

RESET – RESEARCH CENTERS OF EXCELLENCE IN THE TEXTILE SECTOR



ACTION PLAN FOR ROMANIA

PROJECT NUMBER	RESET - PGI00016
PROJECT DURATION	01 APRIL 2016 – 31 MARCH 2021
DISSEMINATION LEVEL	Public
PARTNER NUMBER & NAME REGION	PP9 INCDTP - Bucuresti Ilfov (RO)
VERSION	FINAL

CONTENT

1.	GENERAL INTRODUCTION	3
1.1	AIM OF THE RESET PROJECT	3
1.2	OBJECTIVE OF THE ACTION PLAN	3
1.3	REGIONAL ANALYSIS OF PARTNER REGIONS	4
2.	ACTION PLAN	5
	PART I – GENERAL INFORMATION	5
	PART II – POLICY CONTEXT	5
	PART III - DETAILS OF THE ACTIONS ENVISAGED	8
	ACTION 1	
	ACTION 2	

1. GENERAL INTRODUCTION

1.1 AIM OF THE RESET PROJECT

European textile and clothing sector is a most relevant economical source for the EU, accounting for 4% of the total added value of the manufacturing sector, with 173.000 companies and a turnover of 165 billion €. Its competitiveness is linked to increased investments in innovation and research both public and private which are key drivers for European companies to lead the market in the coming years. Due to its enormous environmental impact, sustainability and environment-friendly production is emerging as a new driver of textile process, product innovation and technology development. The overall objective of the project is to generate a policy change in the implementation of regional policies and programmes of the Structural Funds related to the strengthening of research, technological development and innovation to assure the sustainability of the T&C sector in the partner regions. It will be achieved through policy learning and capacity building activities on public policies supporting innovative, green and sustainable T&C production and processes. The learning potential embedded in **interregional exchange** will result in the **uptake of new Good Practices and projects by the partner regions** enabling to support excellence in R&D, to promote investments by enterprises, to develop innovative skills of T&C stakeholders, and in a deeper integration between research and innovation policies for the sector's sustainability. Sustainability driven research and innovation will concern primarily the production processes and product development and addresses **six key themes**:

// Recycling in textile and waste disposal

// Water consumption and energy saving, sustainable company organisations

// New sustainable chemistry, including reduction of chemical substances

// Smart textiles and new ways of production

// Eco-creativity, natural fibres, short value chains

// New materials and new applications

1.2 OBJECTIVE OF THE ACTION PLAN

An action plan in general is a sequence of steps that must be taken or activities that must be performed successfully for a strategy to succeed. An action plan has three major elements (1) Specific tasks: what will be done and by whom. (2) Time horizon: when will it be done. (3) Resource allocation: what specific funds are available for specific activities.

Produced by each region, the action plan of RESET project is a document providing details on how the lessons learnt during the project and from the cooperation with other partners and regions will be exploited in order to improve the policy instrument tackled within that region. It specifies the nature of the actions to be implemented, their timeframe, the players involved, occurring costs and potential funding sources.

1.3 REGIONAL ANALYSIS OF PARTNER REGIONS

Romania, structured into 8 regions: North-West (RO11), Centre (RO12), North-East (RO21), South-East (RO22) South Muntenia (RO31), Bucharest- Ilfov (RO32), South-West Oltenia (RO41), West (RO42), registered in 2017 a growth of 6,9% was due to domestic demand. The gross economy investments increased by 4,7% compared to 2016. The current account of the balance of payments registered in 2017 a deficit 77% greater compared to that of 2016, reaching a share in the GDP of 3.4%. The funding of the current account was performed in proportion of 72.7% through direct foreign investments, which reached the value of EUR 4.6 billion and were 1.4% greater compared to 2016. In 2017, the increase in goods exports was 9.1% compared to 2016, while imports increased by 12.2%. Under these circumstances, the commercial FOB-CIF deficit increased by 29.9% compared to the one recorded in the year 2016. The total number of employees increased by 2.6% compared to 2016. The ILO unemployment rate decreased from 5,9% in 2016 to 4,9% in 2017.

The Romanian Textile Sector: T&C sector in Romania is a core economic sector nationwide, country-wide, with elements of concentration in 4 regions (RO11, RO21, RO12, RO32), employing an important share of labor force, mainly women; has in its structure a high level of SMEs; is dependent on imports of raw materials; in the clothing subsector in recent years there has been a revival to the detriment of loans; has a low volume of production of the primary sector; is registering a low share of high technology investments; it has significant share in the national export economy. In 2016 T&C achieved the following shares in Romania's macroeconomic indicators: 2.14% of GDP, 3.66% of the industrial output, 7% of exports, 10% of employees in the industry. Currently, about 171.500 employees are working for T&C sector (21,5% in textiles and 78,5% in clothing sector).

In a European context, the competitive advantage of T&C sector in Romania is mainly due to low payment. If in the ranking of value added/employee, Romania occupies the penultimate place < 30% of the EU28 average, the added value relative to the total wage costs in industry exceeds the EU average for the T&C production. Compared to the country with the highest value added/employee in the EU, Romania does not exceed 12% of its performance. Romania also has a very low share of turnover in the EU, based on the large number of employees in the industry. This is due to an incomplete chain of added value where the links are missing.

Stakeholders: RESET project has build a stakeholder group which includes textiles and clothing manufacturers, the clusters of the textile & clothing domain, representatives from public institutions such as: Ministry of Economy, The Chamber of Commerce and Industry of Bucharest; Regional Development Agencies (RDA); industrial associations such as: Romanian Fashion Council, Reginnova NE Association; North Giurgiu Technological and Industrial Park and educational institutions such as Technical Gh. Asachi Iasi University.

2. ACTION PLAN

PART I – GENERAL INFORMATION

Project: **RESearch centers of Excellence in the Textile sector - RESET**

Partner organization (s) concerned: **P9- National Research & Development Institute for Textiles and Leather**

Country: Romania

Region (NUTS2):

Contact person: Doina Toma

Email address: doina.toma@certex.ro

Phone number: +40213404928

PART II – POLICY CONTEXT

The Action Plan aims to impact:

- ⊆ **X Investment for Growth and Jobs programme**
- ⊆ European Territorial Cooperation programme
- ⊆ Other regional development policy instrument

Name of the policy instrument (s) addressed: **Regional Operational Programme 2014-2020 of Romania**

The targeted policy instrument is Regional Operational Programme 2014-2020- Priority Axis 1 – Promotion of technology transfer, investment priority 1(b) having as specific objective the increase of innovation in SMEs through the support of innovation and technology transfer entities in the field of smart specialization. The ROP 2014-2020 finances under Priority Axis 1: Operation A “Innovation and Technology Transfer Infrastructures” investments in the development of innovation and technological transfer infrastructures and the acquisition of specific innovation technology transfer services in the benefit of companies from the smart regional sectors, including textiles and clothing. The total budget available, at national level is 36,74 MEUR; Operation B “ Scientific and Technology Parks” with a budget of 36,35 MEUR; Operation C “Investments for SMES for the implementation of a research result in cooperation with a technology transfer entity”. The budget available for Operation C is 35,77 MEUR.

The actions included in the Action Plan are targeted toward improvement of policy planning and its instruments, with a special emphasis on the Priority Axis 1 of ROP but without excluding others policy instrument that are essential for strengthening of research, technological development and innovation to assure the sustainability of the T&C sector in Romania as:

- ROP 2014-2020, Priority Axis 2/ Improving the competitiveness of SMEs, Priority 2.2 - Supporting the creation & the extension of advanced capacities for product & service development- with a budget of 537,47 MEUR.
- ERDF Operational Programme Competitiveness 2014-2020; Priority Axis 1 - Research, Technological Development and Innovation (RDI) supporting the economic competitiveness and business development/Investment Priority 1.1 Specific Objective: 1.3 Increasing private investment in RDI 1.3 Increasing private investment in RDI; Action: 1.2.1 Stimulating companies' demand for innovation through RDI projects undertaken by companies individually or in partnership with R & D institutes and universities for the purpose of product and process innovation in the economic sectors presents potential for growth/ Project type: Innovative technological project.
- The National Plan of Research-Development and Innovation 2015 – 2020 (NPRDI III)
- New Industrial Policy Document of the Ministry of Economy. including cluster policy which sets priorities and directions for reindustrialisation of Romanian.

The National RDI Strategy 2014-2020 identifies, as part of the RIS3 analysis done at the regional level, regional areas of excellence (with important economic role and influence on employment) and their correspondence with areas of specialization. T&C sector has been identified as regional specialization area in 4 of the 8 regions of Romania (North East, Centre, West, South-East) corresponding to smart specialization area, namely eco-nano-technologies and advanced materials. Intelligent development of the T & C sector implies a strategic reorientation from production based on high volume and low added value to innovation-based production.

One of the major problems of the Romanian economy is the low level of innovation as constantly shown by European Innovation Scoreboards. Furthermore, the innovation performance has declined over the last 7 years (2010-2017). R&D expenditures in the public sector were only 10.1% of the EU average in 2017, R&D expenditures in the business sector scored a modest 17.6% and innovative SMEs cooperating with others only 5.6% of the European average. To be noted that Romania ranks last concerning the vector “Innovators” (SMEs product/process innovations, SMEs marketing/organisational innovations and SMEs innovating in house). (<https://ec.europa.eu/docsroom/documents/30697>).

Against the tide, and as a solution to the problem, comes the tremendous cluster development in Romania. With 72 clusters recorded by the Ministry of Economy, 42 cluster members of the Romanian Cluster Association, 2 ESCA Gold labelled clusters, 11 ESCA silver labelled clusters (2 valid in January 2019), 57 ESCA bronze benchmarked clusters (24 valid in February 2019), it is one of the European champions. This is an outstanding performance given the rather incoherent public support.

Regarding international cluster visibility, Romania ranks also on top. It started in 2012 with the first national cluster conference, arriving in 2018 at its 7th edition. In 2015, Romania hosted also the Balkan & Black Sea Cluster Conference, in 2017 the North Western Cluster Consortium has co-organised the European Open Innovation 2.0 Conference, and 2018 saw the Joint Romanian-Hungarian Cluster Conference as the first European event of the EU Cluster Weeks Series, while in 2019 Romania will host the European Cluster Conference.

Textile Clusters are the most active ones as the innovation gap between Western and Eastern Europe is even bigger in traditional sectors. In addition to that, the new 2014-2020 EU Smart Specialisation approach has put an additional pressure on the weaker “low skilled – low tech” economic sectors of the Eastern side by restricting their access development instruments, e.g. EU structural - and national funds. Consequently, they

are faced with the critical decision of becoming “smart” sectors or dying out. While being well known that innovation processes are always accompanied by losing parties, it is also worth being noticed that these traditional sectors such as textiles, wood processing or agro-food are among the largest employers in Eastern European economies and their extinction will lead to tremendous social problems. In addition to that in value-chains spanning all over Europe, not only the innovation gap but also the technological one is increasing; the implementation of Industrie 4.0 processes in Germany and Austria not accompanied by similar measures in the East will render cooperation between companies more and more difficult leading to negative effects on innovation and internationalisation aspects of Eastern SMEs leading to more competitiveness losses

Hence, the 4 Romanian textile clusters (Romanian Textile Concept, ASTRICO North East, Transylvania Textile & Fashion and Traditions-Manufacture-Future) have embarked on an innovation journey, supported by INCDTP as catalyst of innovative processes.

With the background collected from the lessons learnt during the RESET implementation and from the cooperation with other partners and regions as also, with the involvement of stakeholders, INCDTP defined an action plan that aims to influence the Policy Instrument addressed through the implementation of new projects oriented towards the sustainability of the production processes and product development.

For the creation and improvement of the necessary RDI infrastructure to develop green and sustainable textile and clothing products and process in Romania, the Action Plan contains in particular two actions: *Action 1: Sustainable T&C production & innovative textile* and *Action 2: Reinforced domestic T&C value chains based on innovative clusters.*

PART III – DETAILS OF THE ACTIONS ENVISAGED

ACTION 1

Name of the action: Sustainable T&C production & innovative textile

The objective of the action is to develop and implement new projects for promoting of new methods which lead to the increase of the added value of the products made by companies, to the efficient use of the resources, both material and energetic.

1. Relevance to the project *(please describe how this action derives from the project and in particular from the interregional exchange of experience. Where does the inspiration for this action come from ?)*

- Textile & Clothing in Romania: is a traditional “low-skilled - low-tech” branch based on loom whose main engine for value-added is innovation by use of eco-nanotechnologies and advanced materials (highlighted in National Strategy for RDI 2014 -2020);
- The main weaknesses of innovation and technology transfer in Romania are: little cooperation between firms and R&D Institutions, low level of SMEs participating in knowledge transfer activities and low technology transfer rates;
- Enhanced SMEs competitiveness should be supported by investments in address highly

innovative technologies and their transfer;

- During the implementation of the project, from GPs examples promoted within the RESET partnership, one could learn that sustainability is a crucial aspect of research and innovation processes in partner regions in the textile and clothing industry.

As part of the project implementation good practices (GPs) were collected, discussed and approved by RESET partnership. INCDTP selected relevant ones from the list of the collected GPs. Selected GPs were introduced and examined through staff exchange visits, and assessed in regional stakeholders meetings in Romania if and how they are transferable.

The set of the GPs providing learnings to Action 1 offer replicable elements and methods which lead to the increase of the added value of the products made by companies as well as to the efficient use of the resources, both material and energetic.

The following Good Practices were selected for **Action 1**:

- *Sustainable Textile Finishing Using Ozone and Nanobubble – ES*
- *Integrated Fashion Project for Eco-Sustainable Products – IT*
- *Smart Armour – new idea of the smart personal protections – PL*
- *Seab2 - Clothing system with integrated inflation – PT*
- *ACCLITEXSYS - ACCLImatisation TEXTile SYStem: New Materials and New Applications for Defence – PT*
- *Nanostructured textiles to promote cell growth in severe burn injuries – ES*

1. Sustainable Textile Finishing Using Ozone and Nanobubble: This Good practice was presented by AITEX during the 3rd thematic seminar on "New sustainable chemicals, including reduction of chemical substances" in Bucharest (RO) and during Staff exchange visit in Alcoy & Valencia (ES). Main problem addressed is the massive consumption of chemicals and water in textile finishing processes applied on fabrics or garments. Processes like desizing, bleaching, washing (roll-to-roll systems on fabrics) and dip-coating functionalization or dyeing (batch systems on garments) are currently developed by wet application systems and chemicals that require huge amounts of water and treatment of the waste-water released. This Good Practice - use of alternative chemistry like ozone for fabric treatment in a continuous way, and use of nanobubble technology for garment finishing- is able to reduce the chemical consumption -also water consumption- in comparison with traditional systems. The development and first stage implementation of the good practice and the involved technologies has been done through national and EU R&D projects, and last stage is the implementation on companies (direct selling and installation of finishing systems on textile companies). *The lessons learnt from this GP are: a) application of e-flow, ozone and laser technology requires investments in related equipment's; b) impose to carry out intensive research and development activities on interested companies premises, to obtain the same results as in the traditional techniques.*

2. Integrated Fashion Project for Eco-Sustainable Products: This Good practice was presented by NTT during the 3rd thematic seminar on "New sustainable chemicals, including reduction of chemical substances" in Bucharest (RO). The aim of GP was to realize products with high technological content and low level of environmental impact thanks to the combination of experiences and technology gained in different areas of fashion: textiles, tanning, footwear and furniture. The final goal of the project was to break down the manufacturing systems barriers in order to share the know-how and the various skills of the different sectors that compose the fashion industry. Through the combination of the data from the different sectors, it will be possible to get products that fully

meet the market needs in terms of eco-sustainability. *The lessons learnt from this GP are: a) the technologic transfer has been possible also with the support of research centers and with the collaboration of the enterprises that have participate to the study process; b) Companies that will implement a similar approach, will have a growth in their technical skills and a wider possibility in market penetration.*

3.SmartArmour – new idea of the smart personal protections: This Good practice was presented by Lodz Region during the 4th thematic seminar “Smart textile and new ways of production” in Chemnitz (DE). The GP was focused on designing modern nanostructural body armour with application of rheological fluids and implementing it into the industrial practice. The new idea of the passive armours with colloidal fluid and with magnetorheological fluid, for human protection enables a production of much more flexible and lighter composite structures which allow for moving, while getting thick and hard immediately upon strong hit (bullet, knife), or exposed to magnetic field. So, they increase wearer’s comfort. But the application of the rheological fluids improves also the functionality – the resistance of personal protections to hits with a bullet or knife. *The lessons learnt from this GP are: a) Smart personal protections are considered as a new generation of textile products applicable in smart protections actively providing support in fields of safety or health. They are high-tech and highly specialized products with a high added value. b) GP idea is easily adaptable to other products made of the above-mentioned materials*

4.Seab2 - Clothing system with integrated inflation: This Good practice was presented by CITEVE during the 4th thematic seminar “Smart textile and new ways of production” in Chemnitz (DE). The development of SeaB2 - a smart protective garment with an inflation device completely unnoticeable and automatically inflated when it hits the water, that combines functionality with an appealing, comfortable and practical design is of high importance for the safety of maritime environment users. User-centered design methodology, characterized as a multi-stage problem-solving process, was used to optimize the product around how users can, want, or need to use the product. *The lessons learnt from this GP are that a) SeaB2 developed for three main applications: sailing, fishing and nautical sports and recreational activities but it has raised the leverage effect to the development of a wide range of other smart PPE garments; b) the user-centered design methodology used and the interactive, articulate and dynamic work plan envisaged are transferable also to other products, regions and countries.*

5.ACCLITEXSYS - ACCLImatisation TEXTile SYStem: New Materials and New Applications for Defence

This Good practice was presented by CITEVE during 6th thematic seminar “New materials and new applications” in Huddersfield (UK). ACCLITEXSYS aimed to study the conceptual development and evaluation of different technological approaches for the stabilization of the soldier’s body temperature. The main goal was to study the feasibility of a new acclimatisation textile system, regarding active and passive technologies that can act as a temperature regulator by monitoring and responding to the soldier’s body needs, considering different environment conditions. The active thermal regulation system was studied considering a fast and efficient thermal reversible solution (hot/cold). For that it was studied the feasibility of using based textile Peltier elements, air or liquid channels, forced air like micro fans or pumps. The system requires wearable electronic devices for data acquisition (temperature body sensors), monitoring and a power supply unit. The passive thermal regulation system was studied regarding the potential of spacer fabrics, deploying 3D structured fabric technologies. The main motivations are: to develop light weight space fabrics able to improve human body thermal regulation; to use a technical textile that can have multifunction’s like compressibility, flexibility, air channels, moisture management, thermal resistance, in order to

have one textile suitable for hot and cold climates. *The lessons learnt from this GP are: a) ACCLITEXSYS has developed 2 innovative proofs of concept, both using 3D spacer fabrics as a very innovative textile solution for passive thermal regulation.; b) despite the proofs of concept were developed for military, they can easily be transferred to other type of users as workers or people in cold and/or hot environments; c) 3D spacer fabrics developed have a high potential for exploitation in various applications: personal protective clothing or equipment's, bulletproof vests, impact protectors, thermal regulation materials for home and vehicles, among others.*

6.Nanostructured textiles to promote cell growth in severe burn injuries: This Good practice was presented by AITEX during the 4th thematic seminar "Smart textile and new ways of production" in Chemnitz (DE). The GP aims for a textile-based media for severe burn injuries, developed by novel electrospinning technology, which promotes cell growth of the skin better than current solutions. This GP reach its objectives starting from a researching work on bio-compatible polymers to be electrospun, the development of suitable nanotextiles (nanofibers) in a web form and the implantation and validation - in a preclinc stage- of these nanoweb for treating some severe injuries on the skin. Final implementation and validation will be done on humans. *The lessons learnt from this GP are: a) electrospinning is a mature technology and some EU producers of end-products and machinery can be easily found; b) intensive collaboration between partners with different profiles is required; c) possibilities to launch R&D and cooperation projects at national/EU level.*

2. Nature of the action (please describe precisely the content of action 1. What are the specific activities to be implemented)

The actions undertaken by INCDTP envisage 2 levels:

- At policy level, establishment of new/development of existing technology transfer centres which should encompass in their spectrum of services the transfer of sustainable T&C products, processes and services from research providers towards the SMEs;
- At SME level, enhanced innovation level via collaborative projects and investments in new equipment/technologies, etc.

Following activities are being followed:

Activity 1.1 Initialisation of joint research projects between industry & research centres

In the frame of bilateral discussions, the innovation needs of the SMEs have been identified and according solutions have been and will be proposed, based on the INCDTP experience and the exchange of RESET good practices. As an example:

- A project proposal "CareKnits" was developed by INCDTP in collaboration with one knitting company (Datsa Textil) which was influenced and based on GP presented by AITEX - "Sustainable Textile Finishing Using Ozone and Nanobubble". The project aims at developing new processes & products for the company (production of functional knitted textile and introduction of a new ecological finishing technology). The project proposal was submitted for funding through the ERDF COP/ Axis 1, and now is under evaluation. The total budget of project proposal is 1.602.170 Euro of which 1.022.500 Euro funded by ERDF.
- 2 collaborative research projects were developed by INCDTP and 2 SMEs from clothing sector: "Innovative IT technology for design & personalization of PPE" (MENTOR SRL) and "Innovative concept for personalized pattern design of PPE" (MATEI CONF GRUP SRL) which were inspired and influenced by GP presented by CITEVE "Seab2-Clothing system with integrated inflation"

and the GP presented by Lodz Region “SmartArmour-new idea of the smart personal protection”. The R&D activities of the projects were funded from national funds through the NRDI Programme III. For the acquisition of the equipment and installations necessary to transfer the research results obtained during the projects, the SMEs submitted 2 projects funded through ERDF ROP/Axis 2 Improving the competitiveness of SMEs/I.P.2.2. Supporting the creation & the extension of advanced capacities for product & service development/Call 1 published on 23/02/2017 and the deadline for submission of project proposal was 30/08/2017; the total amount of available funds (at national level) was 537,47 million Euro. The first project under implementation by MENTOR SRL, was approved on 21/12/2017; has a total budget of 472.520 Euro of which 188.925 Euro funded by ERDF ROP; the duration of the project is 36 months. The second project under implementation by MATEI CONF GRUP SRL, was approved on 10/08/2018; has a total budget of 2.832.169 Euro of which, 852.654 Euro funded by ERDF ROP; the duration of the project is 36 months.

Performance indicators (KPI) to monitor this activity are:

- No of innovation project with follow up ERDF
- No of enterprises cooperating with research institutions
- % of innovative SMEs that have collaborated with others

Activity 1.2 Support for creation of regional technology transfer infrastructure in T&C sector

The National Strategy for RD&I (2015-2020) encourages the development of an innovation ecosystem through public-public and public-private partnerships to increase the transfer of knowledge. These partnerships would stimulate innovative entrepreneurship and a more active of firms in research and innovation activities. This is an action meant to strengthen links between R&D centres and innovative firms to a better exploitation of R&D results and to increase competitiveness at enterprise level.

In these context a project proposal for creating & organizing a regional technology transfer infrastructure (TTI) was developed by Romanian Textile Concept Cluster which was inspired by business models and the good examples of the collaboration actions between research centers and SMEs from other partner regions of the project, in particular from Valencia Region (ES), provided by GPs exchanged within RESET and by staff exchange visit in Alcoy and Valencia. The aim of project proposal is to provide facilities and technological services for T&C SMEs. INCDTP is the innovation provider on the strategic themes of RESET project. The project proposal with a value of 168.000 Euro, ERDF contribution is in the preparation phase to be submitted for funding through the ERDF ROP/Axis 1, Operation A/ Support TTI Entities. The call was published on 20/8/2018 and the deadline for the submission of project proposals is 20/04/2019; the total amount of available funds (at national level) is 36.74 million Euro. Since a specific objective of ROP/Axis 1 is to increase innovation in firms by supporting the technological transfer Innovation entities in RIS3, the realization of a new TTI has a very positive effect on the realization of this Policy Instrument

Performance indicators (KPI) to monitor this activity are:

- No of Technological Transfer infrastructures with follow up ERDF
- No of technology transfer services/activities intermediated

Activity 1.3 Introduction of research topics on sustainable T&C and innovative textiles into

national research programmes.

Based on the RESET GP examples new research topics were/will be addressed / introduction into national research programmes. In this regard:

- 2 R&D projects (“Advanced multifunctional logistics, communications and protection systems to improve the safety, operability and efficiency of emergency workers/ SiMaLogPro” and “Integrated multifunctional systems based on nanocomposites and pharmacodynamic therapeutic agents for various skin conditions/BIOPANTEX”), inspired and influenced by GP presented by CITEVE “ACCLITEXSYS - ACCLImatisation TEXTile SYStem: New Materials and New Applications for Defence” and GP presented by AITEX “Nanostructured textiles to promote cell growth in severe burn injuries”, were developed by INCDTP and it is funding through The National “Nucleus’ Research Programme.

The results of R&D projects inspired by RESET developed and funded by national research programmes will give input to next ERDF calls dedicated of the investments in infrastructure of T&C enterprises.

Also, the institute will organise thematic workshops where new research ideas and production applications will be generated through direct discussions with members of textile and clothing companies.

Performance indicators (KPI) to monitor this activity are:

-No of research projects developed in partnership

-No of new/ innovative products/processes developed

-No of information sessions organized by institute

3. Stakeholders involved (please indicate the organisations in the region who are involved in the development and implementation of the action 1 and explain their role)

- **The Regional Development Agencies** are intermediate bodies of the Regional Operational Programmes. In addition to that they elaborate the regional development plan and the regional specialisation strategy. Targeted by the action plan are the RDAs North East, South East, Centre and South where strong textile clusters are to be found;
- **Romanian Textile Concept** is a silver labelled cluster acting mainly in the South Region of Romania. It is an industry driven clusters made up mostly of SMEs acting in the textile sector with a particular emphasis put on innovation and developing of the production spectrum towards technical textiles and fashion.
- **North Giurgiu Technological and Industrial Park** which manages the business infrastructure and offers advice to located companies, including from the T&C sector
- **Technological and Business Incubator ITA TEXCONF** which support the development of private sector through innovation and technology transfer of the research in T&C.
- **Textile & clothing companies**

4. Timeframe (please specify the timing envisaged for action 1)

Activity 1.1: 2018 -2021

Activity 1.2: 2019 -2021

Activity 1.3: 2018 -2021

5. Indicative costs (please estimate the costs related to the implementation of action 1)

Activity 1.1: 1.000.000 EUR+ 1.000.000 EUR + 1.072.000 EUR

Activity 1.2: 168.000 EUR

Activity 1.3: 2000 EUR

6. Indicative funding sources (please describe how action 1 will be financed is it through the policy instrument (s) indicated in part II)

Activity 1.2: Competitiveness Operational Programme/ Axis 1- Research, Technological Development and Innovation supporting the economic competitiveness and business development/Action 1.2.1/ Project type-Innovative technological project + Regional Operational Programme/ Axis 2- Improving the competitiveness of SMEs/ Priority 2.2. Supporting the creation & the extension of advanced capacities for product & service development

Activity 1.2: Regional Operational Programme/ Axis 1/Operation A – Support Technological transfer Innovation Entities

Activity 1.3: National RDI Programme III + National “Nucleus Program

ACTION 2

Name of the action: Reinforced domestic T&C value chains based on innovative clusters

The objective of the action is to develop and implement new projects for promoting sustainable textile and clothing value chains. It will be explored the opportunities provided by eco-creativity, processing and capitalizing the natural fibres in value-added textiles through sustainable technologies, inspired by GP identified by RESET for the development of new projects funded by ERDF/national/international funds.

1. Relevance to the project (please describe how this action derives from the project and in particular from the interregional exchange of experience. Where does the inspiration for this action come from ?)

The complete integration of a domestic textile value chains – as it was the case in the former communist times – is utopic and economically not rational. New industrial value chains have to be based on cross-sectoral approaches and aspects of circular economy.

The set of GPs providing learnings to Action 2 offer replicable elements and solutions by eco-creativity, processing and capitalizing the natural fibres in value-added textiles through sustainable technologies. The following Good Practices were selected for **Action 2**:

- MUFTEX- textiles and protective clothing and health care sector – CZ
- Detox: from threat for brands to opportunity for labs and manufacturers – IT
- Hospital Service Textiles - New Tools employing Bio and Smart Aiming at Dematerialization and Circular Economy – CZ
- BleNaBIS (CORNET) – Complex utilization of natural (linseed flax waste) and biosynthetic (PA) fibres – step forward to the bioeconomy and textile resource sustainability – CZ
- WOOL4BUILD - Isolation material for eco-building based on natural wool – ES

- *The World's only Natural FR System – GB*

7.MUFTEX- textiles and protective clothing and health care sector: This Good practice was presented by CLUTEX during the 3rd thematic seminar on "New sustainable chemicals, including reduction of chemical substances" in Bucharest (RO). The main objective of GP was the research and development of textiles with new functional properties (functional samples) based on the combined solution by selecting the material structure and processing methods (proven technology), extend the offer to the specific requirements of the user committee and deepening consortium cooperation within the cluster. The project has several parts. One parts is focused on multifunctional barrier fabric. One sub-goal has been focused on the fabrics with flame retardants. The results is TEXAFLAM DFR - the innovative eco-friendly P/N-based formaldehyde and halogen/Sb O - free flame retardant finishing system suitable for cotton and PES-rich Co/PES blends has been developed and optimized. *The lessons learnt from this GP are: a) Sustainable chemistry (not only in textile industry) is long term social objective; b) funding of research projects through clusters; c) application technology don't need special equipment, it is applicable on a common finishing device.*

8.Detox: from threat for brands to opportunity for labs and manufacturers: This Good practice was presented by Commune di Prato during the 3rd thematic seminar on "New sustainable chemicals, including reduction of chemical substances" in Bucharest (RO). Several chemical substances have always been used to make clothes, which through water discharges and household care can be harmful for the environment and toxic for human health. To protect fresh and sea water resources, in 2011 Greenpeace launched the Detox campaign, aimed at having cleaner and toxic-substances-free fashion. 11 groups of substances were selected to be eliminated as a priority. They include compounds used in the textile sector and to which several restrictions applied. Now, the list has grown to around 430 compounds. In Prato cluster (Tuscany), local business association Confindustria Toscana Nord (CTN) has created a consortium to support a group of 27 committed companies since early 2016 and launched a Consortium for Detox Implementation, in October 2016. *The lessons learnt from this GP are that: a) for the moment, only three Detox committed manufacturers are located outside Italy; two of them relate to Italian groups, one in Romania and one in Tunisia. The third one is in Lithuania; b) there a lot of space for research activities in the quest for alternatives for substitution; c) there is a space and a need for pre-competitive activities at business cluster/association levels, to: program coordinated monitoring; gather resources for the research of alternatives to potentially harmful chemical formulations, share information and good practices on common chemical problems.*

9.Hospital Service Textiles - New Tools employing Bio and Smart Aiming at Dematerialization and Circular Economy: This Good practice was presented by CLUTEX during 6th thematic seminar on "New materials and new application" in Huddersfield (UK). Hospital service textiles (HST) represent one of rising textile market commodity, typical high volumes in daily use of hospital care and related institutions became part of health care, comfort and safety products with rising societal impact consequently with ageing of population. Often being categorized as PPE they are chosen by public tenders. Resulting from it combination of high quality and rising demand for functionality and comfort by extended durability (service life) require a complex innovation solutions including the whole chain of producers-users (nursery, medical staff and patients) x maintenance (laundry services – more often the shared/leasing system based) and supporting (more and more to the integrated ICT tending) actors. Actually – the disproportion between the lowest possible purchasing price (in case of public tenders) and requested parameters initiated a joint innovation action to

solve these problems. Long term joint activity of (2) textile development centers – large Prague and regional hospitals and laundry services opened space for a systematic approach - from optimized fabric constructions, finishing (functionalization) to the daily use in real conditions and industrial laundry testing. Future need of dematerialization and circular economy practices did get a new dimension to this long term study. Results document that replacement of purchasing price criteria with cost per one cycle of use can help to find new way to the added value market. *The lessons learnt from this GP are: a) Hospital service /elderly people life standard improving textiles are a steadily used volume textile products for special purposes. Functionality, comfort in use and design must be accompanied by the acceptable prices; b) Multidisciplinary approach and complex producer-service-users cluster solution leading to the optimizing the costs by prolonged service life and dematerialization of the whole production/product chain only can help to the acceptability on the highly competitive volume market; c) Simultaneously –the interdisciplinary activities from research to the implementation help to understand each other need and speed process of development and evaluation of innovative materials.*

10. BleNaBIS (CORNET) – Complex utilization of natural (linseed flax waste) and biosynthetic (PA) fibres – step forward to the bioeconomy and textile resource sustainability: This Good practice was presented by CLUTEX during the 5th thematic seminar on “Eco-creativity, natural fibres, short value chain” in Lodz (PL). BleNaBis project aims to develop an innovative yarn from oil flax straw (a waste stream obtained during the harvesting of oil flax) and bio-based polyamide (BioPA). This innovative, blended yarn will enable the production of home textiles showing less environmental impact but are qualitatively and economically competitive with traditional product equivalents. This will be demonstrated within the BleNaBis project choosing the pile yarn material of a carpet as the application for the innovative blended yarn. This demonstration offers high potential for reducing greenhouse gas emissions since the production of conventional pile yarn causes 45 % of the Global Warming Potential (GWP) for the total carpet. *The lessons learnt from this GP are: a) the multidisciplinary approach – collaborative research between farmers, processors, bio-industry and textile sector – this is an advantageous step in the early stage of coming bio-economy era with potential chances to utilize results within the next R&D projects; b) close collaboration with industrial partners helps to tailor new processing/finishing methods to be manageable on existing technology devices with minimum dependence on starting investments; c) new materials will help to cut off the nowadays strong dependence of textile sector on limited fossil resources, extending space for rural local productions and sustainable resourcing.*

11. WOOL4BUILD - Isolation material for eco-building based on natural wool: This Good practice was presented by AITEX during the 5th thematic seminar on “Eco-creativity, natural fibres, short value chain” in Lodz (PL). In the construction sector, where we can find different types of materials and technical solutions, there is an increasing demand for more environmentally friendly products that keep their natural properties. Beside the most common mineral insulation, there is a variety of natural and sustainable materials attempting to claim their space in the world market. These organic materials have very interesting technical features but are harshly penalized by having to compete with materials manufactured on a large scale. The aim of WOOL4BUILD project has been to develop a sustainable product for buildings insulation based on the wool wastes produced in the tannery industry, with improved performance in the acoustic and thermal insulation values. WOOL4BUILD products provide a number of environmental advantages, such as reduction in the consumption of non-renewable resources and less building waste, making them the ideal materials for sustainable construction and environmentally friendly building. *The lessons learnt from this GP are: a) the use*

of by-products and wastes to create new products in the same operation field of the company or in another different sector is a way to make shorter value chains; b) WOOL4BUILD is a sustainable alternative vs synthetic isolation materials available in the market; c) legal framework should be considered from the beginning of a new product development. It is necessary to obtain a product compliant with standards that can be tested in a real environment during the project development, this is important to offer enough guarantees to the market and the potential users.

12. The World's only Natural FR System: This Good practice was presented by TCoE during the 5th thematic seminar on “Eco-creativity, natural fibres, short value chain” in Lodz (PL) and during Staff exchange visit in Huddersfield (UK). The use of chemicals to create a Fire Retardant fabric is commonplace and as such creates a practice that has a lasting effect on the Environment. Due to continually changing Regulations and Legislation, new chemistries must be found to replace those that have been deemed no longer suitable, and banned. These new chemistries are still in their infancies and are not as efficient as those they are replacing, and potentially still harmful to the Environment. The Good Practice utilises the long held knowledge that Wool is a very good Fire Retardant fibre and by blending it with fibres such as Hemp, Jute or Nettle Fibres, the resultant yarn or fabric enhances the properties of each fibre and creates a FR fabric which is greater in efficiency than if the fibres were used individually rather than as a blend. The fabrics have been fully tested to recognised ISO, EN, BS Standards and pass all the relevant test procedures to ensure their safety. *The lessons learnt from this GP are: a) The use of Wool and Bast Fibres make the products eco-friendly, whilst manufacturing costs of spinning and weaving stay the same; b) from concept design to manufacture, these products show an industrial balance in creativity, eliminating harmful chemical use but giving the same level of protection as before; c) this is a totally innovative practice, which shows an effective use of nature's resources without the need for harmful manufactured chemistries*

2. Nature of the action (please describe precisely the content of action 2. What are the specific activities to be implemented)

The actions undertaken by INCDTP envisage 3 levels:

- At policy level, embedment of the T&C value chain approach into the Regional Development Strategies/S3 of the Regions NE, Centre, SE, South and at national level;
- At cluster level, support to their integration into regional (Danube) and European T&C value chains.
- At SME level support to their integration into new industrial value chains.

Following activities are being followed:

Activity 2.1: Regional debates on the T&C value chains in each envisaged region (First one was held in Piatra Neamt on the 15.02.2019)

The aim of the debate was to: map together with a relevant number of companies and clusters the regional value chain within the field of T&C; identify key factors of change in the value chain in view of sustainability. This mapping will lead to the identification of a number of challenges and needs that could benefit from.

Several other regional debates will be organised in the other regions with a strong T&C sector (South East, Centre, South) as well as at national level.

Performance indicator (KPI) to monitor this activity is:

-No of regional meeting organized by institute

Activity 2.2: Elaboration of the point of view of INCDTP on the role of T&C value chains in the new regional development strategies/S3 and national industrial policy which will be discussed in a national conference organised in 2020

A position paper will be elaborated based on:

- Analysis of existing trends at national, regional and international levels;
- Capitalisation of the results coming from the regional debates;
- Fine tuning after the national conference

The position paper will be submitted to the Ministry of Economy as a valuable input towards “the longer domestic value chains based on innovative clusters” objective of the new industrial policy, containing also concrete financial and non-financial support measures.

Performance indicator (KPI) to monitor this activity is:

-Position paper integrated into the Industrial Policy Document

Activity 2. 3: Support to T&C SMEs for their integration in existing or new value chains

Based on the RESET GP examples new research projects were/will be initiated using ERDF /national/ international funds.

As an example: un collaborative research project was developed by INCDTP and a textile SME (Cora Trading& Services SRL) “Optimisation of the range of wool nonwoven fabrics for thermal and sound insulation” inspired and influenced by GP presented by AITEX “ WOOL4BUILD - Isolation material for eco-building based on natural wool” The project was funded from national funds through the NRDII Programme III.

Performance indicators (KPI) to monitor this activity are:

- No of research projects developed

- No of new enterprises integrated into value chains at cluster level

-% of innovative SMEs that have collaborated with others

Activity 2.4: Support to clusters participating in/own participation of INCDTP in relevant EU value chain targeting calls (INNOSUP, DTP etc.).

Based on the experience it has developed over the years in accessing national and European RDI projects, INCDTP will support the integration of Romanian T&C clusters and SMEs into relevant international value chains by:

- Identification of suitable calls and continuous information on available opportunities;
- Support in finding relevant partners and project consortia;
- Own participation to relevant projects in order to scale up already achieved results and to overcome identified gaps

As an example stands the DTP Project proposal, call 3 /2019 “Business Model Innovation Services for the T&C Sector/ DanuWear” aims to improve the framework conditions for Creativity-driven Business Model Innovation in the Danube area, primarily in but not limited to the Textile & Clothing sector. The consortium set-up North-East Regional Development Agency (LP, RO), INCDTP (RO), Reginnova NE Association (RO) and other partner from: SI, SL, DE, HU, HR, BA, IT, BE has already submitted a first step - Expression of Interest (EoI)

*Performance indicator (KPI) to monitor this activity is:
-No of submitted project proposals*

3. Stakeholders involved (please indicate the organisations in the region who are involved in the development and implementation of the action 2 and explain their role)

- **Ministry of Economy:** The Ministry of Economy is the central public authority responsible for the industrial policy; in 2018, the Ministry has launched the new industrial policy document, considering increasing the lengths of domestic value chains. In addition to that, the Ministry is coordinating the competitiveness and cluster policy at national level;
- **The Regional Development Agencies** are intermediate bodies of the Regional Operational Programmes. In addition to that they elaborate the regional development plan and the regional specialisation strategy. Targeted by the action plan are the RDAs North East, South East, Centre and South where strong textile clusters are to be found;
- **The Romanian Cluster Association** is the main platform of cooperation, exchange of information and support towards development of the national cluster landscape based on innovation and internationalization;
- **Romanian Textile Concept** is a silver labelled cluster acting mainly in the South Region of Romania. It is an industry driven clusters made up mostly of SMEs acting in the textile sector with a particular emphasis put on innovation and developing of the production spectrum towards technical textiles and fashion;
- **Traditions. Manufacture. Future** is a bronze labelled cluster acting in the South East of Romania, bringing together T&C SMEs in the region, with a particular interest in circular economy aspects;
- **ASTRICO North East** is a bronze labelled cluster generated around the biggest Romanian fibre producer, RFIL, in the North East region. The cluster has already started the process of improving its position on the value chain by creating an own acquisition/distribution company;
- **Transylvanian Textile Cluster** is a bronze labelled cluster in the Central Region of Romania. A particular emphasis is put on the cross-sectoral collaboration (especially with wood and energy clusters in the region)
- **Textile & clothing companies**

4. Timeframe (please specify the timing envisaged for action 2)

Activity 2.1: 2019

Activity 2.2: 2019-2020

Activity 2.3: 2018-2020

Activity 2.4: 2019-2021

5. Indicative costs (please estimate the costs related to the implementation of action 2)

Activity 2.1: 1000 EUR

Activity 2.2: 1000 EUR

Activity 2.3: 1.000 EUR

Activity 2.4: 200.000 EUR

6. Indicative funding sources (please describe how action 2 will be financed is it through the

policy instrument (s) indicated in part II)

Activity 2.1: RESET & own costs
 Activity 2.2: RESET & own costs
 Activity 2.3: National RDI Programme III/ ERDF & own costs
 Activity 2.4: project budgets

MONITORING OF THE ACTION PLAN – INDICATORS

The monitoring of the implementation of the proposed actions will be in regular basis, both within the region according the steps defined in the action plan and also informing the RESET partners on regular through telco and meetings for mutual advice and for streamlining interregional elements. INCDTP will be responsible for the monitoring of the Action Plan implementation

Dashboard for monitoring the RESET Project in Romania

Action	Source	Method	Base	Ambition
1. Sustainable T&C production & innovative textile				
1.1 Initialisation of joint research projects between industry & research centres				
Number of innovation project with follow up ERDF	MA/RDAs	records	0	>2
Number of enterprises cooperating with research institutions	INCDTP/ Clusters	records	0	.>5
% of innovative SMEs that have collaborated with others		records		3%
1.2 Support for creation of regional technology transfer infrastructure in T&C sector				
Number of Technological Transfer infrastructures with follow up ERDF	MA/RDAs	records	0	1
Number of technology transfer services/activities intermediated	INCDTP	records	0	>2
1.3 Introduction of research topics on sustainable T&C and innovative textiles into national research programmes.				
Number of research projects developed in partnership	INCDTP	records	0	3
Number of new/ innovative products/ processes developed	INCDTP	records	0	>3
Number of information sessions organized by institute	INCDTP	records	0	3
2. Reinforced domestic T&C value chains based on innovative clusters				

2.1 Regional debates on the TC value chains in each envisaged region				
Number of regional meeting organized by institute	INCDTP	records	0	3
2.2 Elaboration of the point of view of INCDTP on the role of T&C value chains in the new regional development strategies/S3 and national industrial policy which will be discussed in a national conference organised in 2020				
Position paper integrated into the Industrial Policy Document	INCDTP	records	0	1
2.3 Support to T&C SMEs for their integration in existing or new value chains				
Number of research projects developed	INCDTP	records	0	>2
Number of enterprises integrated into value chains at cluster level	INCDTP/ Clusters	records	0	>5
% of innovative SMEs that have collaborated with others		records		3%
2.4 Support to clusters participating in/own participation of INCDTP in relevant EU value chain targeting calls (INNOSUP, DTP etc.).				
Number of submitted project proposals	INCDTP	records	0	.>1

Date: 28.03.2019

Name of the organisation(s): National Research & Development Institute for Textiles and Leather/ INCDTP

Signature(s) of representative of the relevant organisation(s):

**Pyerina Carmen Ghituleasa,
General Director**