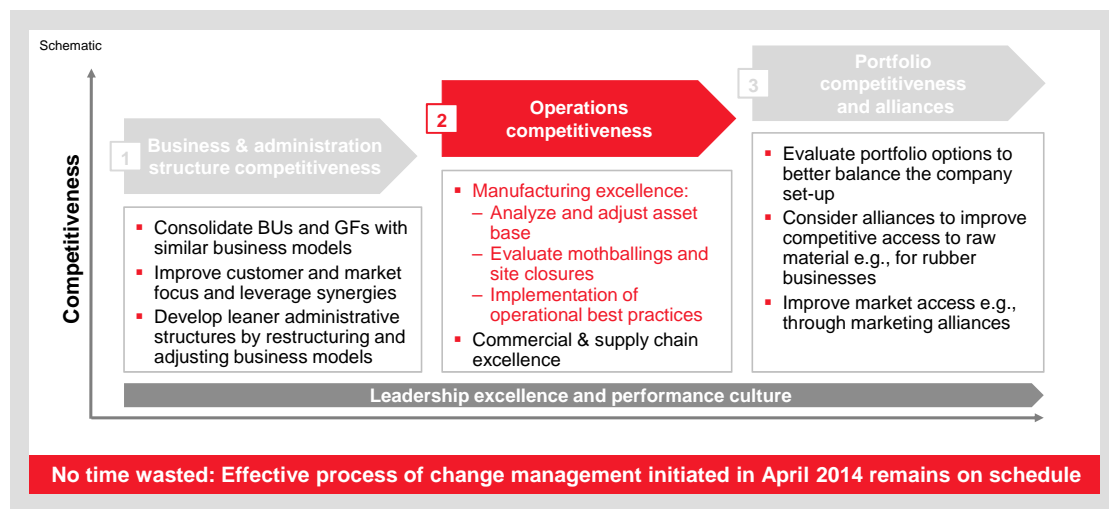


## Manufacturing Excellence Initiative Concept & Methodology

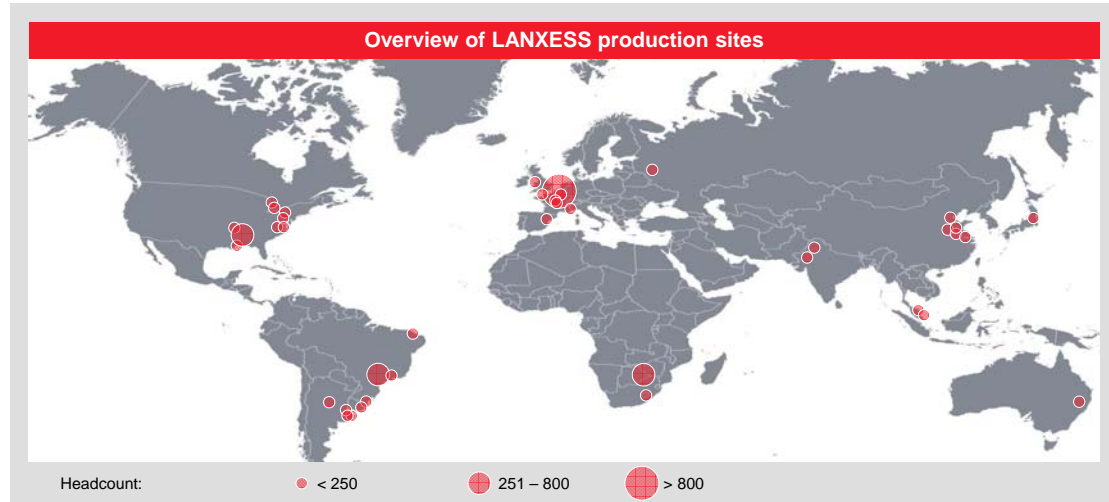
Par Singh  
Head of Group Function PTSE



### “Let’s LANXESS again” – a three-phase realignment program has been defined



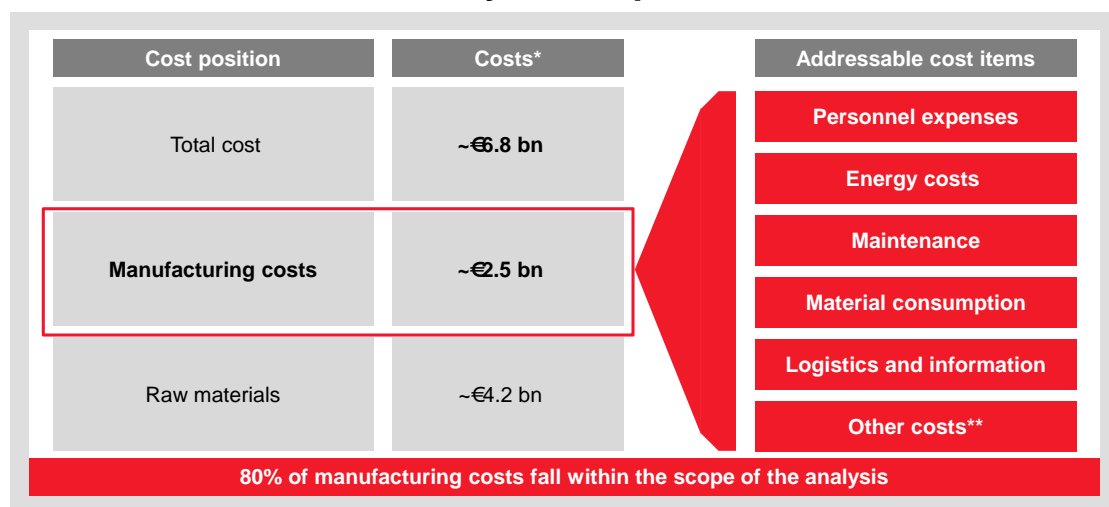
## The LANXESS manufacturing network includes 47 production sites in 17 countries with 9.300 employees



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## The analysis is focused on improving the effectiveness and efficiency of our processes



\* Data based on LANXESS P&L 2013 (Annual Report)

\*\* Other costs mainly consist of production, technical and infrastructure services

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## Current manufacturing network is lacking in harmonization and transparency



Plant & site structure	Processes	KPIs
<ul style="list-style-type: none"> <li>Plant structure defined by legacy</li> <li>Site development according to BU interests</li> <li>Added complexity through acquisitions</li> <li>Limited technical standardization in new plants</li> <li>Various site concepts and organizational set-ups</li> </ul>	<ul style="list-style-type: none"> <li>Lack of standardization of processes on a global scale</li> <li>Non-harmonized processes at BU and plant level</li> <li>Different approaches to optimization and continuous improvement</li> <li>Limited exchange between BUs on best practices</li> </ul>	<ul style="list-style-type: none"> <li>Clear top down targets regarding manufacturing performance missing</li> <li>Lack of transparency on overall manufacturing performance</li> <li>No harmonized KPI-system and definitions</li> <li>Absence of LANXESS-wide manufacturing reporting</li> </ul>

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## Manufacturing excellence applies a three-step-process



<p><b>Creating transparency</b></p>	<ul style="list-style-type: none"> <li>Upfront data analysis: initial screening for site potential and agreement on sequence</li> <li>Build and train site transformation team</li> <li>Comprehensive site check</li> <li>→ Validation of site specific potential</li> </ul>
<p><b>Definition of targets per site</b></p>	<ul style="list-style-type: none"> <li>Define site targets and integrate into performance management</li> <li>Prioritize measures by potential and establish timeline</li> <li>Create site specific gap closure plan with responsibilities</li> <li>Implement demo lighthouse project (continuous improvement tools)</li> <li>→ Commitment of site management gap closure plan</li> </ul>
<p><b>Implementation &amp; tracking</b></p>	<ul style="list-style-type: none"> <li>Site implements agreed measures</li> <li>Start continuous improvement process</li> <li>Gap closure tracking per site</li> <li>→ Bottom-line impact and increased competitiveness</li> </ul>

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# Applied methods and tools in line with industry standards

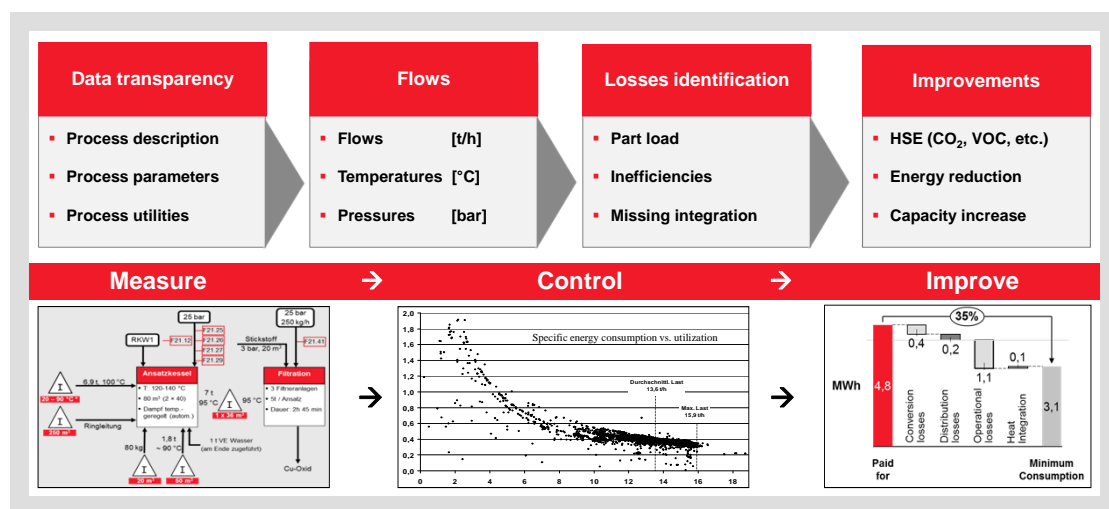


Subjects of screening							
HSEQ	Organization	Maintenance	Quality & yield	Energy	Site logistics	Assets	Processes
HSEQ Performance	Span of Control Layer Analysis	Maint. / Reliability expectations	Raw material efficiency	Energy Consumption	Optimized Logistics	Capacity Utilization	Process Maturity
Status X_Act	Assignment of contractors	Standard & Guide best practices	Quality	Energy Supply	Warehouse Layout	Equipment Effectiveness	Work in Progress
	Qualification Matrix	Roles/ Duties/ Know-How	First pass yield	Ideal operating point	Loading time	Productivity	Process Efficiency
	Roles & Responsibilities		"Golden Batch"				Production Planning
	KPI Tree	RCM / FMEA		Minimum Energy Consumption	Value Stream Analysis		Bottleneck Analysis
	Business Process Analysis	Total Productive Maintenance		Energy Check	Cost Analysis	Loss Cascade	Root Cause Analysis
Visualize CIM & KPIs	FTE Analysis DILO	Inspection master plan		Pinch Point Analysis	Maturity Grade	SMED	Value Stream Analysis
5 S	Functional Workplace Analysis	Performance metrics (KPIs)	Six Sigma				LEAN, Six Sigma

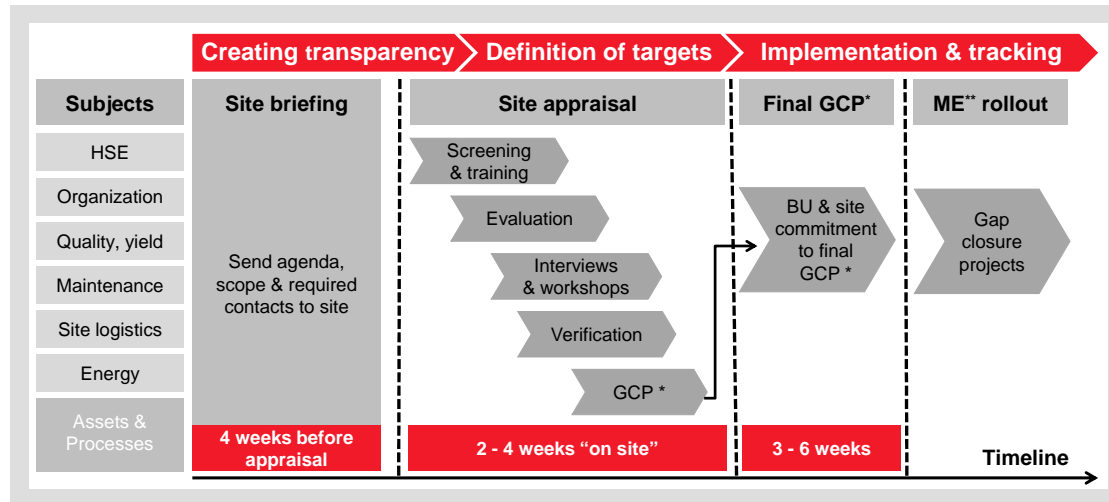
Topics Methods Mandatory



# Methodology to improve energy efficiency



## Precisely planned workflow and timing

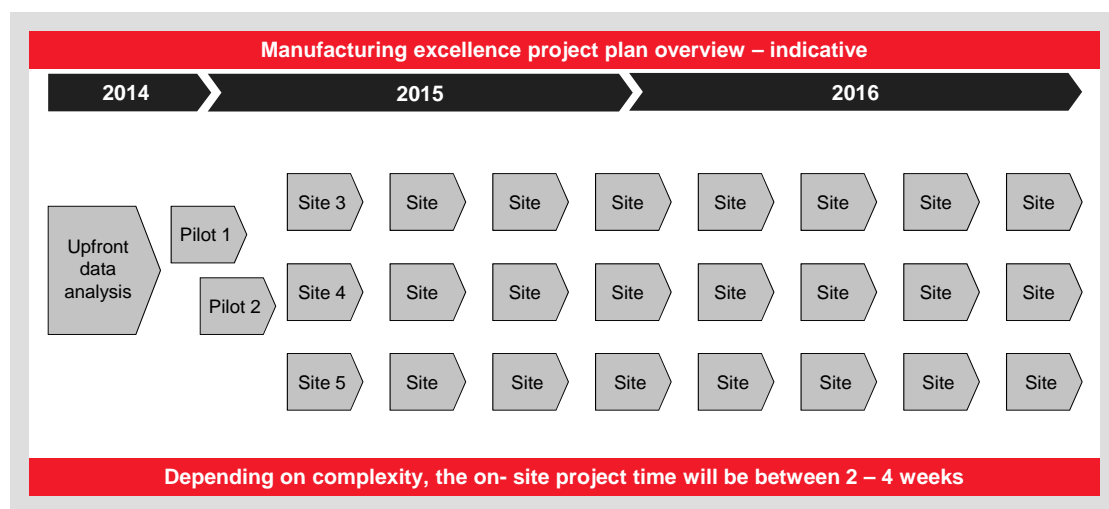


\* GCP: Gap closure plan  
 \*\* ME: Manufacturing excellence

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## Priority of the rollout will be given to Performance Polymer sites



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# LANXESS' goal is to achieve best in class manufacturing excellence



Establish continuous  
improvement culture

Improve  
HSEQ performance

Optimize  
manufacturing costs



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Energizing Chemistry

Safety first!

**Xact**  
Health Safety Environment








## Abbreviations

Performance Polymers		Performance Chemicals	
▪ BTR	Butyl Rubber	▪ MPP	Material Protection Products
▪ PBR	Performance Butadiene Rubbers	▪ IPG	Inorganic Pigments
▪ TSR	Tire & Specialty Rubbers	▪ FCC	Functional Chemicals
▪ KEL	Keltan Elastomers	▪ RCH	Rhein Chemie
▪ HPE	High Performance Elastomers	▪ RUC	Rubber Chemicals
▪ HPM	High Performance Materials	▪ ADD	Rhein Chemie Additives
		▪ LEA	Leather
		▪ LPT	Liquid Purification Technologies
Advanced Intermediates			
▪ All	Advanced Industrial Intermediates		
▪ SGO	Saltigo		

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