# ECOTEXNANO - Innovative tool to improve risk assessment and promote the safe use of nanomaterials in the textile finishing industry

Join workshop on risk assessment & risk management strategies applied to nanomaterials
Results from the projects REACHNANO, ECOTEXNANO, SIRENA & GUIDENANO
02/12/15 - INSHT, Madrid

*With the contribution of the LIFE financial instrument of the European Community*

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**LEITAT Technological Center**

# ECOTEXNANO - Innovative tool to improve risk assessment and promote the safe use of nanomaterials in the textile finishing industry

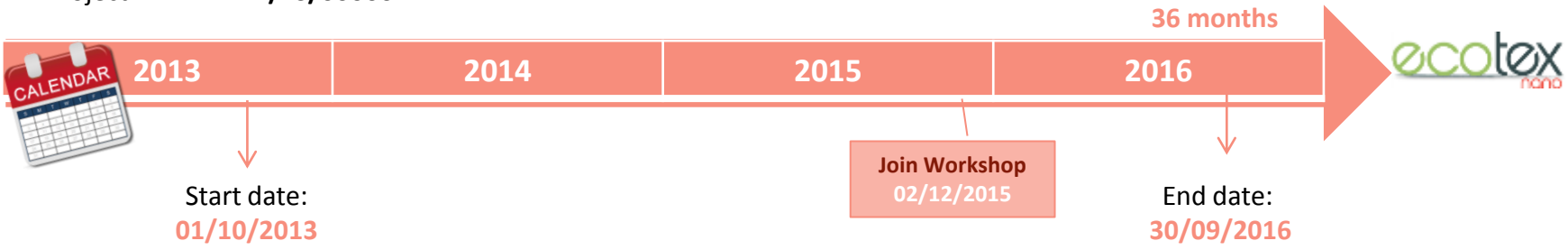

**This presentation:**

1. **ECOTEXNANO Project – the context**
2. **Nanomaterials addressed**
3. **The key work**
4. **Expected results**
5. **Project details**

# ECOTEXNANO - Innovative tool to improve risk assessment and promote the safe use of nanomaterials in the textile finishing industry

## CONTEXT

LIFE+ Project: **LIFE12ENV/ES/000667**




## Objective:

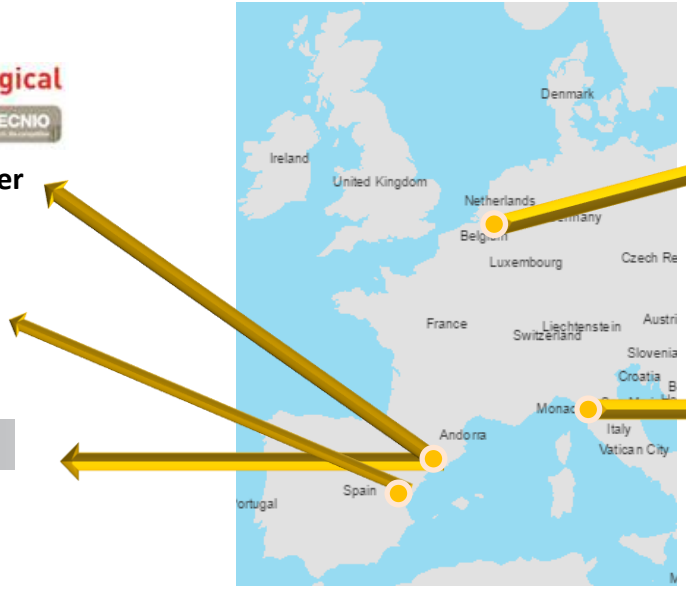
ECOTEXNANO project is **aimed to design an innovative tool to improve risk assessment and promote the safe use of nanomaterials in the textile finishing industry**. The project deals with innovative solutions in the field of **technical textiles incorporating nanoparticles.**

## Partners:

**LEITAT, Spain – Project leader**

**ITENE, Spain**

**VINCOLOR, Spain**
Textile industry




**CENTEXBEL, Belgium**

**PIACENZA, Italy**
Textile industry

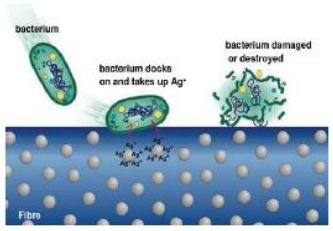
CONTEXT

## Thematic scope:

- Production of textiles – **finishing process**

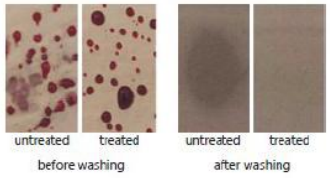
- **4 technical functionalities** of textile are being tested by comparing conventional and nano-based technologies:

**ANTIMICROBIAL**

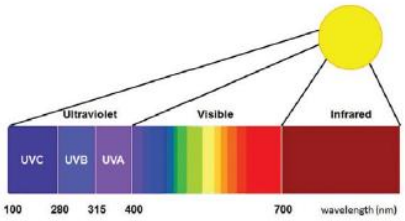



**FLAME RETARDANT PROPERTIES**

**SOIL-RELEASE**




**UV-PROTECTION**




- **Two type of fabrics**:
  - Upholstery fabrics
  - Luxury garment fabrics

## Nanomaterials addressed

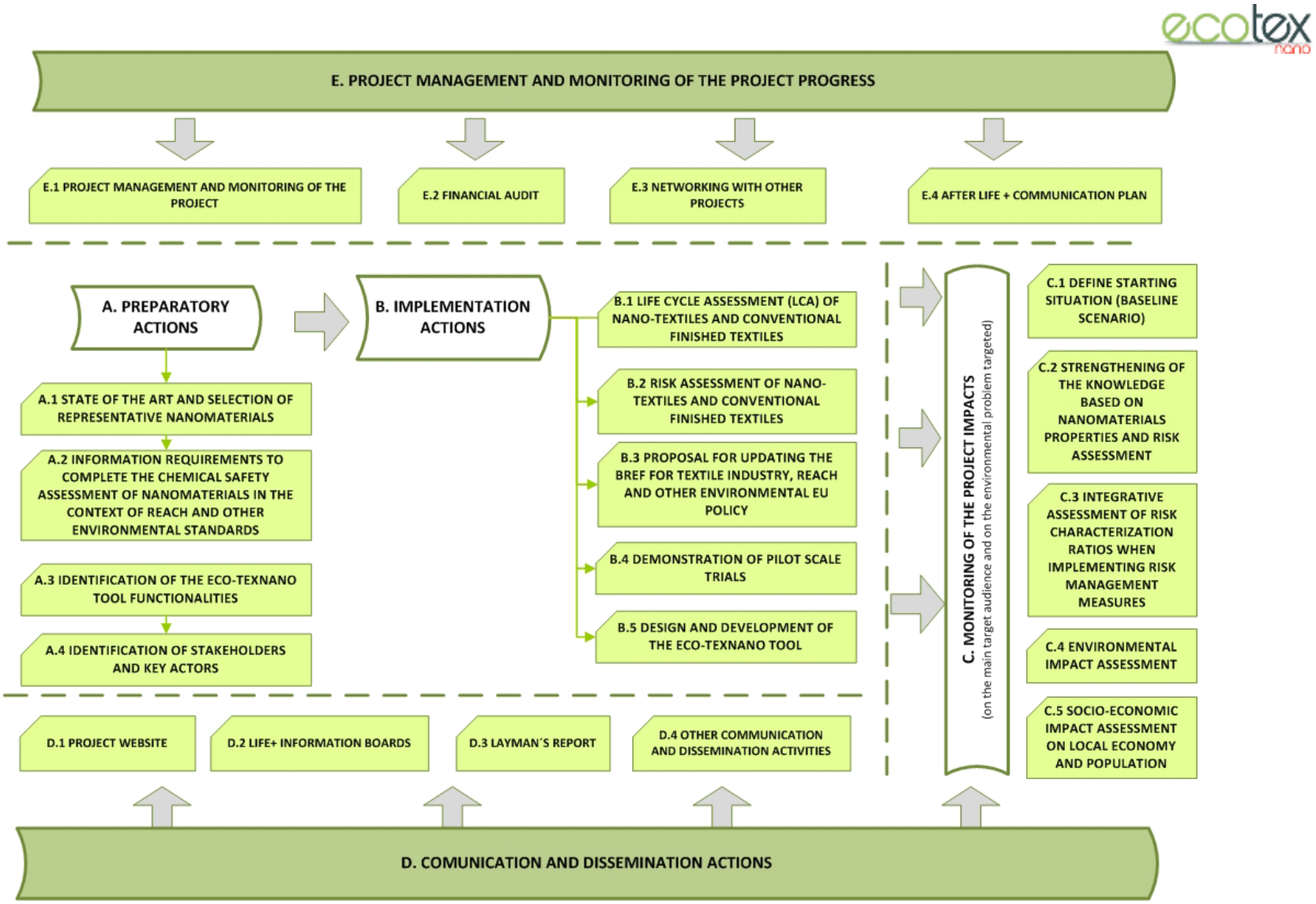
- Nanomaterials's selection criteria:
  - Commercial availability
  - Human health and environmental risks
  - Environmental impacts
  - Performance of nanomaterial in textiles
  - Price of formulated nanofinishing products
  - Feasibility to apply in pilot scale trials
  - Level of transferability
  - Availability of data

- Nanomaterials selected:

| Functionality | Nanomaterial |
|---|---|
| Flame retardant | **Nanoclay** |
| Soil release | **C6 based fluorochemical** |
| Antimicrobial | **Silver** |
| UV protection | **TiO2** |

## THE KEY WORK

**Work programme:**



## Pilot scale trials

- Pilot scale trials have been developed at textile industry:

Pilot scale trials at **VINCOLOR (Spain)**


Upholstery fabrics
2 functionalities:
- **Soil-release**
- **Flame retardant**

Real data collected and processed for performing:
- Life Cycle Assessment
- Risk assessment

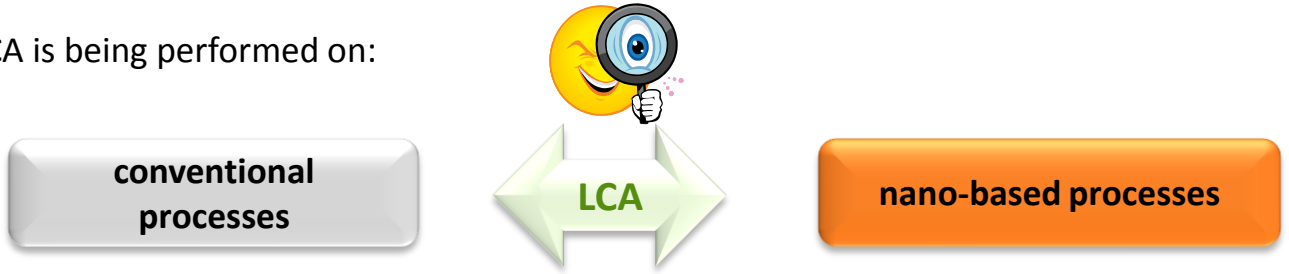
Luxury garment fabrics
3 functionalities:
- **Soil-release**
- **Antimicrobial**
- **UV-Protection**

Pilot scale trials at **PIACENZA (Italy)**

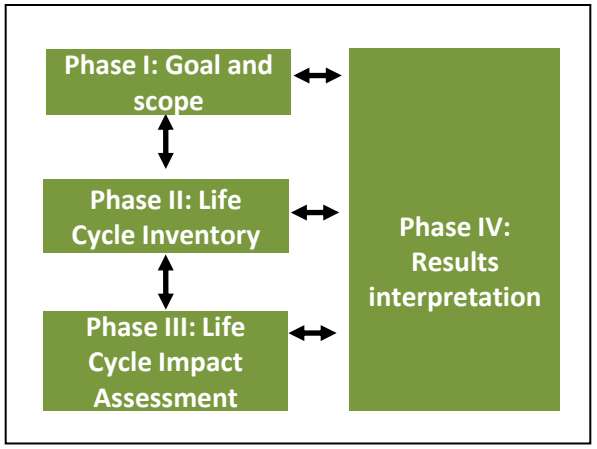
## Life Cycle Assessment (LCA)

"The Life Cycle Assessment is a tool to analyze the environmental aspects of a product, process or activity throughout its life cycle, considering all inputs and outputs related to every stage analyzed"

- Comparative LCA is being performed on:




- LCA methodology based on:
  - Standard ISO 14.040: 2006 Environmental management -- Life cycle assessment -- Principles and framework
  - Standard ISO 14.044: 2006 Environmental management -- Life cycle assessment -- Requirements and guidelines
  - The International Reference Life Cycle Data System (ILCD)

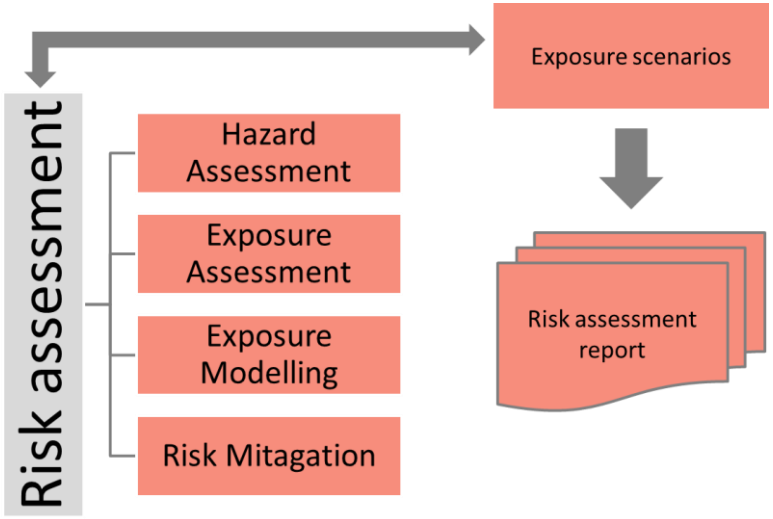


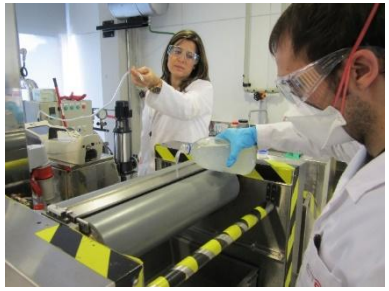

- LCA will allow:
  - Comparison between two scenarios: conventional vs nano-based processes.
  - Quantification of the environmental impacts.
  - LCA will provide useful information that will help to demonstrate the improvement reached by the application of the BATs or a good practice.
  - Specific results will be expressed by the impact categories selected (i.e. climate change…).

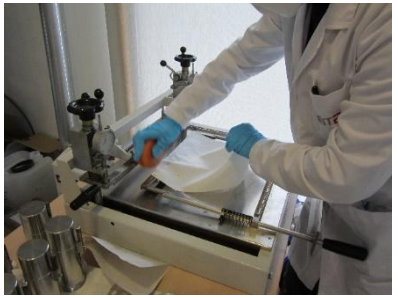
## Risk Assessment

To **assess the health and environment potential risks posed by the use of nanomaterials** due to handling and application of nanomaterials in finishing processes of textiles

- Risk Assessment involves:





- Risk assessment allows:

  - Measurements to characterize and quantify particle release over the key life cycle stages using nanoparticles and comparison with the release from conventional processes.
  - Evaluation of the effectiveness of a number of Risk Mitigation Strategies, including the use of different Local Exhaust Ventilation (LEV) systems for capturing airborne NPs and organizational procedures.

## EU Regulatory Assessment

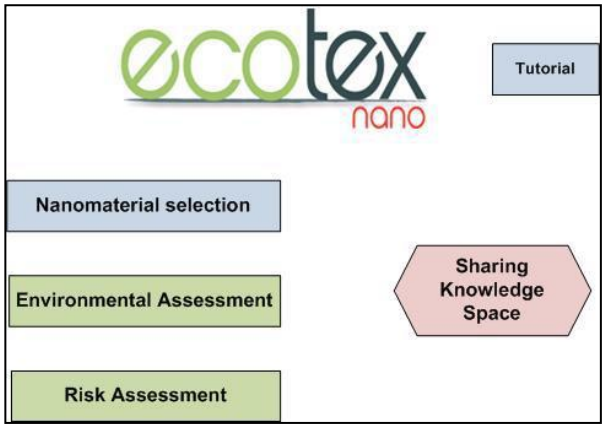
❑ ECOTEXNANO involves the analysis of the related EU regulatory context to elaborate recommendations for potential updating:

- The Reference Document on Best Available Techniques (BREF) for the Textiles Industry (current BREF from July 2003)
- REACH requirements for the registration dossier of nanosubstances
- Regulation (EU) 528/2012 concerning the making available on the market and use of biocidal products
- Handbook of Sustainable textile Purchasing
- …

**ECOTEXNANO results by September 2016: 2 key outcomes**

1. ECOTEXNANO TOOL

- Web-based Tool
- To provide the textile finishing industry a user-friendly tool to improve its knowledge on risk assessment of nanomaterials and to promote the safe and green use along their life cycle.
- To compare the nano-textiles and the conventional textile finishing products to quantify the achieved environmental and risks improvement.
- To serve as a basis for the further development of a network platform to share data with stakeholders including scientific committees, EU policy makers and international researchers, filling the knowledge gaps about nanomaterials in textiles.
- General structure:

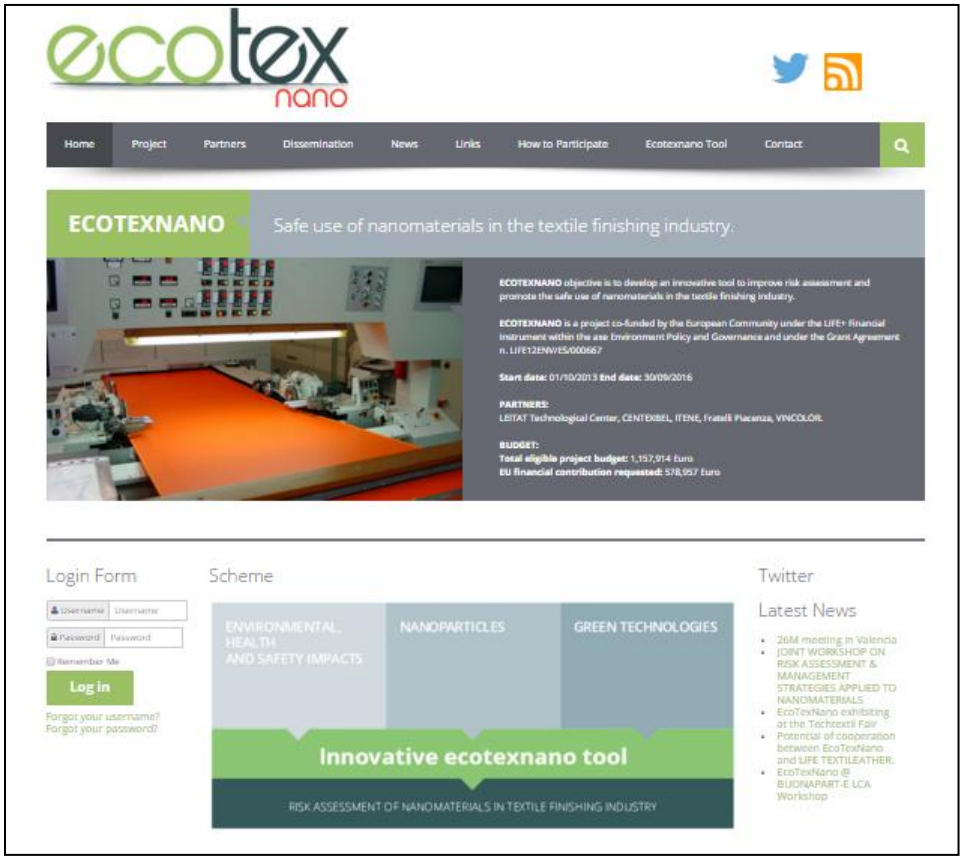



2. RECOMMENDATIONS for potential updating of BREF for textile industry, REACH and other environmental EU policy.

## ECOTEXNANO details

- ECOTEXNANO website

http://www.life-ecotexnano.eu/

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