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Construction market from the perspective
of a global steel producer

Colin Hautz - Eurofer Conference
December 8th 2011

Agenda

- Position of steel in construction
- The new demand drivers
- Market opportunities
- Common vision and support



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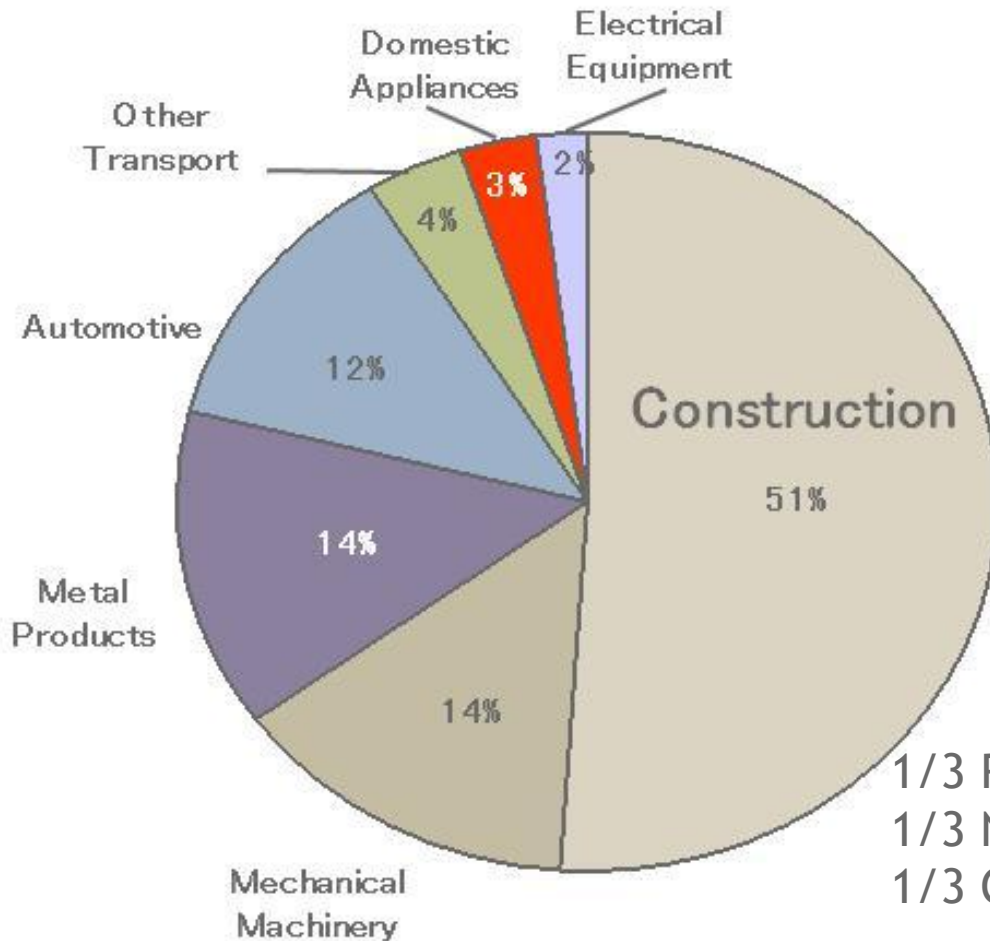
Construction is the largest sector for steel

EU27 represents 10% of worldwide consumption in construction



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Global Steel Consumption



1/3 Residential
1/3 Non-Residential
1/3 Civil Engineering

Indicated size of Construction Market			
Figures in Millions of Metric Tonnes	2008	2009	2010
South America	16,5	12,9	14,8
North America	48,3	32,2	39,1
China	264,8	331,5	345,3
Middle East + Turkey	34,8	30,9	34,4
Other Asia	133	109,9	126,6
UE27	74,5	52,6	59
CIS	26,7	19,2	21,2
Rest of the World	7,8	5,7	6,7
World construction	606,4	594,9	647,1
World construction (China excluded)	341,6	263,4	301,8

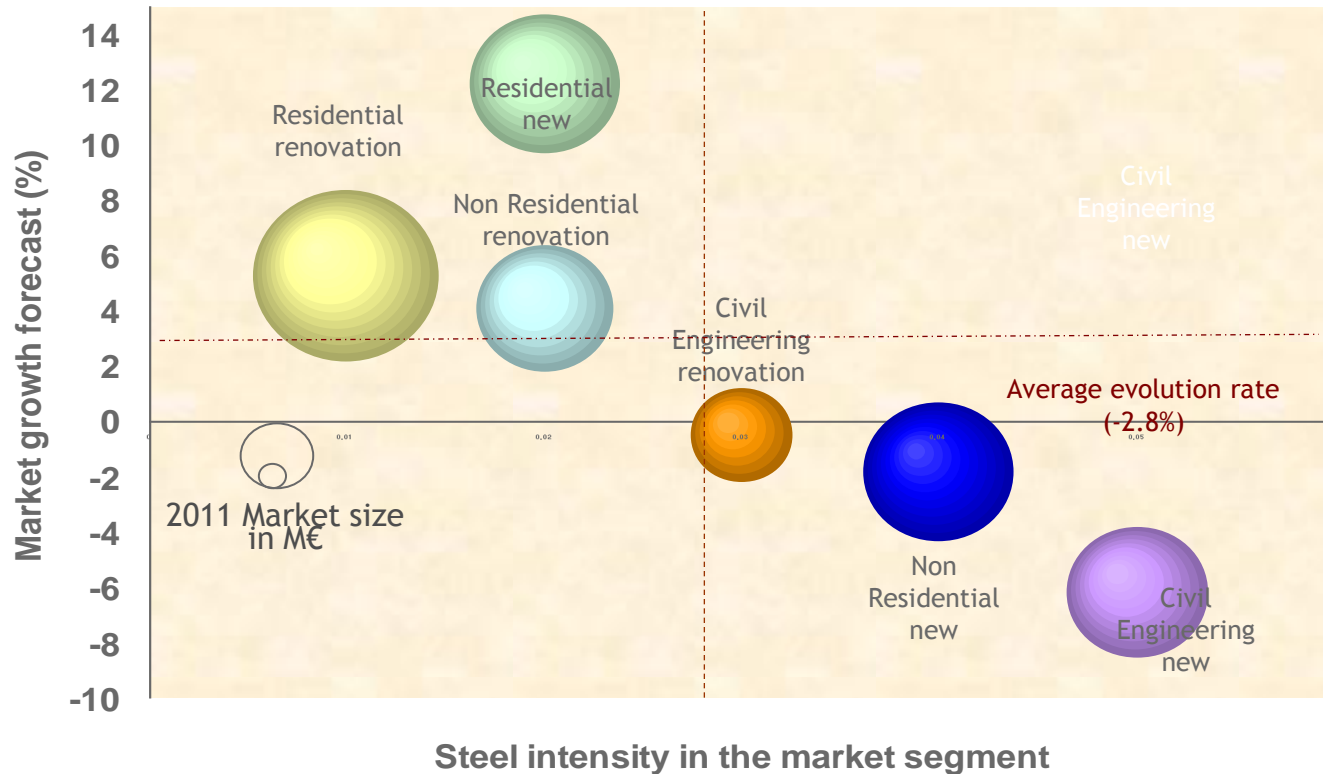
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Sources: World Steel Association, Apparent Steel Use, and AM analysis of Overall Apparent Steel Consumption and SWIP Analysis,

NOTE: The SWIP share for Construction is fixed across all 3 years.

Civil engineering and non-residential are the weakest segments in the construction sector

2014 vs 2010 construction evolution by segment*

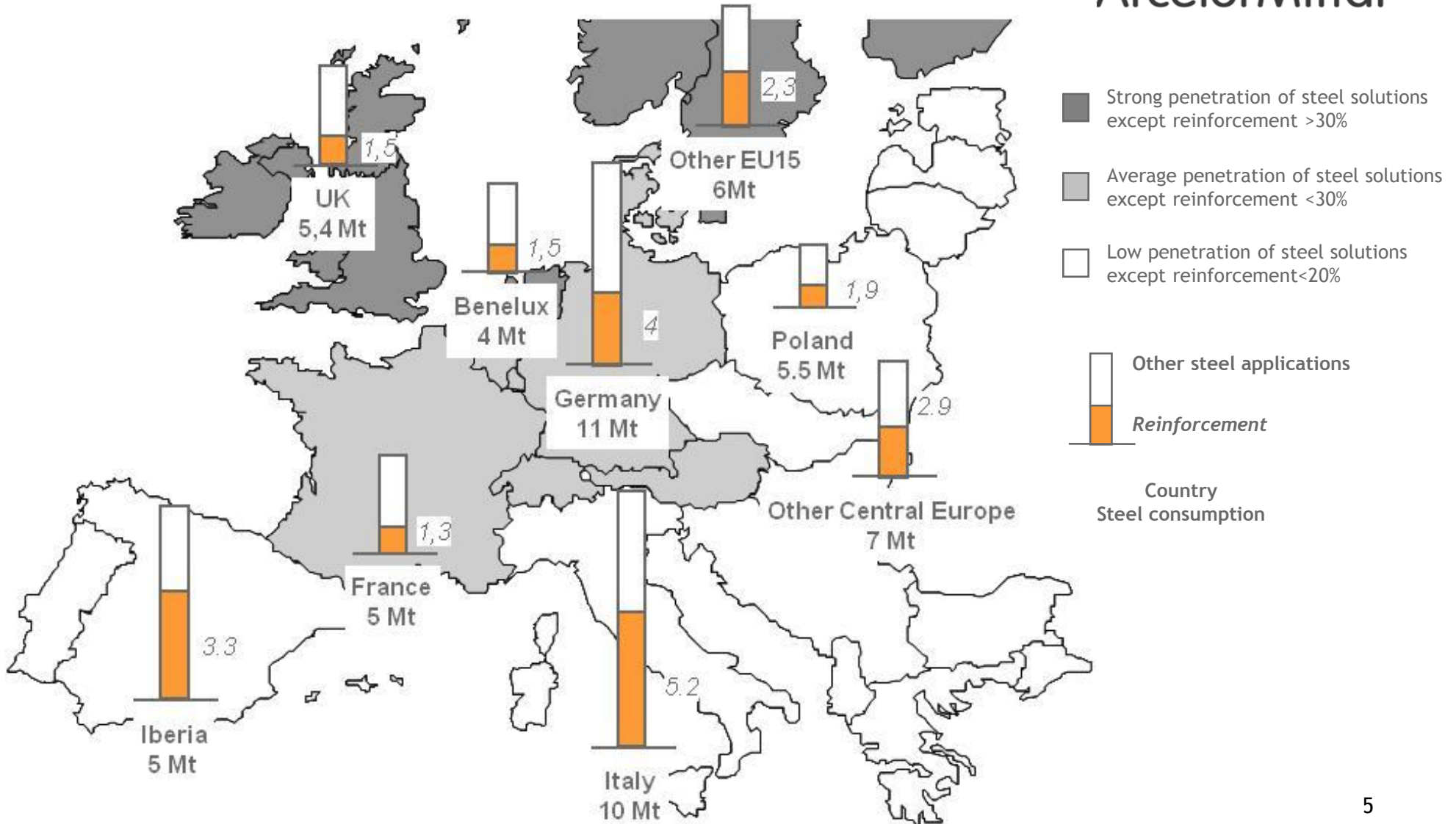


* Source: Source Euroconstruct reports Nov 2011

2010 construction market represented 59 Mt steel consumption



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Segmentation is key to understand this complex market



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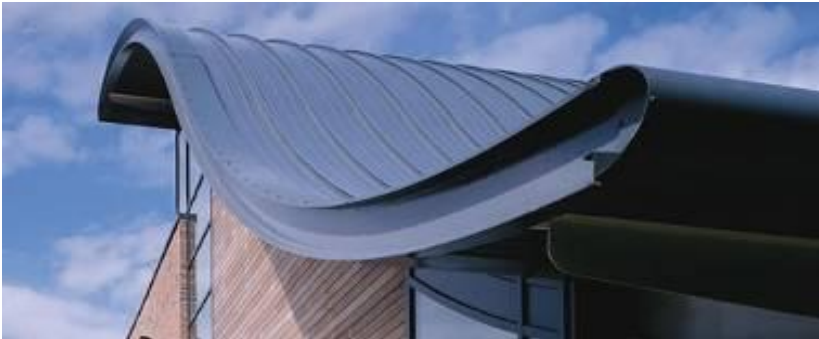
FUNCTIONS		SEGMENTS		CONSTRUCTION			
				Building		Civil Engineering	
				Non-Residential	Residential		
		New	Renovation	New	Renovation	New	Renovation
SHELL	Structure	Flooring		Frame		Tunnels, bridges, railways etc	
	Envelope	Façade, Cladding, Roofing					
EQUIPEMENT FOR BUILDING	Partition	Metal Stud, Metal Partition, Internal Wall					
	Equipments	HVAC, Radiator, Door, Window, Solar Panel					
OTHERS	Road					Safety barrier, Signal Panel, Accoustic panel	
	Urban furniture					Advertising Panel, Bus stop,	
	Energy					Wind turbine, Solar panel	
	Basement and water adduction					Foundations, Piles	
Site Material		Scaffolding, construction site enclosure					
Reinforcement		Rebars & Mesh					

Steel is everywhere from foundation to roof

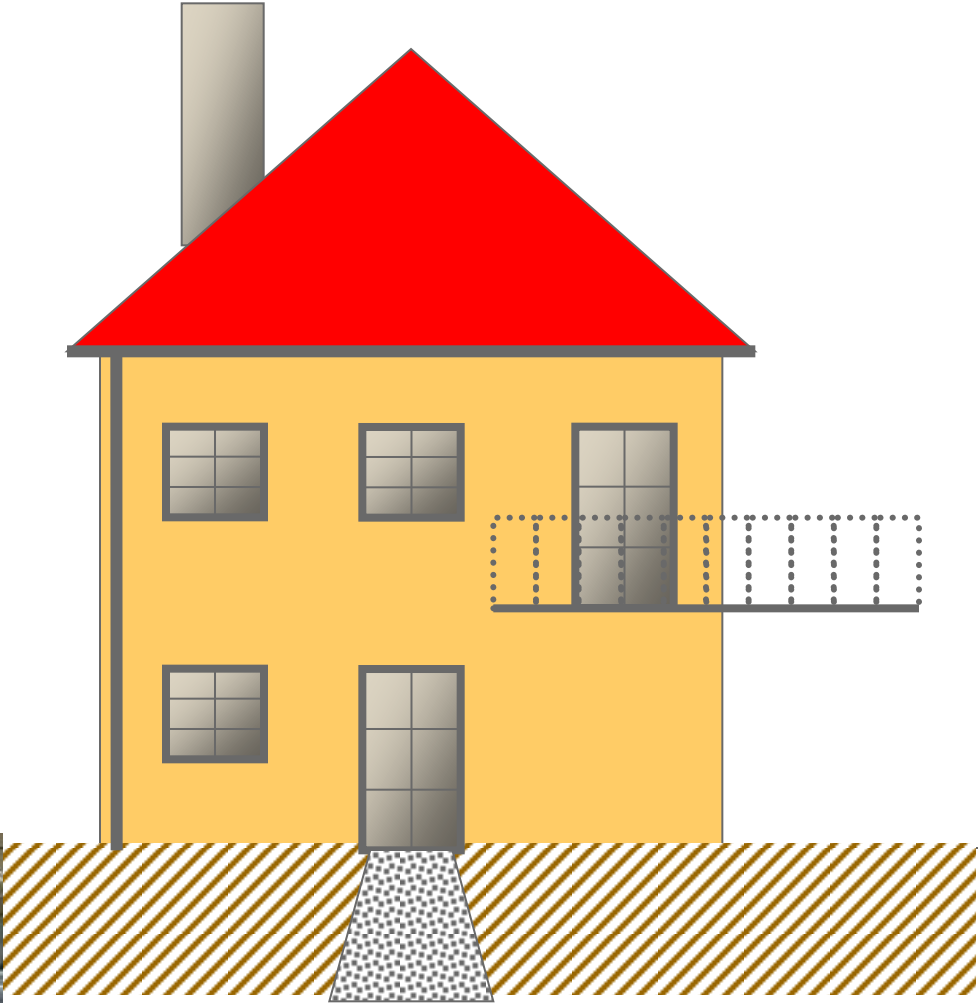


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Steel roofing



Steel facades



Steel fibres in foundations

And in every segment from single housing...to high rise towers



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Industrial plants



Car parks



Agriculture, farms



High Rise Towers



Residential



Food processing



Refurbishment



Despite economical crisis, construction market offers potential for steel growth



- Propose new steel construction solutions to answer identified mega-trends
- Adapt to new market regulations
- Answer demands from society
- Offer new added value solutions including advantages along the life cycle

In Buildings, 5 Global Mega-Trends have been identified as main challenges



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Growing population

Changing societal demographics



Urbanization

Globalization

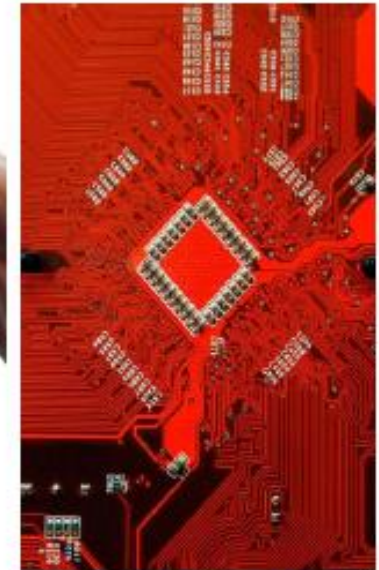


Climate Change

Energy shortage
fossil resources



Healthcare Revolution



Accelerating Technology

Dynamic market change

[source: *PlasticsEurope*]

Answers to growing population and urbanisation....



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- Steel frame solutions for housing



- Refurbishment of existing buildings



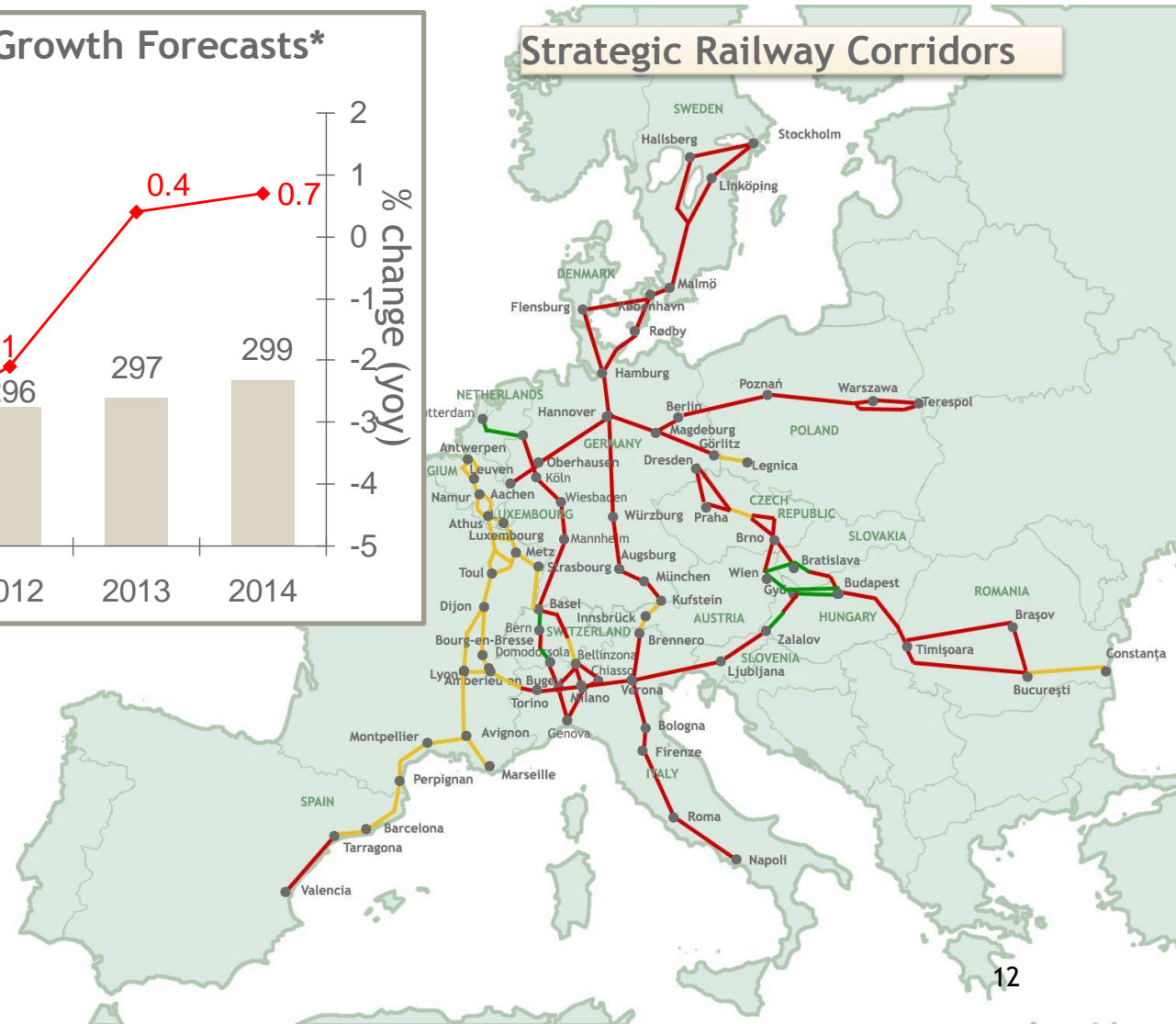
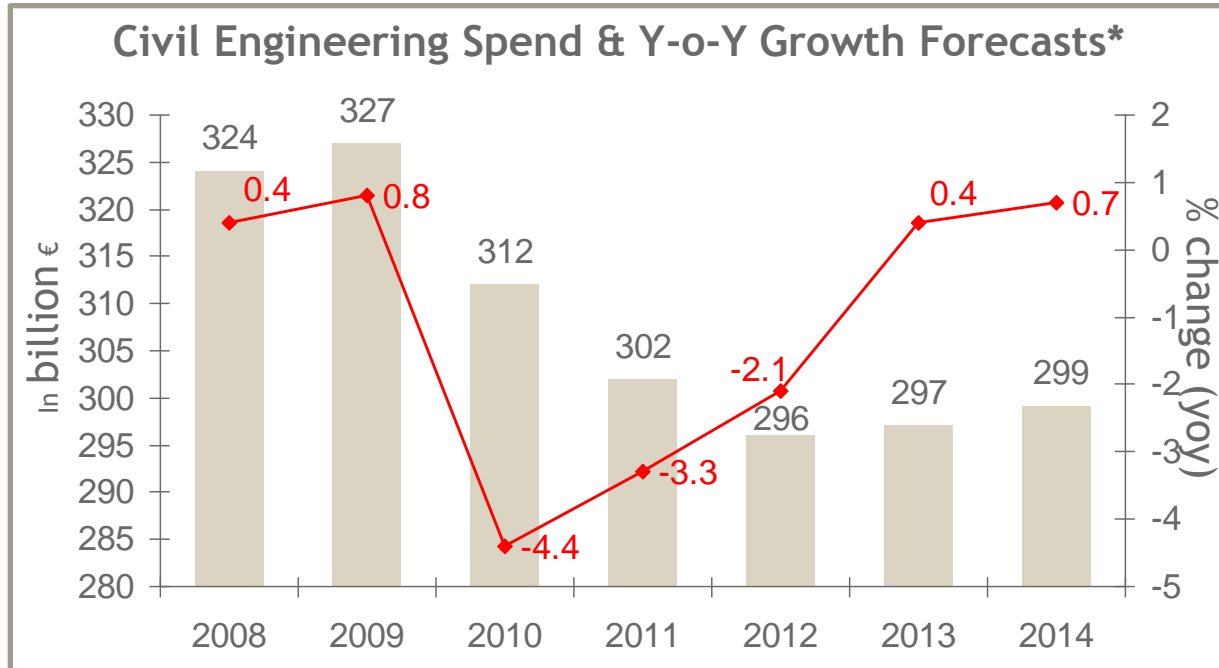
- Car parks



Constant urbanisation also requires an efficient infrastructure network in Europe



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* Source: Source Euroconstruct reports Nov 2011

Steel has always been the « backbone » of EU infrastructure network



Railways

Roads

Airports

Ports



Society demand for modern building aesthetics



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- Steel is enabling designers to invent the « modern art of architecture »
- Steel appears now as the material of choice for modern building architecture



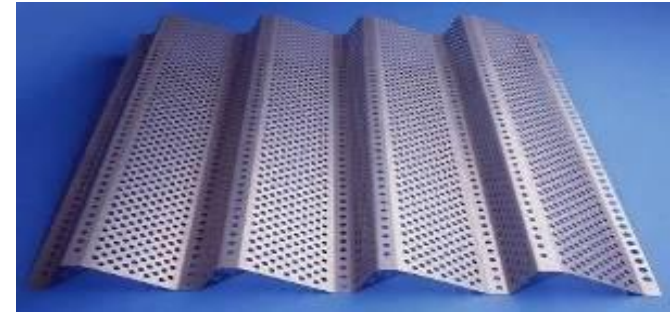
Climate Change and Energy shortage are drivers for new offers.....



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- Answer to new thermal regulations
 - Higher insulation thickness, improved air-tightness & daylight management

- Renewable energy production
 - New concept for windmills & solar carports



Windpark Fleddeweg – Norden (Ostfriesland)



Steel buildings are obtaining “Green” labels



The first HQE® - certified office building in the city of Luxembourg

PolarisMittal

VERTIGO



Polaris

Polaris, the larger of both buildings composing Vertigo, offers a total of 15.835 sqm divided over 4 floors and offering optimum flexibility to its occupants due to 4.000 sqm office floors.

The entrance of the building is composed by a magnificent plaza offering a green nestle of brightness and openness right outside the building.



Naos

Naos is the second building composing Vertigo project. It offers a total of 8.471 sqm divided over 4 floors built around a splendid atrium designed to provide work areas with as much natural light as possible.



The first HQE® - certified office building in the city of Luxembourg

VERTIGO

With a design that focuses on increasing the efficiency of resource use like energy, water, and materials while reducing building impacts on human health and the environment, Vertigo will meet the two major challenges of the 21st century: a growing desire for comfort and security on one hand and better management of resources and energy on the other hand.

What's HQE® ?



HQE® (High Environmental Quality) is a certificate designed to improve the environmental quality in construction. HQE® works around two main themes: controlling impact on the outdoor environment and creating a healthy and comfortable indoor environment.

The first takes into account eco-construction and eco-management, the second handles occupier comfort and occupier health. These 4 categories are divided into 14 target performance levels which must be met in order for a building to qualify.


source : Certivis International

Vertigo's environmental characteristics:

Vertigo allows a reduction of the global operating costs (rent + charges) through a reduction of water and energy consumption, improvement in waste management, optimal supply of natural light, heat recovery ventilation and rainwater harvesting, ...

The secrets of HQE®

 More energy generated than energy consumed

[More...](#)



Steel solutions are offering efficient answers to natural resources scarcity



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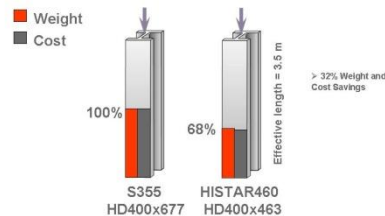
- Steel construction systems are « slim & fast »
 - Lighter than competing materials
 - Dry construction systems to avoid water consumption
- HSS- High Strength Steels for high rise buildings
 - Less material for the same function



Advantages of HISTAR steels



Weight Savings Using HISTAR460



New offers have also to be more economical for customers along the life cycle



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- Prefabrication process diminish on site construction costs
- Very long durability new coatings are decreasing maintenance costs
- Composite construction using HSS enable competitive bridges concept



ArcelorMittal has anticipated new regulations in EU



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- LCA and Eco-design platform in line with new standards (CEN TC 350)
 - Products EPD
 - AM will propose designers Life cycle analysis all along their design process

Environmental product declaration Steel Sheet Piling 2011

Environmental product declaration for Steel Sheet Piling products

This document is intended for understanding the environmental performance of steel sheet piling products, which are suitable for port cover, offshore and marine structures. Steel piles are used in the construction of quay and harbor, offshore, bridge abutments, retaining walls, foundation structures, etc.

The information given is based on the LCA CYCLE ASSESSMENT (LCA) study "Comprehensive environmental impact of steaming structures made of steel sheet piling or reinforced concrete", which has been peer reviewed by an organization with the ISO standards 14067 and 14044 by "SGC Environment".

LCA

LCA (Life Cycle Assessment) is a well-established, based on ISO standards, used to account for the energy and material resources as well as for the pollution and other impacts at all the stages necessary for the manufacturing of a given product.

The Functional Unit

The results of a LCA are related to something representative of the product and the owner being evaluated. The Functional Unit (FU) describes the primary functions to be fulfilled by a product system. When comparing several products, it is necessary to consider a identical functional unit for both products.

Environmental indicators

LCA uses various indicators to assess some common environmental indicators. Generally, several substances contribute to a given environmental impact. For example, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and other greenhouse gases are converted to CO₂ equivalents according to standard models, and the resulting impact is expressed as CO₂ equivalent (emissions in CO₂ or the major gas factor). This is a way to make one single aggregate value for the impact. Acidification is expressed in sulfur dioxide (SO₂) equivalent, and so on for the other impacts.

Primary Energy Consumption accounts for the total primary energy needed along all the stages. It is expressed in megajoules (MJ).

Global Warming Potential represents the contribution of the emitted products to the global warming of the atmosphere. It is expressed in CO₂ equivalent.

Acidification occurs when the product contributes to the acidification rate, generating damage to vegetation and forests. It is expressed in SO₂ equivalent.

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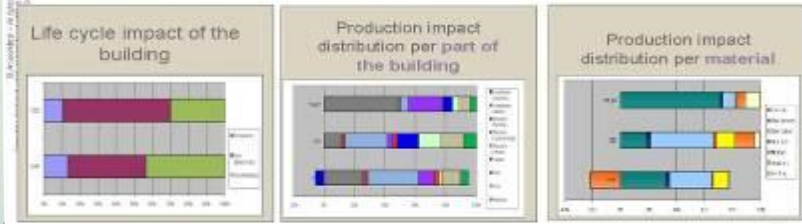
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Water consumption is calculated by adding the water intake flows of the installation. It is expressed in kg of water used.

LCA for Green Building- Villavenir project



- Loos-en-Gohelle, France,
- BBC-Effinergie French label (consumption < 65 kWh/m²/yr)
- Semi-detached house
- 2 floors
- Net living area: 100 m²
- 3 bedrooms, 2 bathrooms



- « Green coatings » under commercial developments
 - Cr free coatings in line with REACH
 - CoV free coating
 - Heavy metal free pigments but enabling any colour



ArcelorMittal is answering new market demands thanks to constant innovation



- More than 20 m€ expenses in Innovation for Construction
- New solutions developed for all key market segments and identified mega-trends
- Added value solutions answer customer needs and society demands



Common vision and support required



- Constant support to innovation is a guarantee for the future of the steel industry
- European Standards have to be at benchmark level and take in account best practices like recycling process
- EU authorities have to be aware of the cost of regulation implementation for the construction industry
- Respect of EU regulations have to be the same for all actors

Conclusion

- EU construction market is changing fast
- We anticipated those evolutions with strong effort in Innovation
- Cost to keep adequate level in innovation is high to obtain long term results
- Steel has strong assets to be the material of 21st century in construction



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