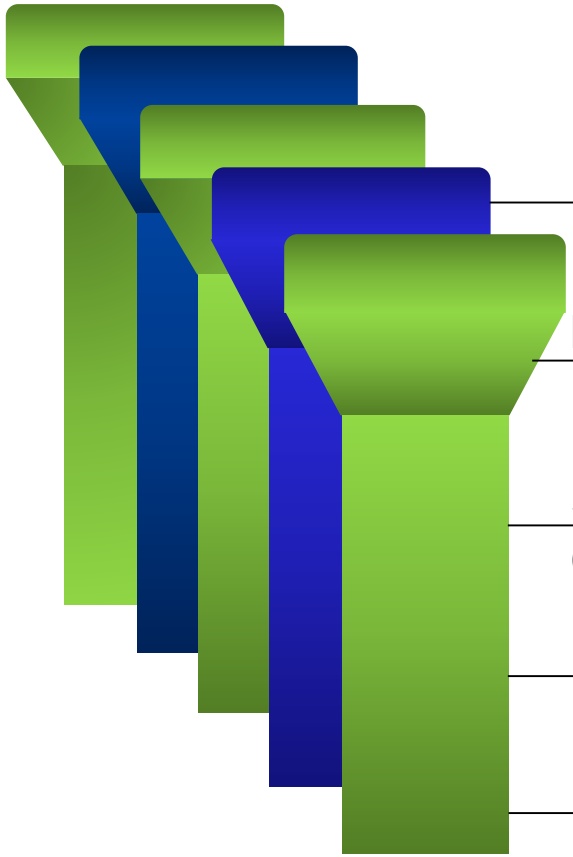
“Renovation in Innovation: a successful route to gain a sustainable chemical industry from a local to a global perspective”

Maria Cristina Pasi, Vilnius, Lithuania 27-29 Nov 2019

LIFE-TRIALKYL

With the contribution of the LIFE Programme of the European Union under grant agreement LIFE14/ENV/IT/000346

The five pillars of the circular economy in the chemical industry



Circular raw material input

Modular design to facilitate regeneration

Systemic chemical synthesis platform towards circular outputs

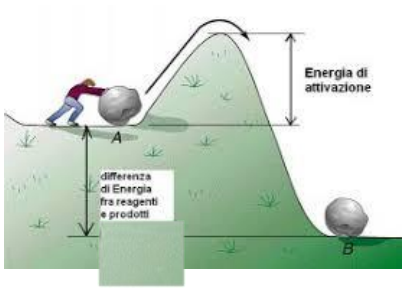
Design towards ecosustainable service products

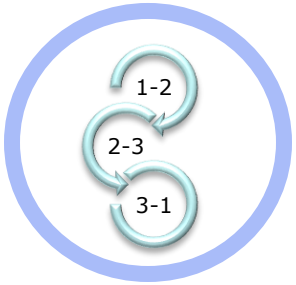
New life cycled chemical products

LIFE-TRIALKYL

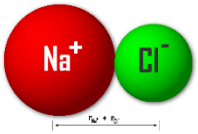
Glocal circular raw material input from local to global

- Renewable & sustainable sources (energy – elu-reagents- water cycle)

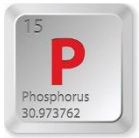




- Secondary raw materials to reduce environmental impact by
  - Wastes management reduction



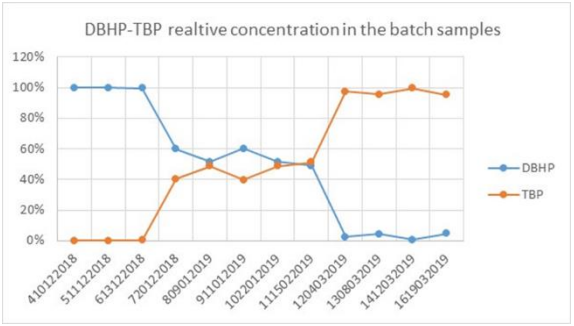
  - Primary natural sources saving



  - CO2 emission reduction

Modular design to facilitate regeneration

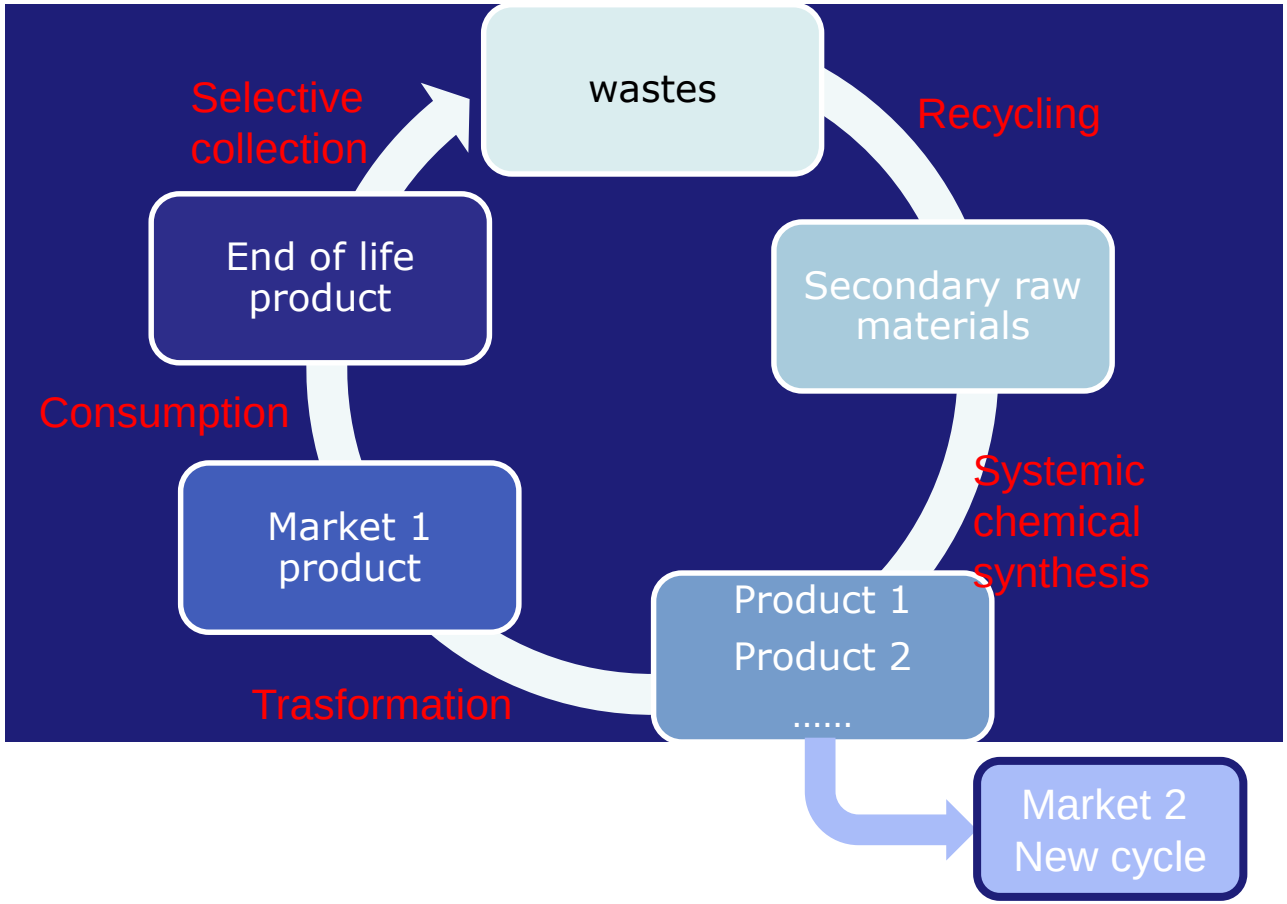
- Stepwise designed synthetic routes aimed at regeneration vs end of life wastes from TMP to TAP through DBHP and TBP



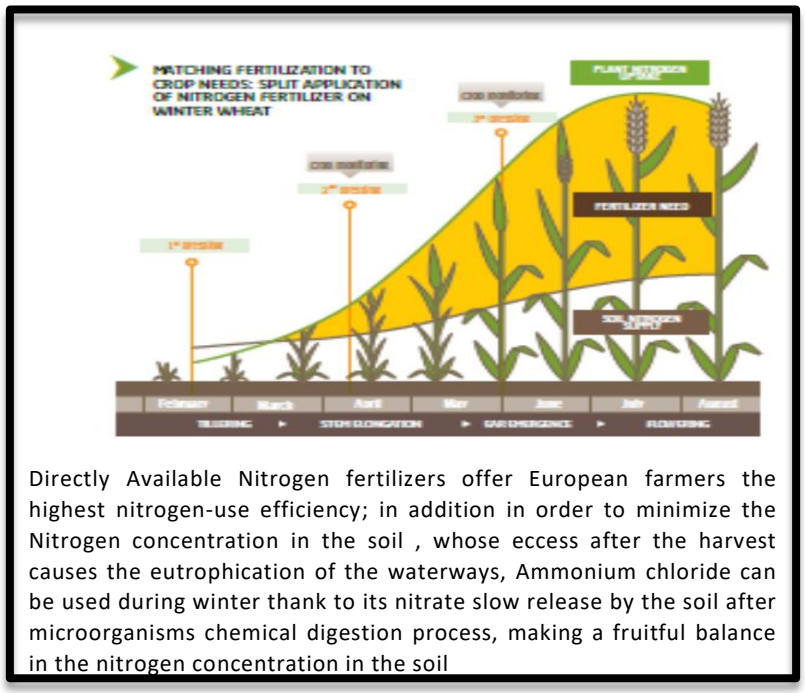
- State of the art analysis:
  scientific literature vs state of the art technologies to discover new BATs

- Renovation in Innovation

Systemic chemical synthesis platform towards circular outputs

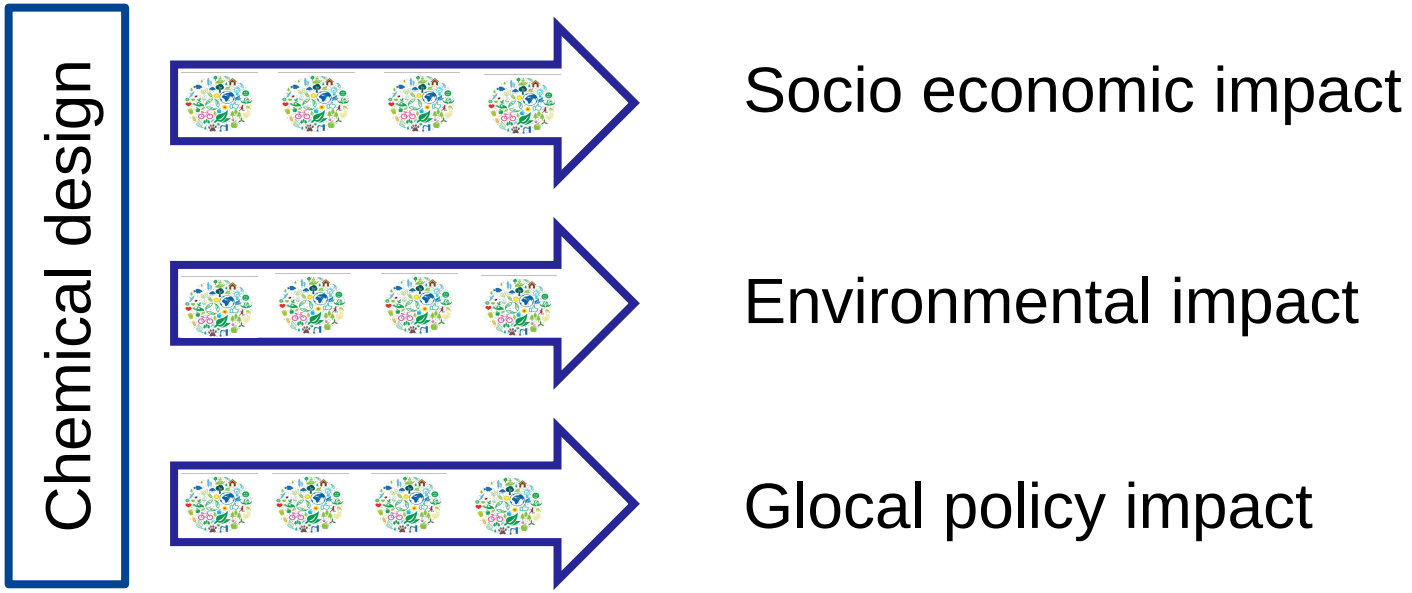


Systemic chemical platform towards circular profitable outputs



Directly Available Nitrogen fertilizers offer European farmers the highest nitrogen-use efficiency; in addition in order to minimize the Nitrogen concentration in the soil , whose eccess after the harvest causes the eutrophication of the waterways, Ammonium chloride can be used during winter thank to its nitrate slow release by the soil after microorganisms chemical digestion process, making a fruitful balance in the nitrogen concentration in the soil

Chemical design towards ecosustainable service products



Chemical design & socio economic impact recommendations

Social care chemical product for citizens: SMART

Avoidance of harmful chemicals

Avoidance of wastes

Reduction of emissions (VOCs and PM)

Chemical design & environmental impact recommendations

Environmental impacts and risk assessed (full LCA analysis) validation according to LCA ISO standards

Quantitative monitoring of key indicators

Development of SEIA

Analysis of upstream and dowsntream cascade effects

Chemical design & Policy impact recommendations

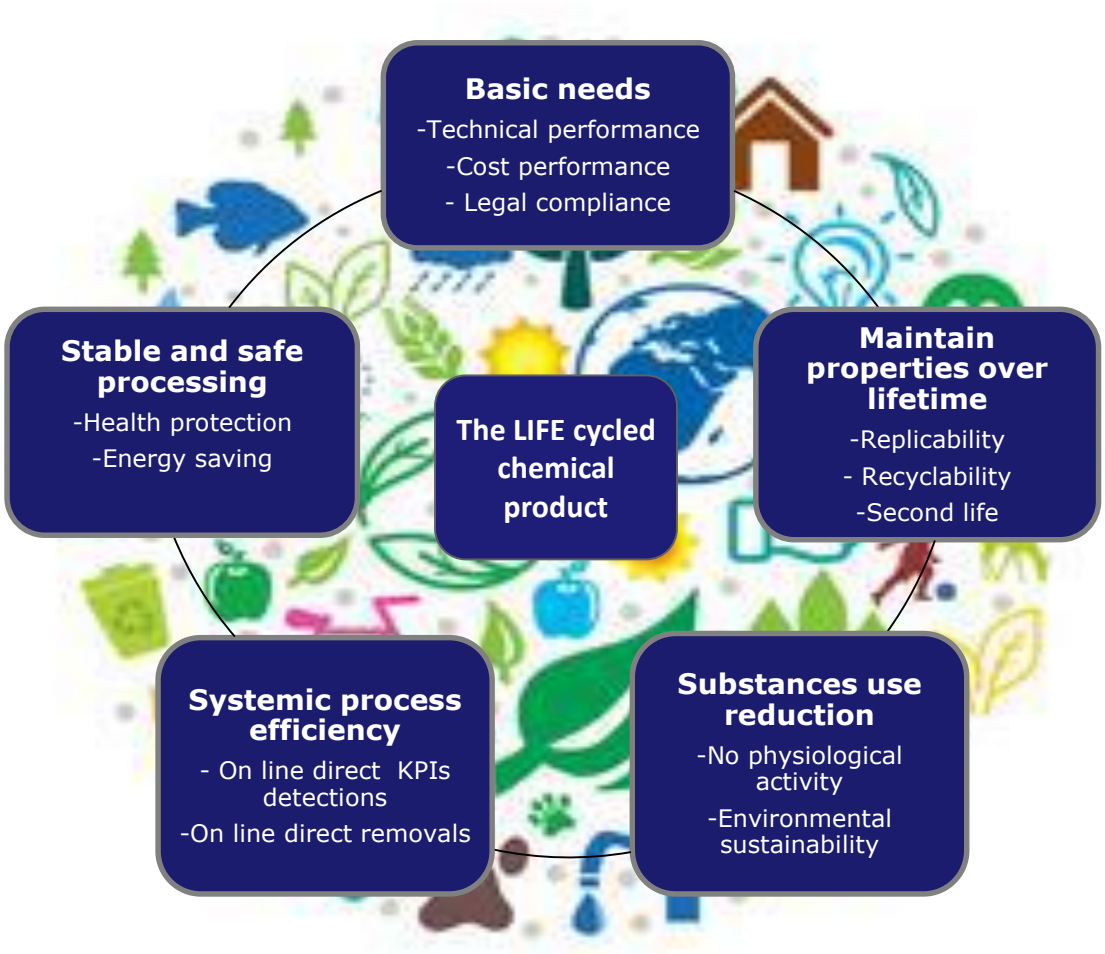
- **IED** - Industrial Emission Directive pubblished Jan 2011, compliance with the **included Integrated Pollution Prevention and Control (IPPC) Directive**

- **BAT**- Best Available Technique
  http://eippcb.jrc.ec.europa.eu/reference/

- **BREF** – Best available REFerence documents
  The Industrial Emissions Directive.docx

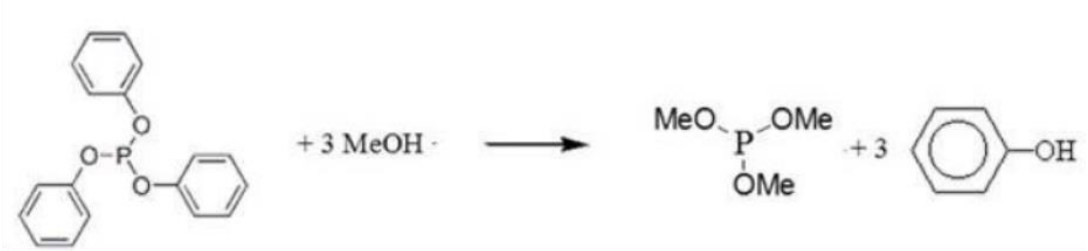
- **EWP** - The European water policy

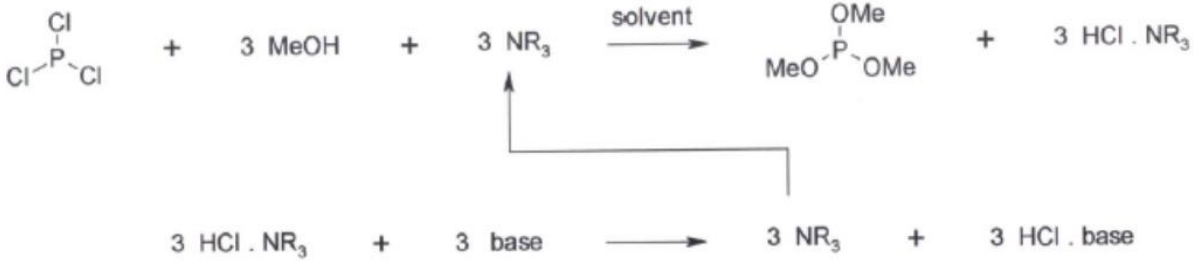
New LIFE Cycled chemical products



European Commission

LIFE-TRIALKYL : Renovation in innovation





Thank you all very much for your attention and for your contributions!

Maria Cristina Pasi - Project coordinator
mc.pasi@italmatch.com
mc.pasi@izar-enterprise.com

With the contribution of the LIFE Programme of the European Union
under grant agreement LIFE14/ENV/IT/000346