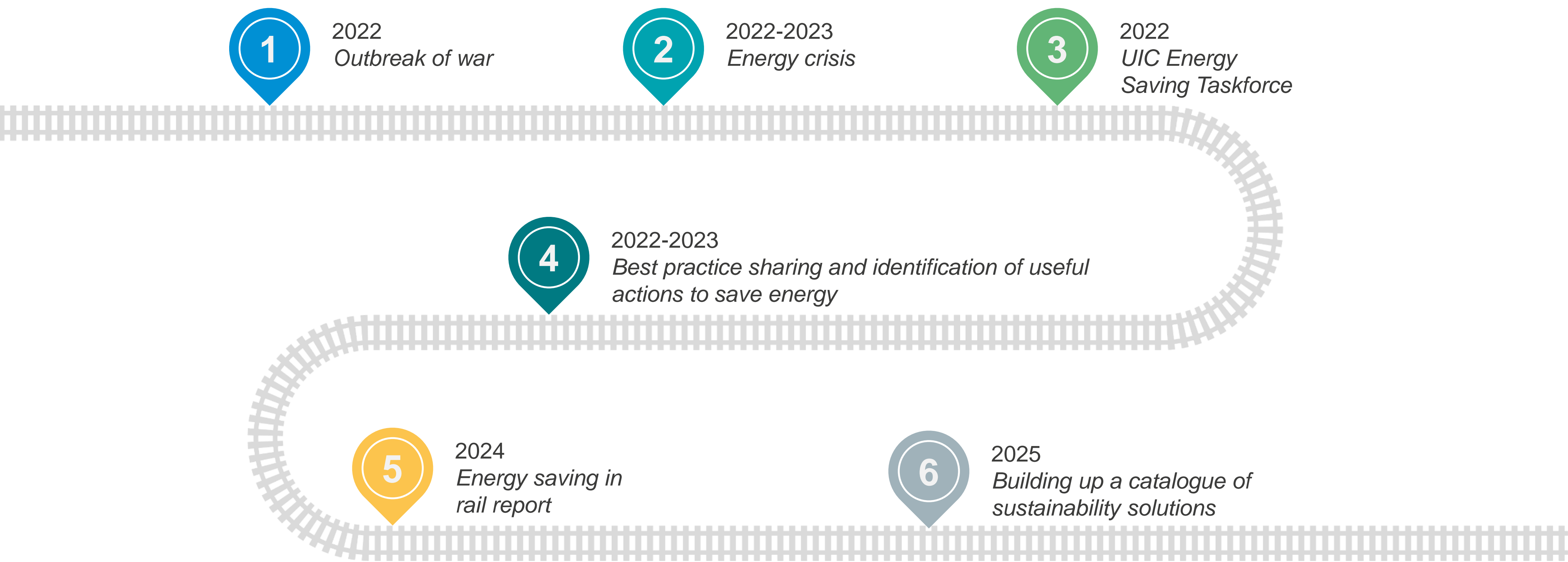


Unprecedented combination of energy resources shortage in Europe (2), leading to skyrocketing energy prices, made UIC Members and rail energy stakeholders come together to share and discuss the strategies adopted, and share best practices for quick energy saving.



# ENERGY EFFICIENCY AND ENERGY SAVING IN RAIL

The UIC launched the **UIC ENERGY SAVING TASKFORCE**

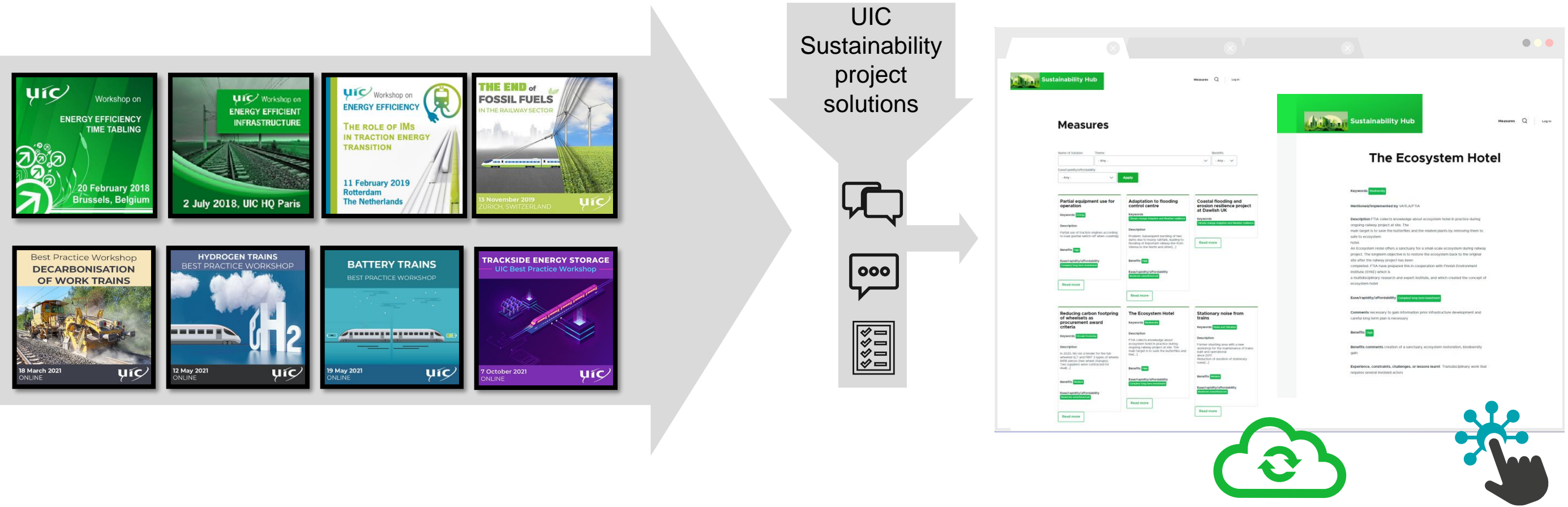
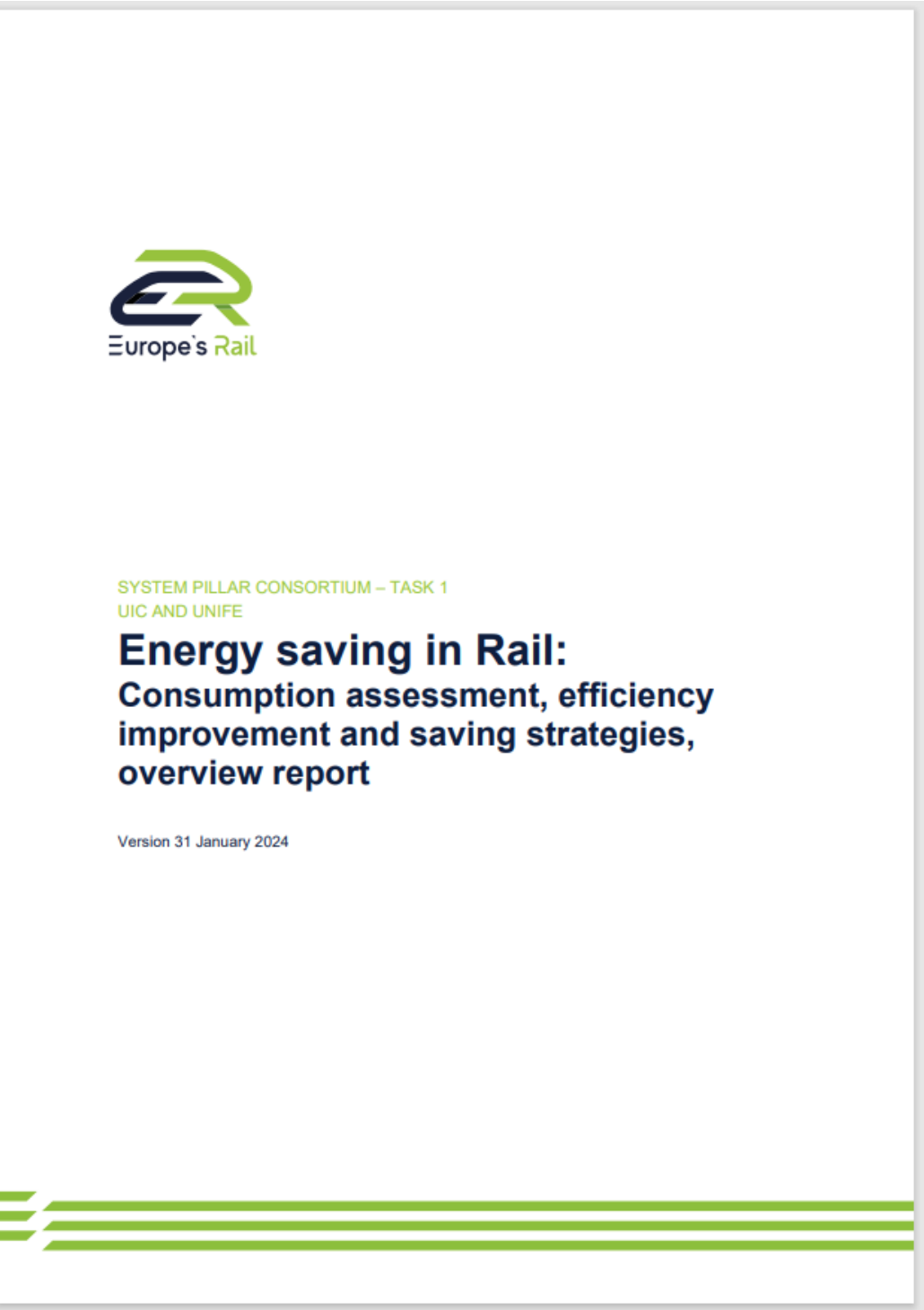
It is now merged within the **UIC ENERGY EFFICIENCY & CO2 EMISSION SECTOR**

The Sector welcomes all members and rail stakeholders as guests in meetings and best practice workshops that will feed in the upcoming the online library: **THE UIC SUSTAINABILITY HUB**

5. ENERGY SAVING MEASURES	
5.1. Rolling stock	
5.1.1. Master Silicon Carbide (SiC) semiconductors	
5.1.2. Insulated gate bipolar transistor (IGBT) traction converters	
5.1.3. Electromechanical Brake System (EMB)	
5.1.4. Maximise braking energy recovery	
5.1.5. Dry transformers	
5.1.6. Heat pumps for enhanced HVAC efficiency	
5.1.7. Smart/automated heating, cooling and ventilation (HVAC)	
5.1.8. Lighting system upgrades	
5.1.9. Aerodynamic efficiency of rolling stock	
5.1.10. Hydro-elastic axle-guide bearings	
5.1.11. Thermal efficiency and insulation of rolling stock	
5.1.12. Weight and capacity of rolling stock (Innovative materials for lighter car body, doors, and train components)	
5.1.13. High-speed motor on wheel	
5.1.14. Alternative traction systems, onboard energy storage & last mile	
5.2. Operations	
5.2.1. Using the most efficient trains for operations	
5.2.2. Eco-driving – saving traction energy	
5.2.3. Driving assistance tools, Driving Advisory Systems (DAS) and Automatic Train	

Operation (ERTMS/ATO)	
5.2.4. Partial equipment usage: adaptation of equipment use according to load/needs	
5.2.5. Optimisation of power electronics	
5.2.6. Using energy measurement data	
5.2.7. Fine tuning train services	
5.2.8. Efficient heating, ventilation, and air conditioning (HVAC) management	
5.2.9. Eco-stabling, eco-parking	
5.2.10. Interval operation of traction coolant pumps during stabling	
5.3. Infrastructure	
5.3.1. Railway layout and infrastructure performance	
5.3.2. Electrification: increased efficiency, renewable energy integration and smart management	
5.3.3. Supply structure/neutral sections	
5.3.4. Infrastructure manager information for railway undertakings: increase the operator awareness regarding more efficient driving and consumption at standstill	
5.3.5. Smart control of power supply and on-demand supply	
5.3.6. Increased voltage for better transmission efficiency	
5.3.7. Flexible traction energy supply systems	
5.3.8. Installing energy recovery systems on DC railway lines	
5.3.9. Recovered braking energy: optimal management	
5.3.10. Avoiding and reducing rotating converter losses (15kV, 16.67Hz systems)	

Lighting: efficiency and management	
5.3.11. Switch/turnout heating system management, optimisation and upgrading	
5.3.12. Tunnels	
5.3.13. Measurement equipment	
5.3.14. Renewable energy supply	
5.3.15. Trackside energy storage	
5.3.16. Medium voltage direct current electrification systems	
5.4. Buildings	
5.4.1. HVAC: efficiency and management	
5.4.2. Harvesting solar power	
5.4.3. Practices for saving energy in stations, buildings, and workshops	
5.4.4. Drone use for solar panel performance inspections and HVAC loss detection	
5.4.5. Monitoring and benchmarking energy consumption in buildings	
5.4.6. Smart and efficient LED lighting	
5.4.7. Escalator, elevator, and conveyor system efficiency	
5.4.8. Contractual energy commitments and auditing for concessions/shops	
5.5. Processes	
5.5.1. Staff: Communication, management, involving employees in energy saving behaviour	
5.5.2. Management activities – cleaning	



UIC

ENERGY&CO<sub>2</sub>

Sector

Sector's chairs and core members:

Gerald Olde Monnikhof, ProRail  
Denzel Collins, NR

Matthias Rücker, SBB  
Christophe Gueudar Delahaye, SNCF (RU)

Philippe Stefanos, UIC

Member repository