

The road to Paris

Advancing climate action with sustainable urban transport

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ALSTOM
Shaping the future

Alstom Transport: a global leader in the rail industry

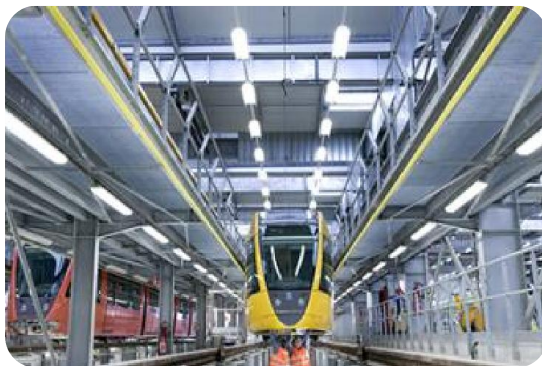


Four activities

TRAINS



SERVICES



SYSTEMS*



SIGNALLING



2014/15 Key Figures

In €Bn

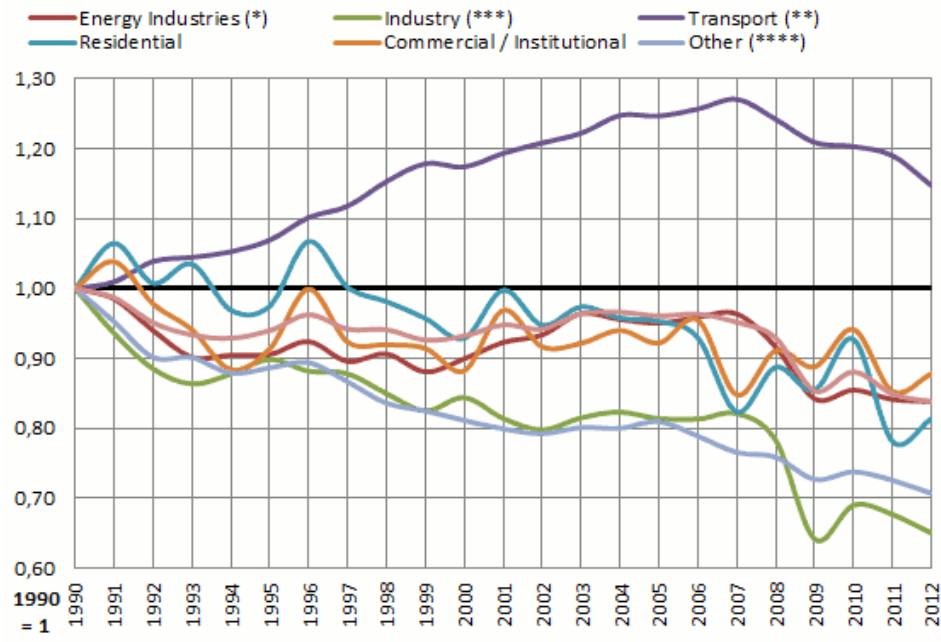
Backlog	28
Orders	10
Sales	6,2
IFO	0.3
<i>IFO % of sales</i>	<i>5,2%</i>

**Including Infrastructure*

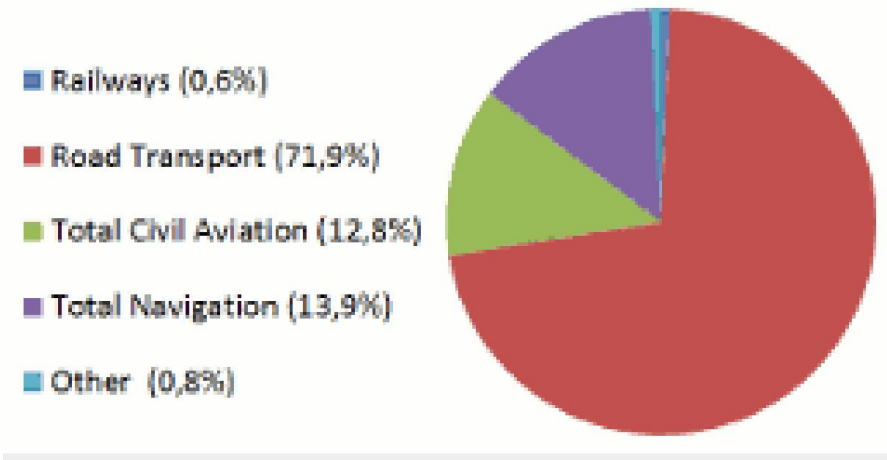
The + 2° C target will not be reached without significant efforts on transport

TRANSPORT accounts for 24% of EU GHG emissions

Rail modal share in the EU: 17,8% Freight / 7,6% Passenger



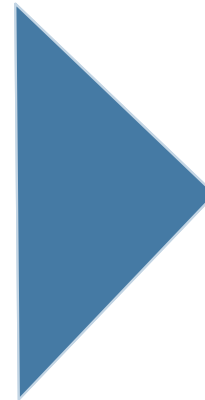
EU GHG emissions from transport by mode



http://ec.europa.eu/clima/policies/transport/index_en.htm

Rail industry approach to sustainable mobility

- **2011 White Paper for Transport targets :**
 - 60% reduction in transport GHG emissions by 2050
 - Modal shift
- **Rail offers a true sustainable mobility option:**
 - Energy-efficient,
 - Reduced air pollution,
 - Space optimisation,
 - Safety.
- **Sustained investment in rail** infrastructure is key to curb CO2 emissions from the transport sector.



Suppliers contribute through:

**Innovative,
Environmentally-friendly,
Cost-efficient rail solutions.**

Innovations to further improve Rail's CO2 performance

High environmental performance rolling-stock



Energy Efficiency Services



Smart Railway Systems



- Weight Reduction
- Aerodynamics
- Efficient Traction & auxiliaries
- Hybrid Traction
- Braking energy recovery & storage

- Energy Diagnosis
- Eco-driving
- Re-tractioning

- Electrification
- Reversible electrical sub-stations for braking energy recovery
- Driverless metros & ATO

Alstom Eco-Design Policy

5 Eco-design priorities

Energy efficiency

Use of clean and recyclable materials

Noise reduction

Air emission reduction

Easy end-of life

By 2020, all our solutions will reduce their energy consumption by 20%

Product Use

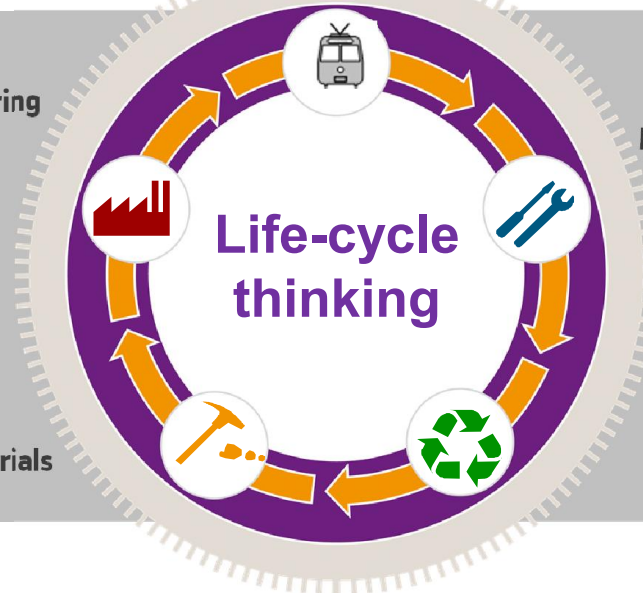


Manufacturing

Maintenance

Materials

End of life
Recovery /
Recycling



Amsterdam Metro, innovation for environmental performance



A show case of Green Rolling Stock



- 100% LED lighting
- 100 % Electrical braking
- Reduced axle load @ 12t
- Energy efficient ventilation system



- -2 up to -6db inside noise reduction
- Reduced noise through electrical braking



- 100% water-soluble paints
- REACH compliance
- 98% recoverability*



- Large doors & gangways - High ceilings
- Continous low floors
- Dedicated multifunctional spaces

* From material recycling & energy recovery

28 trains ordered

Axonis: a new light and efficient metro system



HESOP substations for energy efficiency

METROPOLIS Rolling stock 100% motorised & steelwheels for energy efficiency



URBALIS Driverless CBTC for optimized operations



APPITRACK Automated track laying for quicker projects and reduced disturbances



CIVIL WORKS Precast viaduct for urban integration and quicker projects



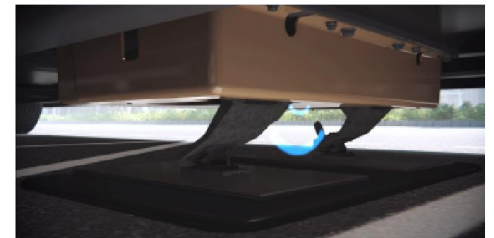
 **20 % energy saving compared with standard metro systems**



SRS – exporting our eMobility know-how to buses

Presented at the 2015 UITP World Congress

- **Ground-based solution** *vs. overhead charging solutions*
 - Easy urban insertion with compact solution
 - No height constraints on vehicles
- **By contact** *vs. inductive charging solutions*
 - Fast and efficient energy transfer
 - Lower vehicle and infrastructure cost/complexity
- **Proven, safe and reliable technology**
 - Derived from Alstom's APS solution for catenary-free trams



***Need coherent &
comprehensive
European
policies for rail***

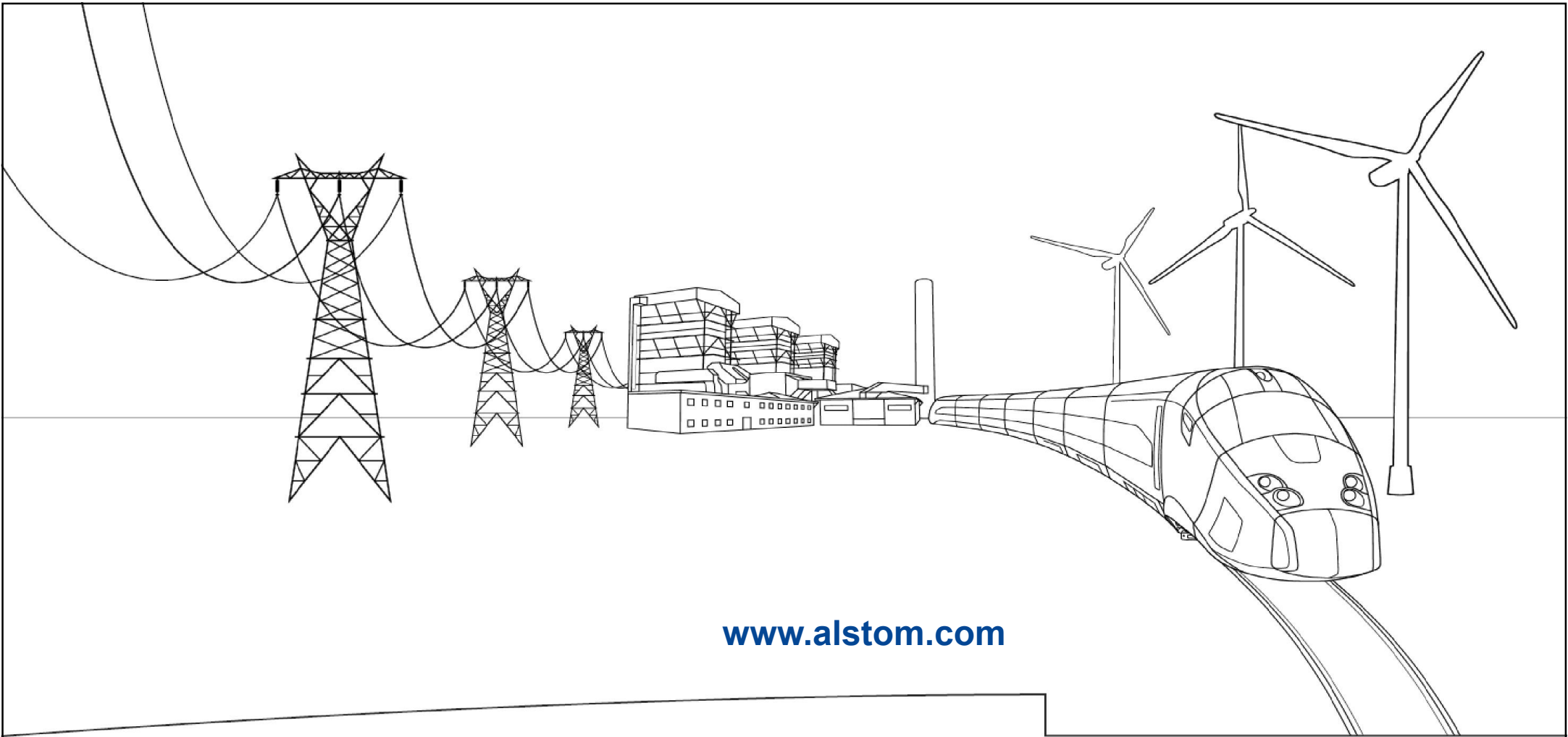
Implement EU's **2011 White Paper CO2 targets**

Integrate transport in the **EU 2030 Energy & Climate Framework**

Enforce the « **most economically advantageous tender** » in public procurement (not only « lowest cost »)

Maintain **priority to rail in EU funding & financing** instruments: critical to achieve 2050 targets

Improve **alternative sources of financing** for rail projects (PPPs, concessions) within the Juncker Plan.



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