



The ECORails Guidelines in use

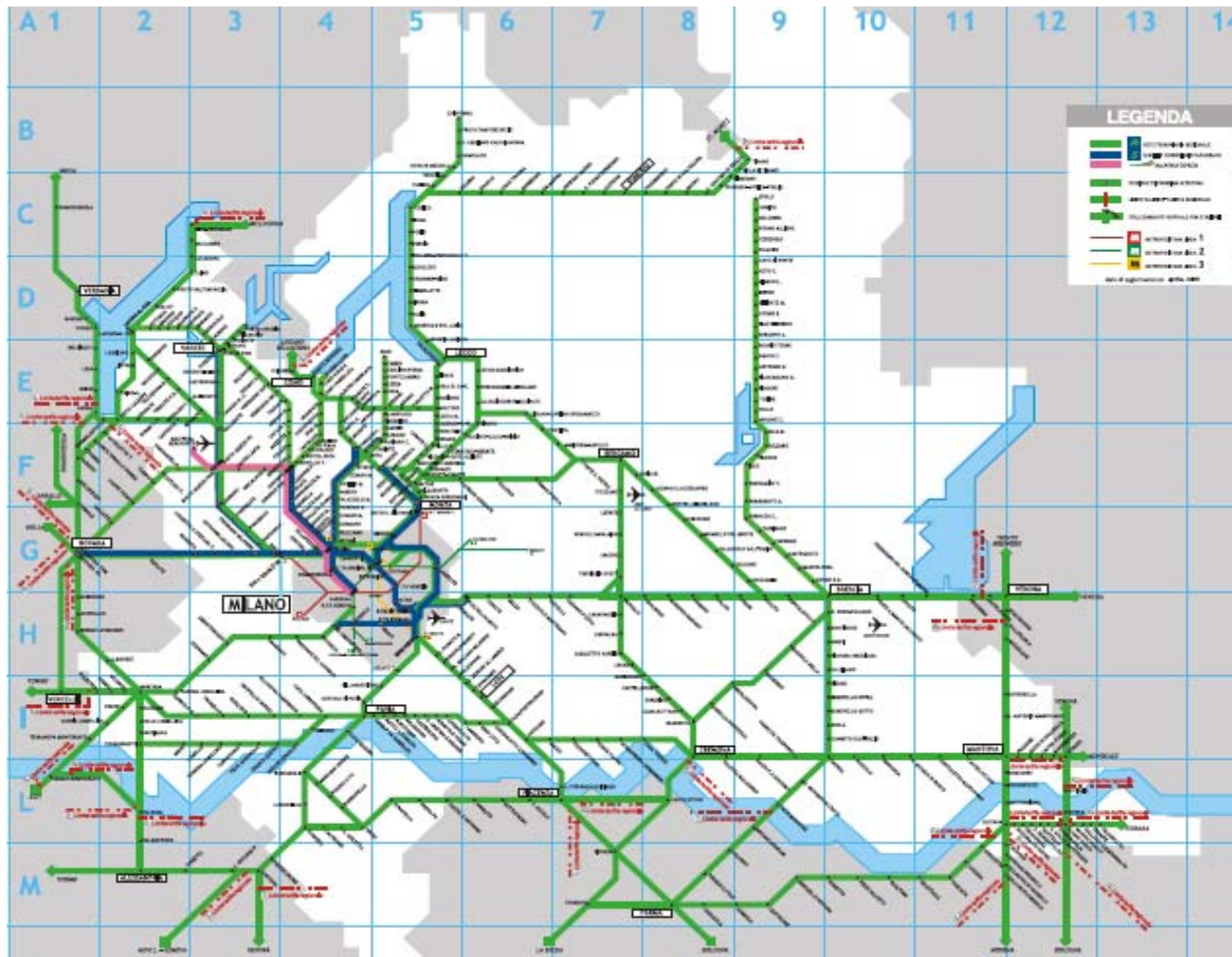
Test Site Lombardy

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- **Regional rail service in Lombardy**
- **Lines and rolling stock involved in the ECORails pilot application**
- **Objectives of the pilot application**
- **Organization and Stakeholders**
- **Planned and running activities**
- **First lessons learned**

Regional rail service in Lombardy



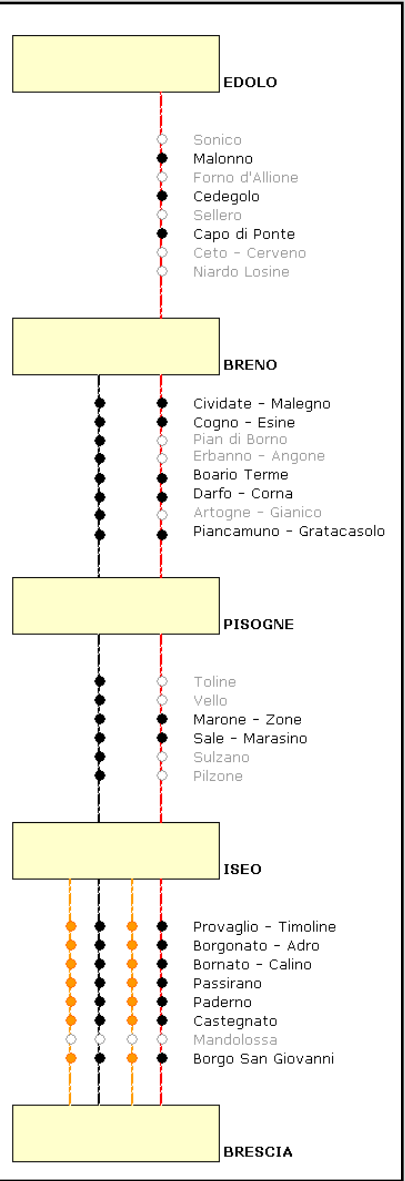
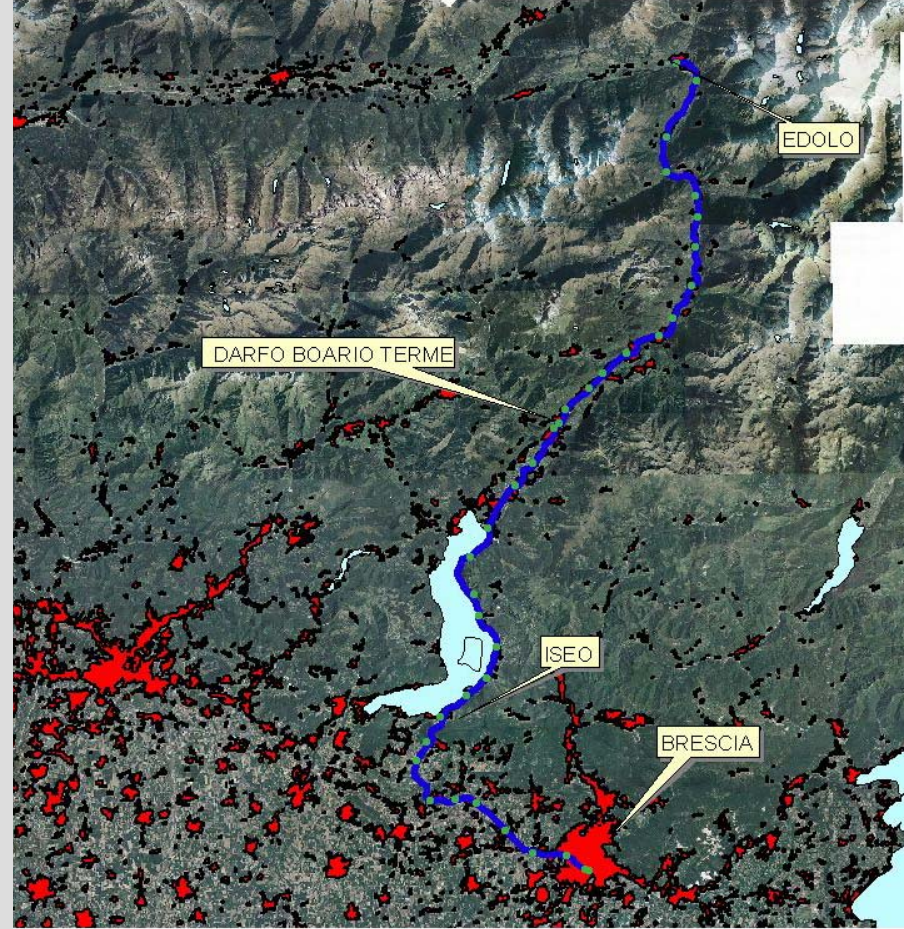
- **LENGH:** 1,921 Km
- **LINES:** 40
- **TRAVELLERS:** 500,000/day
- **STATIONS:** 418
- **SUBSIDY:** 347.3 Million €/year (10.5 €/Km)
- **RUNS:** 1,920/work-day
- **PRODUCTION:** 33 Millions Train*Km/year
- **OPERATOR:** TLN (Trenitalia-LeNord)
- **INFRASTRUCTURE MANAGERS:**
 - FerrovieNord (321 Km)
 - RFI (1,600 Km)
- **TRACTION:** 93% electric
- **ROLLING STOCK:** 330 trains (average 5 coaches long), of which 64 diesel

Testing of the ECORails Guidelines

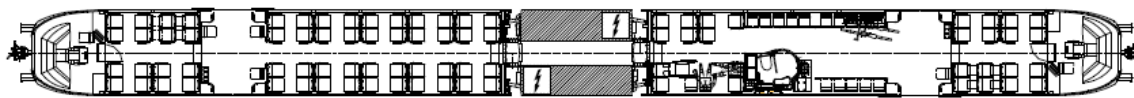
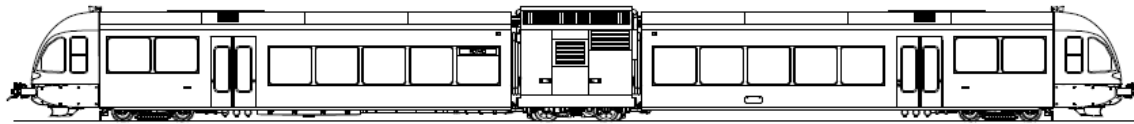
- **Two lines of the regional rail network:**
 - **Valcamonica** line, from Brescia to Edolo:
mixed diesel service including the Brescia metropolitan area, rural villages and the mountains
 - **S3 line**, from Milan to Saronno:
included in the Milan suburban network of “S” lines
- The **Regional Government of Lombardy** - together with the **Province of Brescia** for the Valcamonica line – plays the role of **PTA** by planning the service specifications and paying the financial compensations
- **Rolling stock:**
 - **new DMUs** for the Valcamonica line
 - **recent EMUs** for the line S3
- **Direct awarding** to the public/private operator Trenitalia-LeNord (TLN) by the use of a **Public Service Contract**.
Competitive tendering was experimented in past years.
- **No use of Energy Efficiency (EE)/Environmental (Env) criteria in current contracts**

Valcamonica line

- **LENGH:** 103 Km
- **STATIONS:** 35
- **SUBSIDY:** about 8.5 ml € per year (about 7.7 €/Km)
- **RUNS:** 65/work-day
- **PRODUCTION:** 1.1 Million Train*Km/year
- **OPERATOR:** TLN
- **INFRASTRUCTURE MANAGER:** FerrovieNord
- **TRACTION:** 100% diesel
- **ROLLING STOCK:** 10 trains (about 2.5 coaches)



Valcamonica new rolling stock



- **Class:** ATR 110
- **Builder:** Stadler (CH)
- **Axle arrangement:** 2' Bo 2'
- **Number of vehicles:** 8
- **Service start-up:** 2010
- **Seating capacity:** 104
- **Standing capacity:** 110
- **Multipurpose compartment**
- **Space for up to 10 bicycles**
- **Low floor** 585 mm
- **High floor** 1000 mm
- **Door width:** 1320 mm
- **Overall length:** 39,500 mm
- **Vehicle width:** 3,000 mm
- **Tare weight:** 66 t
- **Diesel engine:** MAN, 2 x 390 kW, EURO IIIa
- **Maximum power at wheel:** 600 kW
- **Starting tractive power:** 80 kN
- **Max. acceleration at gross weight:** 1.05 m/s²
- **Maximum speed:** 140 km/h

Valcamonica present rolling stock

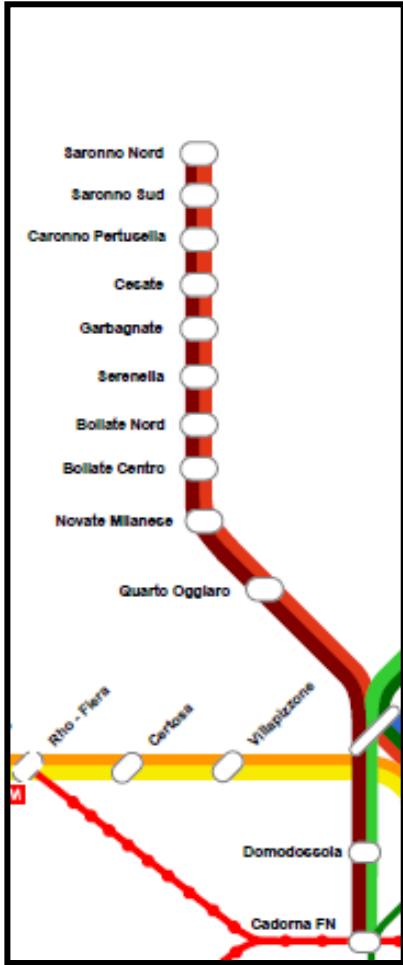


2 Aln 668 diesel units, forming a multiple unit together with 2 coaches

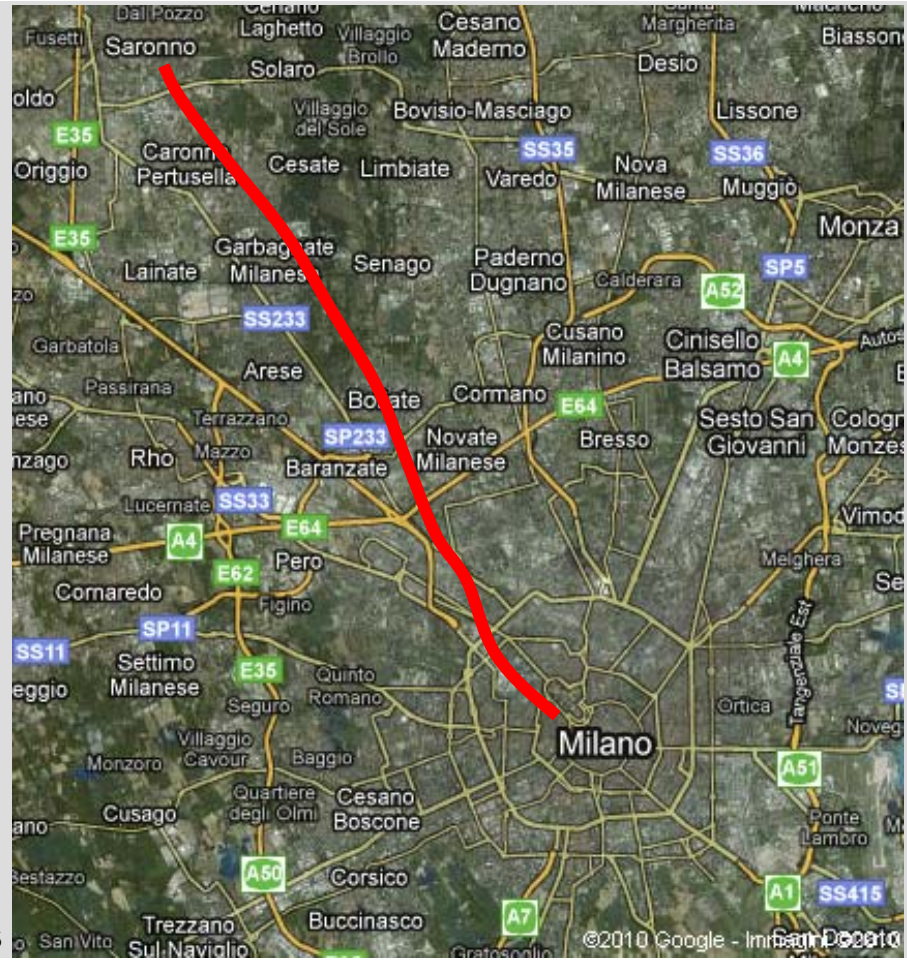
The new ATR 220 built by Pesa with diesel engines EU Stage IIIa (2 DMU are available)



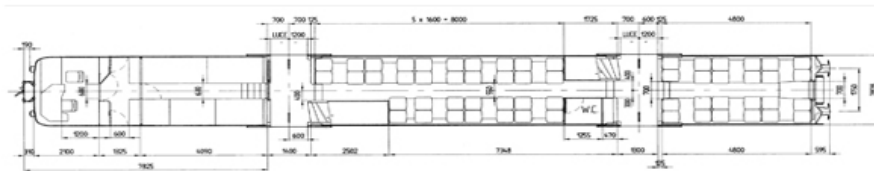
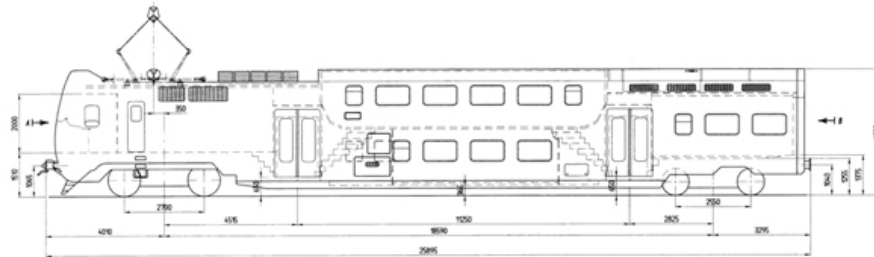
Milan S3 line Milano Cadorna - Saronno



- **LENGH:** 21.5 Km
- **LINE:** S3
- **STATIONS:** 13
- **RUNS:** every 30 minutes
- **PRODUCTION:** 592,000 Tr*Km per year
- **OPERATOR:** TLN
- **INFRASTRUCTURE MANAGER:** FerrovieNord
- **TRACTION:** 100% electric
- **ROLLING STOCK:**
 - double deck EMUs class TAF
 - electric car + coaches
 - Capacity:**
 - TAF: 467 seats
 - Other: from 363 to 875 seats



S3 rolling stock



- **Name:** TAF train
- **Class:** EB 760, EA 761
- **Builder:** Adtranz, Ansaldo, Breda, ABB, Firema
- **Axle arrangement:** Bo2' + 2'2' + 2'2' + 2'Bo
- **Number of vehicles:** 26
- **Service start-up:** 1998
- **Seating capacity:** 467
- **Standing capacity:** 372
- **Floor height:** 650 mm
- **Door width:** 1400 – 1800 mm
- **Overall length:** 103,970 mm
- **Vehicle width:** 2,820 mm
- **Tare weight:** 62 or 45 t
- **Electric power:** 3,000 V DC
- **Electric engines:** 2 three-phase AC for each unit
- **Maximum power at wheel:** 1260 kW x 2 traction units
- **Starting tractive power:** 214 kN
- **Maximum speed:** 140 km/h

Objectives

1. Developing new text modules and clauses to improve the present Public Service Contract with Energy Efficiency and Environmental targets
2. Increasing the awareness of the potentials for saving energy and for reducing the environmental impact of regional rail
3. Testing the ECORails Guidelines

Workflow

		2010																		2011					
		April		May		June		July		August		September		October		November		December		January		February			
		15	30	15	31	15	30	15	31	15	31	15	30	15	31	15	30	15	31	15	31	15	28		
Task 3	Execution of the tests																								
	Step 1 Preparation	[Red bar]						ISR 1																	
	Step 2 Scenarios							[Red bar]						ISR 2											
	Step 3 Execution									[Red bar]								ISR 3							
	Step 4 Analysis of the results																			[Red bar]		ISR 4			

STEP	STATUS	MAIN FEATURES
1. Preparation	running	On-field measurement started
2. Scenarios	preliminary work	Planning of contractual improvements
3. Execution	from August	Text modules and estimation of impacts
4. Analysis	from December	Feedbacks to ECORails Guidelines

Organization and involvement of Stakeholders

**WP4 Manager
(ALOT)**

**Site Manager Lombardy
(Province of Brescia / ALOT)**

Site Stakeholders Group Lombardy:

- Province of Brescia
- Region Lombardy
- FerrovieNord (Regional Infrastructure Manager)
- Trenitalia-LeNord (TLN), (Regional TOC)
- National Agency for Rail Safety (ANSF) (*invited*)
- Federmobilità
- representatives of rolling stock manufacturers

Site Working Group Lombardy:

- ALOT
- Province of Brescia
- Department for Infrastructure and Transport of the Regional Government of Lombardy, Office for the Regional Rail Service
- FerrovieNord (Regional Infrastructure Manager)

Step 1: Baseline

Categories of data collected and analyzed:

- **Geography**
- **Economy and Society**
- **Regulatory framework for transport**
- **Traffic**
- **Infrastructure**
- **Service**
- **Rolling stock**
- **Awarding documents and procedures today in force**
- **Economic framework applied to services and rolling-stock**
- **Stakeholders**

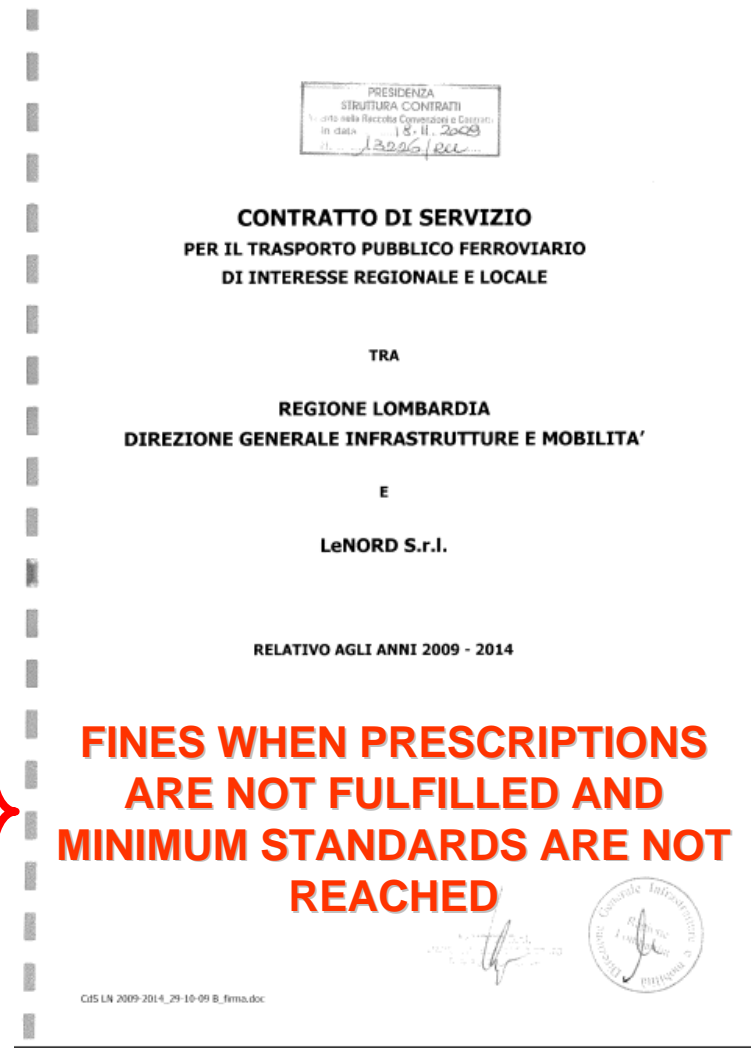
Public service contract LeNord

- Object (annex) = list and timetable of the runs to be done, with specifications: rolling stock to be used, minimum number of seats, accessibility and other features
- Subsidy = 7.22 €/km
- Procedures to add/delete/change runs
- Payments = cash advance and balance depending on cancelled runs and fines
- Obligations related to the rolling stock (costs of maintenance)
- Quality standards of rolling stock
- Reliability of the service (delays and cancelled runs)
- Cleaning standards
- Ticket selling standards
- Information&communication standards
- Claims and refund prescriptions
- Monitoring system

22/06/2010

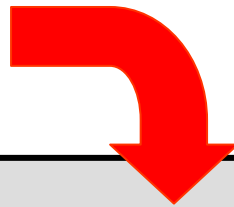
IEE/08/690, 06.05.2009 – 30.06.2011

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Step 2: Scenarios to be tested

- Selection of technologies and operational measures from the Pilot Catalogue of ECORails
- Development of two sets of contractual clauses referred to different foreseen stages of using EE/Env criteria:
 1. BEGINNER
 2. ADVANCED



Contents of the **scenarios**:

– **Impacts:**

1. BEGINNER: basic EE/Env improvements that require less investments
2. ADVANCED: relevant EE/Env improvements asked that usually require more changes

– Level of **regulation**:

1. BEGINNER: EE/Env improvements INCENTIVATED (optional with bonuses)
2. ADVANCED: EE/Env REQUIRED, with a bonuses/penalties system

– **Technologies:**

1. BEGINNER: functional approach focused on the goals more than on how they are reached
2. ADVANCED: also technological approach where solutions to be used are forced

Technologies involved

- **On-board use of braking energy in diesel-electric rolling stock**
- **Eco-driving: electric, diesel**
- **Mass reduction (new diesel rolling stock)**
- **(control of comfort functions in parked trains not included)**
- ***Noise: to be studied***
- **(energy storage under study but not included)**

Step 3: Changes in the contract

- Relevant **points of the contract to be added/improved**:
 - Section **Subsidy to be paid to the TOC**:
 - subsidy partially dependent from the energy consumption
 - incentive dependent from the energy consumption
 - **Section Service Requirements**:
 - environmental standards
 - prescriptions related to the energy saving
 - operational measures
 - features and/or functional requirements of the rolling stock
 - **Section Contract Management and Monitoring of the Performance**:
 - monitoring system and measurement of the energy consumption and the other environmental performances
 - penalties and bonuses dependent from the fulfillment of the service requirements
 - weights and other criteria useful in the negotiation of the contracts

Step 3: example

- Object (annex) = list and timetable of the runs to be done, with specifications: rolling stock to be used, minimum number of seats, accessibility and other features
- Subsidy = 7.22 €/km
- Procedures to add/delete/change runs
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→ optimal length of the trains, eco-timetable

→ use as incentive

→ EE/ENV prescriptions

eco-driving system
(training and operation)

→ extension to EE/ENV direct indicators



On-site measurement



- **FerrovieNord** – the Infrastructure Manager of the regional network, also responsible for the provision of new rolling stock in Lombardy – **is supporting the ECORails pilot application with a measurement campaign** in cooperation with **TLN**:
 - **energy meter on board of the EMU TAF n.27** to measure the consumed and recovered energy
 - **daily measurement of consumed fuel** for each vehicle on the **Valcamonica** line
 - **willingness of testing eco-driving measures** during ECORails
- FerrovieNord has **already experimented the inclusion of some EE/Env criteria in the provision of diesel rolling stock**: the Molteno line tender

Step 4: Analysis of results

- **What:**

- Manageability of the ECORails Guidelines
- Legal feasibility (changes needed)
- Practical feasibility (organization needed, technical difficulties, market obstacles, ...)
- Environmental impacts reachable (fulfillment of the ECORails Key Performance Indicators)
- Additional investments needed
- Possible cost savings (operational costs)
- Changes in the way subsidies are paid
- Level of complexity to be faced

- **How:**

- reports from the Site Working Group Lombardy
- consultation of the Site Stakeholders
- use of the evaluation tools provided by ECORails

First lessons learned

- **Regulatory and contractual improvements are strictly dependant on the technological development of markets (availability of technologies and measurement tools)**
- **Need of an impulse by the EU to support the change.**
Examples:
 - **measurement** of the energy consumption and of the environmental impacts to become **compulsory**
 - **payment of the electricity to the Infrastructure Manager** should be referred by law to the **real consumption of each run** in the timetable
- **The ECORails Guidelines** should provide:
 - the reasons why to adopt EE/Env criteria,
 - key advices, methods and examples about how to use EE/Env in the awarding documents,
 while **specific issues have to be managed locally by the PTAs** using a pro-active approach

Contacts

Province of Brescia

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