



Egypt National
Cleaner Production Center



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Green Chemistry Project Inception Workshop

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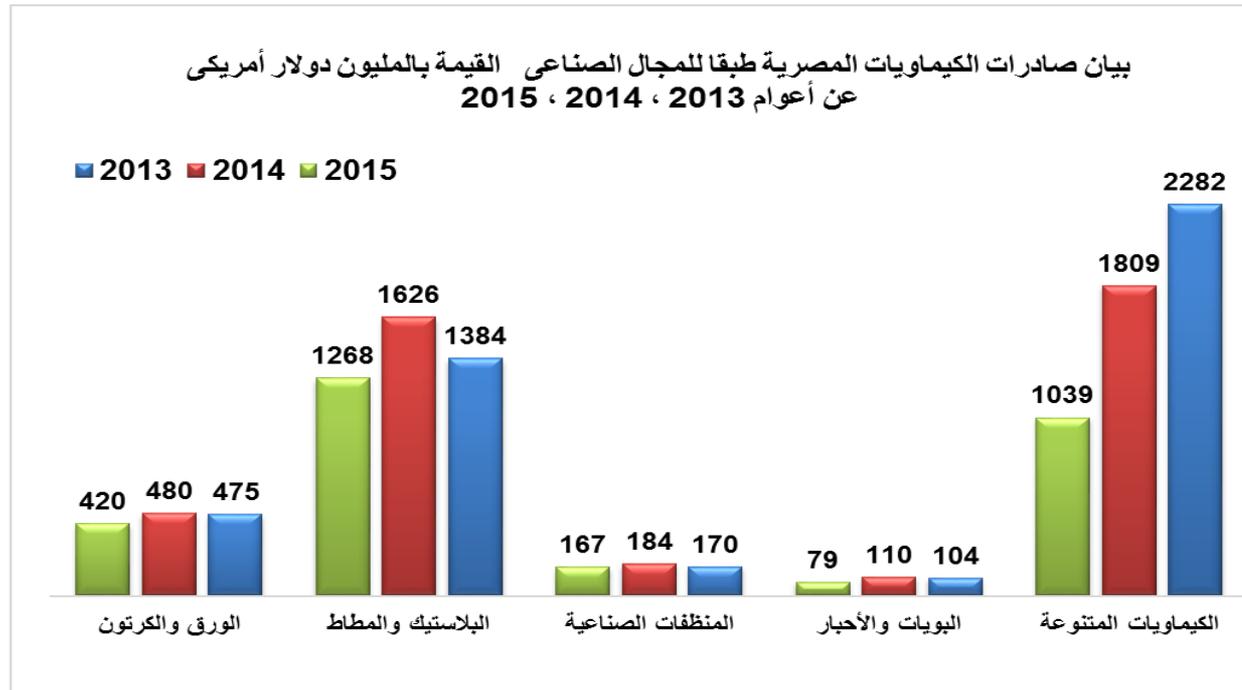
Chemical Industry in Egypt I

- The industrial sector in Egypt contributes to about 35% of the Egyptian GDP and employs approximately 25% of the workforce
- 60 % of total Egyptian export (excluding petroleum products)
- Chemical industry represents about 20% of the Egyptian industrial sector
- The chemical industries includes subsectors such as Plastics, Rubber, Paper, Detergents, Paints, Chemicals, and Fertilizers



Chemical Industry in Egypt II

- Exports of Chemical Industries sector reached 3 Billion US\$ in 2015 (Source: Chemical Industry Chamber 2016)

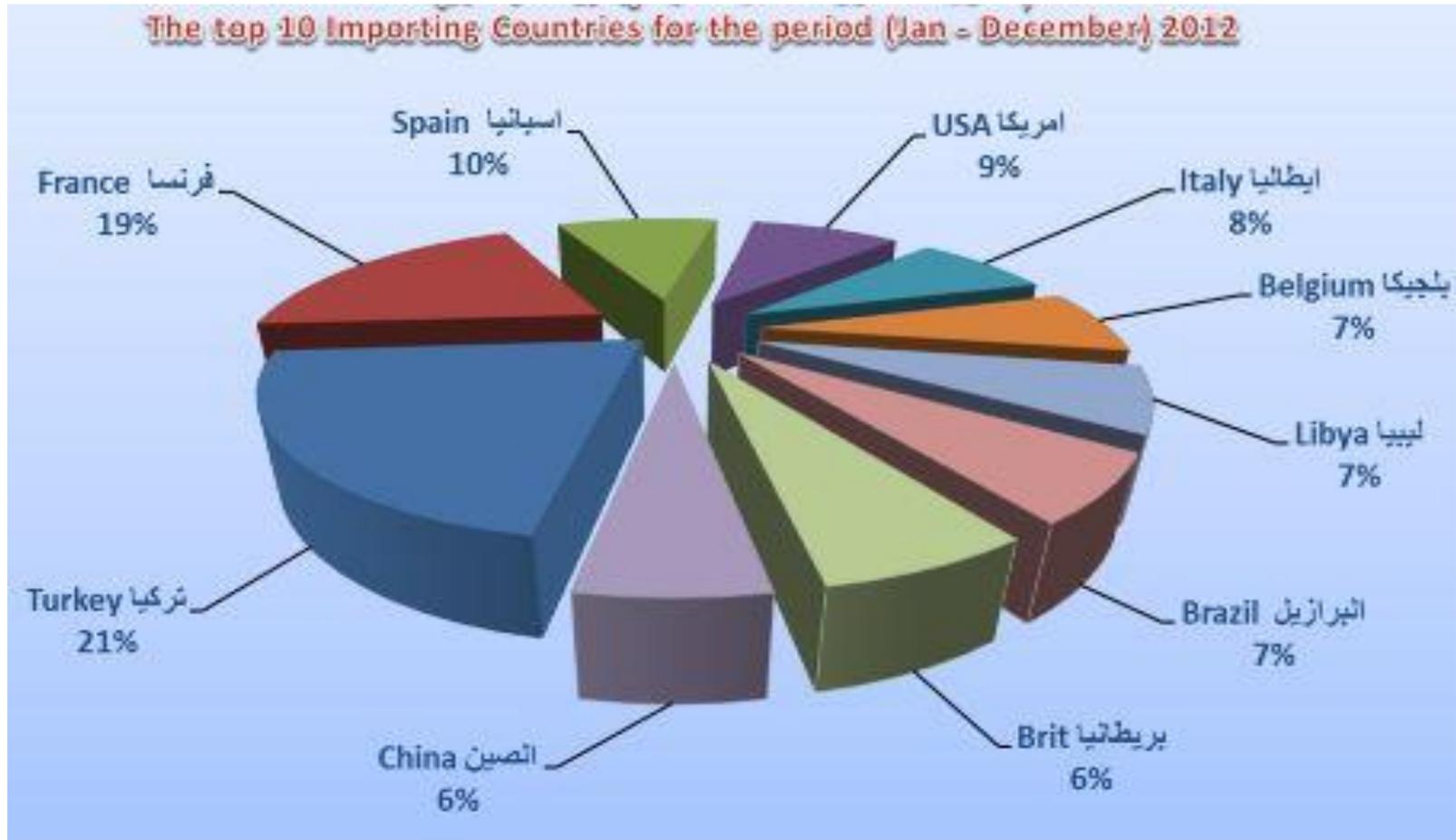


Chemical Industry in Egypt



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The top 10 Importing Countries for the period (Jan - December) 2012



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Potential Green Chemistry in Egyptian Industry



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Sector	Project/Process	Green Technology
Petrochemical	Producing of Bio-PVC	Bio-PVC production from Molasses
Petrochemical	Production of Medium Chain Chlorinated Paraffin (MCCP)	Cooling and catalization stages after converting the green MCCP is to be obtained from Medium chain paraffin
Petrochemical	Production of styrene (=benzene ring with CH=CH ₂ tail)- Traditional route: Two-step method starting with benzene, which is carcinogenic) and ethylene to form ethylbenzene, followed by dehydrogenation to obtain styrene	Start with toluene (benzene ring with CH ₃ tail).
Chemical	Produce new materials from waste acid of pickling process	Green chemical process
Chemical	Shift to safer solvent in paints production & bio-based solvent	Bio-based paints
Chemical Industry-Plastic Industry	Bio-degradable plastic & bio-cleaner for plastic extruder machine to reduce consumption of material	Bio-plastic technology
Chemical application-Furniture Industry	Formaldehyde-free wood composites and bio-adhesive	Green composite technology
Chemical application-Ceramic Industry	Fumed silica from rice straw as additive to reduce the combustion temperature in drying furnace of ceramics	Combustion Technology
Metal & Construction Building Industry	Steel slag in greening of road construction and in concrete	Green Construction Technology

Green Chemistry Initiatives in Egypt



- Programmes for Innovative Chemical Management in Industry (ENCPC and UNIDO)
- Eco-innovation Programme in Chemical Industry (with UNEP)
- UNESCO Programme on Green Chemistry for Young Researchers with the Egyptian Academy of Scientific Research (ASR)
- Academic Programme at Cairo University, Mansoura University and at the Suez University on Green Chemistry



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Expectations

- ❑ Technology solutions for Green Chemistry in different industries
- ❑ Tailored-made Green Chemistry awareness raising activities including university-level curriculums development on Green Chemistry
- ❑ Concrete economically feasible case studies for replication and scale-up



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