“Development of innovation for the sustainable management of polluted sites”
GRANDEST/FRANCE

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I- General Information

Project	**TANIA Interreg Europe**
Partner organisation	**Région Grand Est (Regional Council of Grand Est)**
Other partner organisations involved (if relevant)	**Université de Lorraine (University of Lorraine)**
Country	**France**
NUTS2 region	**Lorraine**
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The Action Plan aims to impact:	
Investment for Growth and Jobs programme	YES
European Territorial Cooperation programme	NO
Other regional development policy instrument	YES
Name of the Policy Instrument(s) addressed:	
Action 2 - Inventory of brownfield sites, and Action 3 - improve the governance on ROP ERDF and develop innovative technologies: **Regional operational program Lorraine ERDF – axis 1 & 2** Action 1 - Strengthen the use of innovative technologies for brownfield remediation: **Regional Funding Instrument for brownfield reclamation**	

II- Policy Context

Further details on the policy context:

Grand-Est is a cross-border region recently created through the merger of three former regions (**Lorraine – involved in the TANIA Interreg Project –**, Alsace and Champagne-Ardenne). The Region Grand Est is one of the largest regions in France with a strong industrial past. The region was strongly affected by the decline of the heavy industry (mostly iron and steel and secondary textile industry), which has left a large number of degraded and polluted land (*e.g*. in Lorraine). In Lorraine a long expertise was acquired over the years in the field of land reclamation and economic redevelopment projects.

The socio-economic situation of the population is uneven in the region. While the territories of the areas of brittleness suffer from a demographic loss and a growing precariousness of the households, four urban systems are more attractive namely the Sillon Lorrain (Metz, Nancy, Epinal, Thionville), the Troyes basin, the Reims basin, the Alsace Rhine axis (Strasbourg, Colmar, Mulhouse), and concentrate the highest median incomes, with strong interactions with nearest major cities (for example: Basel, Luxembourg, Paris).

Land consumption in the Region Grand Est is growing rapidly, with an artificialization of 2.2% over 6 years. Urban sprawl is a problem that needs to be addressed through sustainable urban planning and land recycling, in a context of real estate saturation that requires the promotion of alternatives to housing for the management of degraded sites.

The situation offers a great opportunity to reclaim degraded lands (located in former industrial areas and in / around major cities), recreating the city in the city by offering new uses adapted to the needs of the territory. Depollution is a central issue in this area, and there are several policy instruments to assist such projects.

Since the 1980's, the French government and the regions have developed a policy for brownfields. Specific land reclamation programs involving the public and private sectors have been implemented. These initiatives combat adverse economic and ecological effects and foster the positive development of derelict sites and/or areas.

Once the government, the land owner and the consultants have decided on a remediation scenario, the legal requirements (level of acceptable residual pollution according to the next activity hosted) must be followed. French soil management policy does not impose means on the owner, only results. Remediation techniques to be used are not prescribed. According to the National Methodology for Polluted Sites Management (Ministerial Note of February 2007 and update of April 2017) the best available techniques at the best economically acceptable cost should be chosen.

Soil excavation and subsequent landfilling, as well as groundwater pumping, remain the most commonly used techniques for managing polluted sites. However, they have higher environmental and economic costs than *in situ* treatment techniques. *In situ* techniques offer advantages (better valorisation of treated soils, and lower costs with less transport) but their efficiency depends on various parameters (nature of pollution, site characteristics, soil properties, etc.). It is therefore essential to develop and promote innovative *in situ* remediation techniques to ensure a wider range of possible treatments. These techniques

are the core of the GISFI research and development activities. The GISFI (scientific group on brownfields) is a consortium of 10 research groups created by the University of Lorraine in 2000. GISFI works with industrial partners to develop and implement soil remediation and recovery solutions. It has developed knowledge particularly in nanomaterials but didn't develop their use in the field of remediation soil and water.

Companies and academic expertise in natural resource processes have emerged in the region for many years. These initiatives constitute the start-up of a sector specialized in the treatment and the valorisation of polluted sites and soils. Thus the TANIA Interreg Project is an important opportunity for the Region Grand Est to share the experiences and expertise acquired in our region, especially in the Lorraine part, and to learn from other European regions with regard to the development of innovative techniques. In particular, (nano)remediation is the subject of attention with objectives of scientific and policy improvement.

The POR FEDER-FSE-IEJ Lorraine and Massif des Vosges 2014-2020 (Action 2 and 3) is oriented towards the city's policy (priority neighbourhoods) with a component of services to the population and sustainable urban planning. It does not specifically focus on brownfields, although it contributes to urban renewal.

Axis 1 of the ROP "Strengthening Research, Technology Development and Innovation" makes it possible to finance research laboratories and companies carrying projects on the territory and working in one of the strategic areas defined in the Strategy, especially the DAS "Natural Resource Exploitation". Nothing in the ERDF ROP had mentioned applications for brownfield (nano)remediation (although its possible to fund this field).

Axis 2 of the ROP "Improving the Competitiveness of SMEs" can also offer industrial SMEs or industrial services involved in the TANIA program or that are in line with its objectives to be financed as part of their development projects (material investments, engineering contributions). None project was supported in the field of innovative techniques / (nano)remediation.

Axis 8 of the PO "Sustainable Urban Development" and its "Sustainable Urban Planning" program promote the financing of housing projects in accordance with the principles of sustainable development and in particular the rehabilitation of degraded areas, thus limiting land consumption. Funds can be allowed to brownfield retrofitting projects (excluding cleaning) if future uses are oriented towards housing. Other uses, including social, cultural and sports facilities may be eligible as part of the physical, economic and social revitalization of disadvantaged communities.

Finally, Planning/Environment, ERDF, and Innovation/Economic development represent three distinct departments within the regional authority. This hinders the integrated and coordinated development of actions on innovative environmental techniques for brownfields and polluted soils.

The regional funding instrument (Action 1)

The regional council of Grand Est support public actors in the conduct of their planning and development project on degraded land. Concerning brownfield remediation techniques, dig and dump is the most commonly technique used by brownfield owners, although it's more

expensive and less ecology friendly. Innovative technologies are still underused by the brownfield owners in Grand Est, offering a small market for SME while the regional council support innovation and GISFI.

Thanks to TANIA Project, the Région Grand Est with the help of two stakeholders has decided to improve its own policy instrument in order to reinforce the use of in-situ techniques by public brownfield owners. The Region Grand Est, the Water Agency and the Environment Agency wish to provide technical and financial support in the projects to convert polluted wastelands, which require as much innovative studies and in-situ clean-up actions as possible.

The exemplarity of the conversion of polluted urban wastelands will be assessed under the following three conditions:

- clean-up quality: polluted land and groundwater are treated to the maximum by exemplary techniques (new technologies, new processes, innovative systems derived from research and development, in-situ or on-site, techniques including a circular economy approach
- Integrated project design and sustainable urban planning: the project is designed in an integrated way with pollution management
- Territorial coherence of the project: territorial integration, coherence with planning documents

In this Action Plan, Action 1 aims to improve the regional funding and Actions 2/3 the ERDF ROP of Lorraine (operational program).

Policy needs identified for the Grand Est

The work done at regional level with TANIA stakeholders and at interregional level with TANIA partners permitted to identify four policy needs to address:

1- Promote in-situ (nano)remediation techniques, increase the use of alternative, innovative or environmental techniques ; Promote best technical implementation of brownfield remediation ;

2- Identify contaminated sites in Grand Est ;

3- Improve the coordination between 3 Regional council departments, working on Innovation, on Planning and managing ERDF fund (European department) ;

4- Support the emergence and diffusion of exemplary / innovative (nano)remediation techniques allowing an environmental gain, a reduction of hazardous waste resulting from the remediation.

III – Overview of the actions envisaged

The Grand Est action plan includes three actions: the objective is to improve the *in situ* treatment of polluted sites with a special focus on nanoremediation with the help of the ERDF on the topic "Research and Innovation". **These three actions are designed to generate demand, identify the market and facilitate the use of the ERDF (ROP Lorraine) in order to develop (nano)remediation.**

<u>Action 1</u>: Strengthen the use of innovative technologies for brownfield remediation

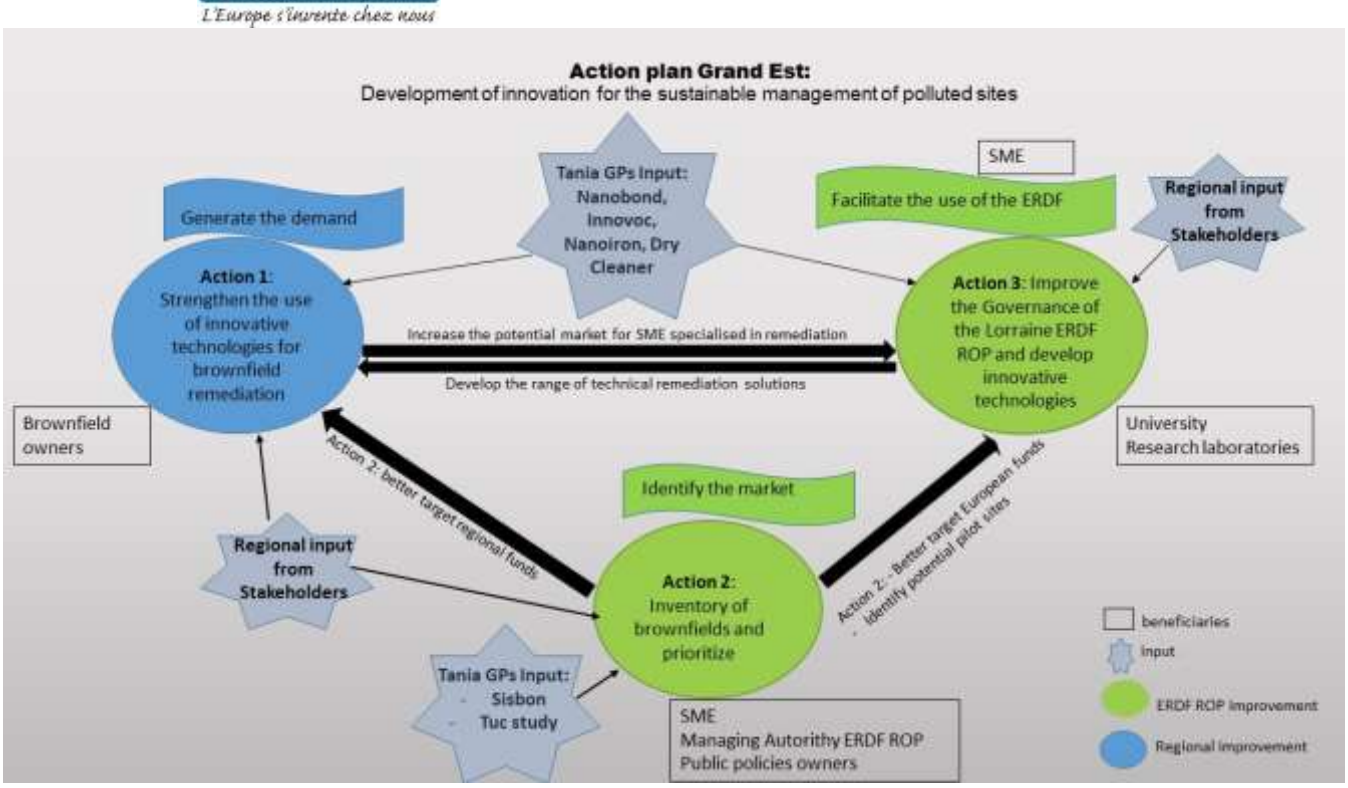
The regional council of Grand Est has developed its own policy instruments (regional fund) on planning, innovation and brownfields: the regional funding instrument "Appel à projets Reconversion des friches industrielles – Etudes et techniques de dépollution exemplaires" (Call for projects "Exemplary cleaning"). The objective is to develop the demand and to include financial incentives for the use of alternative remediation techniques through this Call for projects.

<u>Action 2</u>: Inventory of Brownfield sites

The objective is to identify and classify the contaminated sites in order to focus on priority sites and pilots sites, to reinforce the possible reuse of brownfields in economic projects or alternative use.

<u>Action 3</u>: improve the governance of the Lorraine ROP ERDF and develop innovative technologies

This action will help to promote projects on innovative techniques and to improve coordination in the treatment of the projects.



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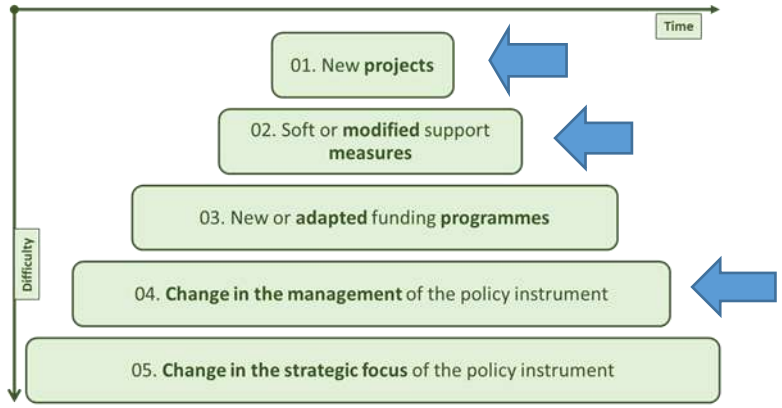
Policy Needs

In a context of control of urban sprawl and tensions over land use, reconversion of brownfields is a real challenge for the sustainable development of territories. The remediation techniques generally implemented at these sites often involve the excavation of impacted materials and off-site treatment. However, alternative, innovative techniques exist and allow in-situ or on-site treatment of polluted materials. In addition, some innovative techniques allow the simultaneous treatment of soil and groundwater and may be less expensive.

1- Promote in-situ (nano)remediation techniques and increase the use of alternative, innovative or environmental techniques and promote best technical implementation of the remediation of contaminated sites.

2- Support the emergence and the diffusion of exemplary/innovative (nano)remediation techniques allowing an environmental gain, a reduction of the hazardous waste resulting from the remediation

Typology of Policy Improvement



Overall Topic and Description of the proposed Policy Improvement	
Overall Topic	Improving the reclamation strategy for the degraded and polluted areas of the Grand Est: develop the market for SME in the field of in-situ remediation.
Specific Description	To convince project owners to use exemplary techniques of depollution, the region Grand Est has launched during TANIA Project - phase 1 a regional policy instrument. Step 1 : Regional call for projects "Exemplary depollution" with Regional funding source. In order to stimulate and develop the use of innovation in the decontamination of brownfield sites, three regional stakeholders focused their funding instruments on remediation to jointly launch a **regional call for Projects**. The call is open to exemplary management solutions to deal with polluted brownfields and promote the best options for reclamation projects. -The three public institutions involved are: - Environment and Energy Management Agency (ADEME) - Rhin-Meuse Water Agency (AERM) - Région Grand Est The aim is to gather their programmes for recycling polluted wasteland while ensuring that the reallocation operations undertaken are controlled for health risks and environmental issues (risks and opportunities). -Types of projects expected: Re-use operations of brownfields such as preliminary studies, pilot trials and remediation work promoting the use of exemplary and innovative techniques, particularly nanotechnologies. Redevelopment operations for degraded brownfields must aim at a structuring project designed with a "sustainable urban planning" approach (including alternatives to housing and commercial activities, such as social and cultural activities, renewable energy production, biomass production for industrial purposes, Biodiversity reservoir). -Exemplary remediation techniques means: - Innovating treatment techniques (e.g. nanotechnologies) - Regular treatment techniques (*in situ*, on-site) that are alternatives to excavation and transfer of soils to landfills and off-site treatment of polluted water

	- Techniques considering the concept of circular economy approach The first call launched in May 7, 2018 initiated the process. 10 files were received. Only one partly included in-situ remediation techniques. A second Call was launched in April 2, 2019. In order to improve the policy instrument, we organised in June 2019 a technical event to raise awareness among the owners, demonstrating the importance of the TANIA's innovation dissemination approach. <u>Step 2: 2020 – 2021 – improve and monitoring the regional policy instrument</u> We plan : - a pre-assessment: analyse the bottle-necks of the two calls launched in phase 1, - launch of the 2020 Call, - awareness raising: - better communication and dissemination on good practices, - a technical event open to beneficiaries (remediation projects leaders: communities, companies) and their service providers is planned to share good practices (regional and Tania's good practices) and highlight the importance of innovation in this area; - monitor the policy instrument.

Background	
Regional / National input, including input from TANIA Stakeholder Group	In the context of a new wide region, the RTPS (Regional Tania Project Stakeholders) group, created 27/04/2017, has helped to bring together the main actors in the management of contaminated sites and soils and the redevelopment of brownfield, such as public authorities, depollution and urban planning experts and the main public funders. TANIA challenges and policy needs were identified with stakeholders at regional level (also during 2nd RTPS September 20, 2017) and then were completed, refined and debated with TANIA partners at interregional level, during the second meeting in Pécs, 22-23 May 2017, and the third meeting in Metz. The Tania exchanges were decisive to identify and prioritize the regional needs to be addressed. This was the base for **defining the first regional call for projects**. The RTPS actors are now included in the **evaluation call committee** which helps in the analysis of submissions and propose improvements.

	The content and objectives of the call for projects were discussed during the meeting of the RTPS group held on September 20, 2017. During the 5th RTPS held on December 14, 2018, the technical solutions of Tania partners (TANIA good practices) were presented to the Stakeholders. The first regional call result and improvement were debated. A link with the ROP ERDF was also debated.
Transfer of TANIA Solutions	It is thanks to the Tania project that the Region Grand Est decided to launch a call for projects. Indeed, this idea was raised by the regional council of Paijat-Häme (TANIA Partner) during the TEE 2 in Pécs, in order to anticipate and facilitate the TANIA action plan taking into account the main hindrances (TANIA challenges and policy needs). The TEE4 at Paijat-Häme, 15/16 May, 2018 was also of inspiration. During this meeting we learned more about Nanobond which is an excellent tool for dissemination of knowledge and awareness on (nano)remediation issues, for exchanging with local actors and to improve the policy instruments about how to make compatible innovation and environment. During the same TEE, Innovoc was also presented as a novel in situ remediation method for treating contaminated groundwater and saturated soils. Lab and pilot scale test with several different types of contaminant have been successfully completed and the results are encouraging. This could be proposed as a possibility of innovative technique solution.
Input and inspiration from TANIA project	The Tania project enables partners to share their best practices, including technical solutions to be exemplary in terms of clean-up, and to disseminate their knowledge and raise awareness of sanitation issues. May 22-23, 2017 – TEE 2 in Pécs (Hungary): work on challenges and policy needs which highlighted the need to know brownfield sites in order to identify pilot sites and to evaluate the amount of funds needed for policy instruments. November 28-29, 2017: TEE3 – These challenges and debates helped to identify the risks for a regional call and define its objectives.

Work plan within TANIA Phase 1 – ELABORATION of the Action
Activities already undertaken at interregional and regional level in Phase 1
Regional activities: - April 27, 2017 : settle the RTPS group, identify challenges and policy needs and decision to launch a Call for in-situ remediation projects of brownfields.

- September 20, 2017: discussion on the content of the first call for projects during the RTPS meeting
- May 7, 2018: Launch of the first regional Call on exemplary decontamination.
- October 12, 2018: evaluation committee of the Call “exemplary decontamination” 2018 (regional funds) – 10 projects received for the first edition and decision to promote exemplary decontamination in a Call for project.
- October 19, 2018: Gisfi / Grand Est working meeting for the next TEE (Finland) – Potential actions and activities for the Action Plan and potential innovative techniques presented in the frame of Tania project
- December 6, 2018: stakeholders involved in the call (Environment Agency and Water Agency) – Obstacles to avoid, modifications, requirements and focus on exemplary depollution with innovative solutions
- December 14, 2018: RTPS meeting with stakeholders – focus on the call “exemplary decontamination” – results and perspectives in order to improve the next call with more exemplarity in the choice of remediation methods.
- April 2, 2019: Launch of the second regional Call on exemplary decontamination.
- June 13, 2019: technical event – a meeting for public project holders and engineering firms with presentation of learning elements, useful contacts and good practices in the management of polluted sites. The aim was to be able to influence the examplarity in terms of innovation and clean-up techniques for the next Call.

Interregional activities:

- May 23 2017 TEE2 in Pécs: discussion on the interest to launch a call for projects in order to prepare and facilitate the future improvement of TANIA action plan.
- 28/29 November, 2017: TEE3 in Metz (regional stakeholders were associated): discussion on nanoremediation concepts, input on various issues related to implementing and funding innovative remediation of soil and water (workshop part 2: topic 3 on solutions to manage Risk/Health and safety and topic 4 with solutions to fund innovative remediation techniques). These challenges and debates helped to identify the risks for a regional call and define its objective.
- 15/16 may, 2018: TEE 4 in Lahti – Interactive sessions to understand the solutions proposed: policy context for (nano)remediation with a focus on elements that could be transferred from one region to another to address their (nano)remediation challenges, see practical examples on novel remediation techniques in Päijät-Häme region. Relevant information to improve the call.
- 8/9 October 2018: TEE5 in Heraklion – Exchanges of solutions for Action Plan. University of Lorraine (GISFI) was interested by NANOBOND, INNOVOC, NANOIRON and Dry Cleaner’s Site Remediation and wanted to deepen in-situ technologies to provide input to and integrate their findings in the “remediation tool-box”. This remediation tool-box could be useful for the Call.

- 5/6 February 2019: TEE6 in Pécs – Work on the Action Plan and comparison with Tania partners in order to have suggestion on the Call for projects "exemplary depollution".

Work plan within TANIA Phase 2 – IMPLEMENTATION of the Action	
Activities planned at interregional and regional level in Phase 2 (January 2020 – December 2021)	
Activity / Description	**Timing**
Workshop on the new regional « Exemplary decontamination » call 2020 (regional funds): assessment with analysis of the two previous calls, communication on good practices and improvement of the new call. The aim is continue to generate demand by supporting the most virtuous projects in terms of innovative techniques and protection of biodiversity.	December 2019/January 2020
Stakeholder meeting with the beneficiaries of the first call for projects to support the innovative techniques used: maintain the dynamics and the networking of the main actors of contaminated sites and soils	March – May 2020
Launch of the new regional call	April-May 2020
Technical event: the objective is to share TANIA good practices and regional good practices in the management of decontamination projects. Dissemination of the communication document (action 3) by the Planning Department during the technical event	June-July 2020
Evaluation committee for the call to analyze the best projects in terms of (nano)remediation techniques Share the results of the call during a technical day for public authorities and how to improve the quality of the projects	october2020/January 2021
Results and prospects – follow-up and decision for future calls. The results could be used to enrich Action 3.	March-June 2021

Stakeholders involved	
Name of Organisation (/ person)	**Role in Action Plan**

ADEME / Franck Le Moing Environment and energy management agency	Expert in environmental approach and one of the initiators of the call for projects. Co-founder of the Call "exemplary decontamination": the objective is to raise the level of Engineering firms in the management of polluted sites and soils by the use of innovative techniques.
AERM / Philippe Ricour Water Agency	The water agency's mission is to help reduce water pollution from all sources and protect water resources and aquatic environments. AERM is also one of the initiators of the call for projects. Co-founder of the Call « exemplary decontamination ».
DREAL / Philippe Liautard (regulatory framework, monitoring of classified facilities for the protection of the environment)	Facilitator for the experimentation of pilot sites to verify that innovative techniques are being implemented. Member of the evaluation call committee
EPFL / Régis STENGER Regional Public Land Establishment - Expert in the conversion of polluted sites and soils	EPFL supports communities in the reclamation of already urbanized spaces such as industrial, urban and military wastelands. EPFL could help to search a pilot site to test innovative techniques as part of the exemplary clean-up call for projects and is also prescriber for local authorities. Member of the evaluation call committee.
BRGM - Expert in soil and basement resource and risk management	Methodological support on the prioritization of industrial wastelands inventoried Member of the evaluation call committee.
Université de Lorraine / GISFI – Noële Enjelvin, Marie-Odile Simonnot, GISFI is a Consortium of 10 research groups created by the University of Lorraine, CNRS, Inra, BRGM and INERIS.	Partner of Tania. Members of the evaluation call committee: assessment of innovative techniques Gisfi will foster the use of nanoremediation in Grand Est and promote projects dealing with effectiveness and health/environmental impacts of the technology.
CONSOILTING / Jean-Louis Morel	Support in scientific and technological expertise, Specialist in soil pollution and remediation, Former chairman of the GISFI (2019). Member of the evaluation call committee.

GRAND EST – Carine Vuidel, Kakou Khoumchane The Regional Council decides the regional priorities of the programme and makes the financing decisions on projects.	Partner of Tania Region Council has acquired extensive expertise in designing, managing and monitoring regional policy for innovation and for environmental management. Co-founder of the Call of Projects and joint coordination.

Risk and Contingency Plans		
Description of Risk	**Level of probability (High, Medium, Low)**	**Description of Contingency Plan**
Risk connected to the funding of the call. Availability of funds and political decisions at the Region Grand Est control the future of the call.	low	To promote awareness among project leaders on innovative techniques without co-financing their work

Costs and funding sources	
Costs	**Funding Sources**
regional funds,:	
GRAND EST: 1 M€ for depollution works	Regional
ADEME: 200 000€ for studies	Regional
AERM: 700 000 € for studies or depollution works	Regional

Monitoring		
Self-defined Performance Indicators		
Indicator	**Target**	**Means of Verification**
Number of applications proposing innovative remediation techniques	2	Number of applications submitted by the call deadline
Output Indicators		
Indicator	**Target**	**Means of Verification**
Number of Call for projects published	1	Monitoring report

Territorial Impact
The implementation of the AP is a means to stimulate the demand for innovative techniques and to improve the dialogue between the different actors who manage remediation actions and reclaim the brownfields. It is also a way to continue to innovate in field of brownfield decontamination, to develop the in situ decontamination market, and to confirm the value of nanoremediation to keep the region at the forefront of these areas.

Action 2: Inventory of Brownfield sites

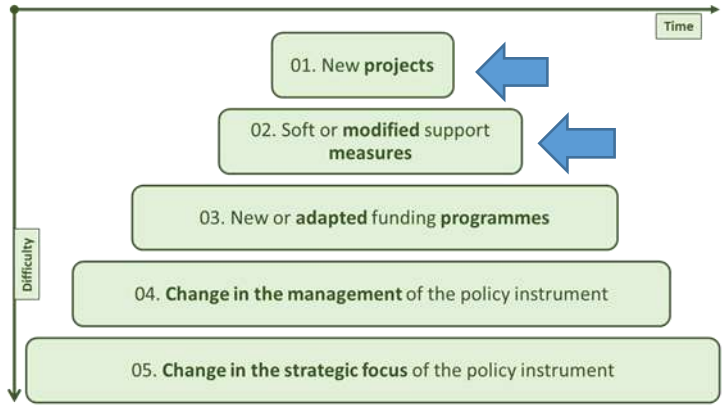
The objective is to identify and classify the contaminated sites and to reinforce the possible reuse of brownfields in economic projects or alternative use.

Policy Need

There is a lack of visibility of the exact number and area of polluted wastelands. This knowledge would make it possible to better target public policies and identify market potentials (number of polluted sites to be cleaned up and indication of sites where innovation could be considered) in the Grand Est. This kind of information is essential to better target public policies, including the ERDF ROP. This work could also help to identify adapted pilot sites for innovative techniques.

- Identify contaminated sites in Grand Est: there is no complete and up-to-date inventory of brownfields and contaminated sites in Grand Est.

Typology of Policy Improvement



Overall Topic and Description of the proposed Policy Improvement

Overall Topic	We have to build an inventory of brownfield sites to identify and classify the contaminated sites and to reinforce the possible reuse of brownfields in economic projects or alternative use. A working group in Région Grand Est must be set up in order to build a collaborative tool able to address and solve this need.
Specific Description	The potential brownfield market needs to be clearly identified, in the new Grand Est region which had just merged from three former regions: Alsace, Champagne-Ardenne and Lorraine.

	No inventory exists in the Grand Est. One of the activities will be to identify the number of brownfields as well as the environmental related issues. In 2020 – 2021, the existing inventories (sub-regional) will be identified. If possible they could be merged. A regional working group (composed by members of the RTPS) will set up to evaluate available data and the needs: identify local inventories, check for mergers and uncovered areas. The results of this inventory will provide reliable information and highlight the importance of brownfields reclamation. It will allow us to prioritize sites with environmental issues, and sites adapted to *in situ* treatment and valorisation according to the typology. This information can be used by the ERDF ROP managing authority in order to make decisions on where to allocate funding for environmental remediation. It will also help to identify Pilot sites should be prioritised for financing with the ERDF funding for environmental interventions. The BRGM (stakeholder) has the skills to develop a tool for prioritizing wastelands (based on an inventory to be created).

Background	
Regional / National input, including input from TANIA Stakeholder Groups	An incomplete database exists at the national and some few at local levels (communities). September 20, 2017: The RTPS group has identified the lack of knowledge on brownfields sites in the Grand Est.
Transfer of TANIA Solutions	During the TEE 4 in Lahti (Finland), 15/16 may 2018, an interactive session proposed solutions shared from each partner. The Sisbon solution and Tuc study caught our attention for addressing our need number 2: to identify contaminated sites in the Région Grand Est. They were also discussed during TEE 5 08/09 october 2018. ➢ The **Sisbon solution** (Information system of the territories concerned by the recovery of the environment). The owner of the solution is ARPAT, the Regional Agency for Environmental Protection of Tuscany, which is also an external stakeholder of TANIA. Sisbon was a potential tool for our need. We went to Florence the January 17, 2019 for a bilateral exchange.

The objectives were to:

- clarify the difficulties inherent in the transfer and effective implementation of Sisbon from a regulatory and technical point of view.
- exchange on possible problems that may arise in the future and how to manage them.
- understand the best way to manage the tool during implementation.
- deepen the knowledge of Sisbon and the eventually the transfer and implementation of this tool in Grand Est.

Notions or transferable points: that would improve the existing systems available in Grand Est.

- Sisbon lists wastelands. It is also a Web tool. It contains all the procedures for site reclamation. Information is easily accessible for public administrations, businesses, environmental and health organizations as well as for all citizen interested in the issue.

- This tool also makes it possible to track and memorize the history of the site.

- The colour codes with the specificity of the site and the different pollutants are a possibility.

- The site is accessible using login in order to divide sessions open to the technical experts and another session open to all.

- The problem of updating the data was raised.

The region Grand Est could draw inspiration from these points without the tool being directly transferable.

Non-transferable points from Sisbon for the Grand Est Action Plan:

- The declaration of a wasteland by the companies themselves with such tool is not possible in France because of the organization of the regulatory authority.

- Use the tool to characterize the sites most likely to be financed by public policies

Sisbon confirms that such a tool cannot be efficient without constant updating of the data by the territory actors. That is why the future tool must present several levels of interest for each involved actor.

- **TUC study methodology:** a bilateral exchange took place in Crete in May 9, 2019. This methodology was made by Technical University of

	Crete/School of Environmental Engineering / Lab of Toxic and Dangerous Wastes and is interesting for Grand Est, because it provides: – Methodology for identifying potentially contaminated sites - Definition of the first qualification criteria – Procedure for characterization of potentially contaminated sites, and decision-making process for implementation of remediation measures To obtain a selection of remediation technologies and follow-up measures (and proposals for financing tools). France has a national web tool in which all technologies are explained (SELECDEPOL). The limit of TUC study is that the methodology is tested in a few territories: it has not been reached and its cost is very high. It will be interesting to have the test results. The methodology is very complete and ideal but it faces a question of means (human and financial) to conduct the study and update the database. The approach is different from France; but it is complementary to our approach which targets the most polluting activities (active or closed) without identifying pollutants or possible *in situ* remediation techniques. Collaborations could be envisaged between the two countries to link the TUC Study and SelecDEPOL. The elements that can be retained in the short term: criteria for defining and qualifying contaminated sites, seeking a complete and integrated approach to the inventory of wastelands.
Other input from TANIA project	May 22-23, 2017 – TEE 2 in Pécs (Hungary): work on challenges and policy needs which highlighted the need to know brownfield sites in order to identify pilot sites and to evaluate the amount of funds needed for policy instruments.

Work plan within TANIA Phase 1 – ELABORATION of the Action
Activities already undertaken at interregional and regional level in Phase 1
Regional activities: - October 19, 2018/ November 30, 2018/ April 26,2019: University and Region Grand Est working for the next TEE6 in Hungary, TEE 7 in France and TEE 8 in Finland – work on potential actions and activities for the Action Plan – how could we reach our goals, define steps to reach the goal of an inventory and prioritisation.

- December 14, 2018 and April 5, 2019: RTPS meetings with stakeholders - sharing of needs, action plan, steps and identify skills and stakeholders to involve in this action: particularly, DREAL owns a national incomplete inventory, and BRGM has the skills useful to develop a prioritisation tool.

Interregional activities :

- May 15-16, 2018: TEE4 – Lahti – Presentation of the Sisbon and TUC Study solutions: these solutions can inspire us to build the inventory.
- October 8/9,2018: TEE5 – Heraklion – Exchanges on the solutions for Action Plan (Sisbon, Tuc study, SOILIA and GISFI) – inspiration for the inventory action and decision to deepen Sisbon and TuC study.
- January 17, 2019: bilateral exchange at Florence (Italy) – Sisbon solution (Arpat) – The aim was to deepen the knowledge of Sisbon and the possibly transfer and implementation of this tool in Grand Est. After this exchange, the construction of our action 2 materialized.
- February 5/9,2019: TEE6 – Pécs – Work on the Action Plan and comparison with Tania partners in order to have a feedback confirming the benefit of this inventory.
- May 9, 2019: Bilateral exchange in Chania (Crete) – TUC Study – deepen this study and verify if it was transposable in Grand Est. This gave us methodological information that could inspire us for the implementation of our inventory.

Work plan within TANIA Phase 2 – IMPLEMENTATION of the Action	
Activities planned at interregional and regional level in Phase 2 (January 2020 – December 2021)	
Activity / Description	**Timing**
- identify the actors to bring together - the RTPS will serve as the core	April 2020
- Set up the working group First meeting: - List of existing inventories and identify the bottle-necks and deadlock to merge them Second meeting : Inventory requirements : -common base -data interoperability -how to cover white areas	May-June 2020 September-October 2020

First approximation results (number of wastelands, identify pilot sites); Evaluate the technical and financial feasibility of obtaining a complete regional inventory	February 2021
Define prioritization tool (Stakeholder BRGM) and Tests to use this inventory to prioritise sites if possible (or test on an existing local inventory)	March-June 2021

Stakeholders involved	
Name of Organisation (/ person)	**Role in Action Plan**
ADEME / Franck Le Moing Environment and energy management agency	Expert in environmental approach. He will be a member of the brownfield inventory working group for the elaboration
AERM / Philippe Ricour Water Agency	Expert in environmental approach He will be a member of the brownfield inventory working group for the elaboration
DREAL / Philippe Liautard (regulatory framework, monitoring of classified facilities for the protection of the environment)	Monitoring of classified facilities. Fund the tool developed by BRGM (prioritizing tool) He will be a member of the brownfield inventory working group for the elaboration and implementation
DDT (Government services)	Deconcentrated services of the Ministry: in particular in areas such as spatial planning. It will be a member of the brownfield inventory working group for the elaboration and implementation A few are owner of local brownfield inventories
DREAL / Michel Antoine	Contribute to the establishment of an inventory of shared brownfield sites in Grand Est Co-facilitator of the working group for the elaboration and the implementation
Région Grand Est – ERDF / Marie Chanal – Yohan Gardiennet	Members of ERDF ROP managing authority : allocate potential funds to eligible projects
EPFL / Régis STENGER Regional Public Land Establishment - Expert in the conversion of polluted sites and soils	Contribute to the inventory of brownfield sites for the elaboration. Owner for some sites

BRGM - Expert in soil and basement resource and risk management	Technical operator and methodological support on the prioritization of industrial wastelands inventoried: development of a prioritization tool. It will be a member of the brownfield inventory working group for the elaboration and the implementation
GISFI – Noële Enjelvin, Marie-Odile Simonnot, Jean-Louis Morel Gisfi is a Consortium of 10 research groups created by the University of Lorraine, CNRS, Inra, BRGM and INERIS.	Partner of Tania. Expert in environmental approach It will be a member of the brownfield inventory working group: scientific advice for the elaboration
CONSOILTING / Jean-Louis Morel External support	Support in scientific and technological expertise, specialist in soil pollution and remediation. He will be a member of the brownfield inventory working group for the elaboration
GRAND EST – Carine Vuidel, Kakou Khoumchane The Regional Council decides the regional priorities of the programme and makes the financing decisions on projects.	Partner of Tania will contribute actively to all project stages and finalize the action plan Co-facilitator of the working group

Risk and Contingency Plans		
Description of Risk	**Level of probability (High, Medium, Low)**	**Description of Contingency Plan**
Risk on the cost for a regional inventory if local data cannot be merged.	medium	Find incentives (National/Regional fund) ERDF fund 2021/2027
Risk on the time required to implement this action	High	Keeping the dynamics of the brownfield inventory working group
risk that local owners do not want to share data	Low	better explain the interests for everyone during an exchange workshop with the stakeholders involved.

Costs and funding sources

Costs	Funding Sources
50 K€	Regional, National and BRGM

Monitoring		
Self-defined Performance Indicators		
Indicator	**Target**	**Means of Verification**
Hectares of brownfields identified	500	Number of hectares
Output Indicators		
Indicator	**Target**	**Means of Verification**
Working group meeting	2	Attendance sheet

Action 3: Improve the governance on ROP ERDF and develop innovative technologies

This action will help to promote projects on innovative techniques and to have a better coordination in the treatment of the projects.

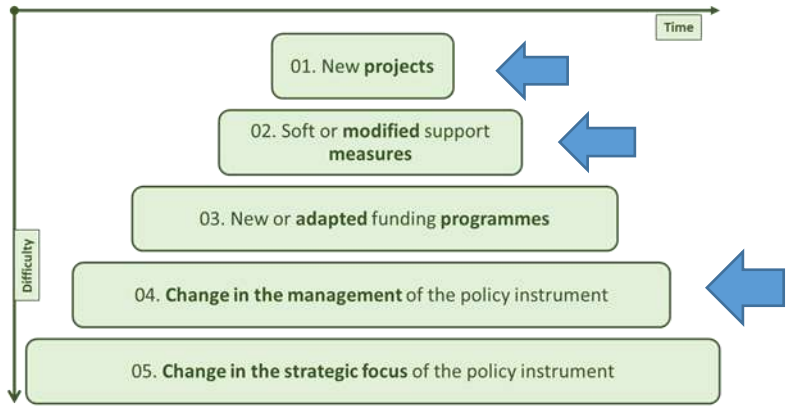
Policy Needs

- The policy makers require support to achieve these needs and increase economic benefits for the territory. The policy does not currently include incentives for the use of alternative, innovative remediation techniques, in comparison to more traditional techniques. Better coordination between the three department (Innovation, Planning and ERDF Management) in the treatment of the projects would help to address this. Improve coordination between the three Regional council departments, working on Innovation, Planning and Management of the ERDF fund

- Promote *in situ* remediation techniques, increase the use of alternative, innovative or environmentally friendly techniques, promote the best technical implementation of the remediation

- Support the emergence and diffusion of exemplary / innovative techniques allowing an environmental gain, a reduction of the hazardous wastes resulting from the remediation

Typology of Policy Improvement



Overall Topic and Description of the proposed Policy Improvement

Overall Topic	Planning, Europe and Innovation represent three distinct departments within the regional authority which don't work enough together in managing the ERDF policies for environmental remediation/brownfield reclamation. This prevents

	the emergence of qualitative innovative projects on brownfield (nano)remediation. The aim is to improve the governance of the ERDF call of proposals, increasing the three departments coordination and to create a communication document, highlighting projects promoting innovation in cleaning techniques especially TANIA good practices/solutions shared and studied during interregional TANIA works. This document will be aimed at universities, companies, Engineering companies that plan to clean up brownfields through innovation in clean-up techniques and even the installation of pilots. The document will be distributed at public meetings organised by the Regional council of Grand Est. This document will be the result of this new management.
Specific Description	First activity: To **change the governance,** coordination between the three Regional council departments, working on Innovation, on Planning and managing ERDF funds (European department) is required: working sessions, for the study of the projects and the final review of the ERDF calls. This improvement will facilitate the analysis of the feasibility of the projects received through the integrated and coordinated development of the ROP and its axes. The aim is to better incorporate innovative techniques for environmental measures and innovative projects in the ROP. In addition, the three services will have the same level of information and the files will be processed on all aspects: planning, innovation and European funds. The result is the optimal use of regional and European funds. We decided to integrate a sentence in the ERDF Call in order to put a visible focus to encourage innovation in the remediation of brownfields and more specifically innovative techniques. This addition will be confirmed for the next Call during an exchange meeting with the ERDF service. The ERDF Call for proposals will be launched in January 2020. Second activity: The ERDF department and the Planning department will work together on a **communication plan** in 2020 to promote innovative (nano) remediation techniques in the next ERDF Call for projects. Indeed, currently no project on this topic has emerged under the ERDF framework. This awareness document aims to bring out innovation-research projects, pilot sites in partnership with companies in the field of (nano) remediation. This document will highlight the Tania Good Practices presented at the TEE4 – May 15/16, 2018 in Lahti and TEE5 - October 8/9, 2018 in Heraklion (eg: Nanorem, Nanobond, Innovoc, Nanoiron). The communication plan will facilitate the positioning of companies in the two European calls concerning: Axis 1 – supporting the evolution towards a

	competitive and sustainable economy in Lorraine and Axis 2 – Improving competitiveness of SMEs.

Background	
Regional / National input, including input from TANIA Stakeholder Groups	The merger of the three regions has provoked a difference in management because the three department (planning, FEDER and Innovation) did not cooperate enough together. Policy needs ("Promote in situ remediation techniques, increase the use of alternative, innovative or environmentally friendly techniques, promote the best technical implementation of the remediation" and Policy need: " Support the emergence and diffusion of exemplary / innovative techniques allowing an environmental gain, a reduction of the hazardous wastes resulting from the remediation") were identified and debated during the 2 first RTPS (April 27,2017 and September 21, 2017) with BRGM, GISFI (laboratory), companies (Microhumus), and brownfield owners (Lux control/Arcelor Mittal).
Transfer of TANIA Solutions	The technical solutions presented in the framework of TANIA during TEE 4 in Lahti (May 15/16,2018) particularly Innovoc and Nanobond are relevant for regional researchers and SME. The involvement of administrative institutions in the implementation of projects was an important input. Indeed, Managing authorities and regulatory institutions are key features, especially when they have an active role to play, it helps overcome bureaucratic bottlenecks. During TEE5 in Heraklion (October 8/9, 2018): a bilateral small group on Innovoc/Nanoiron solutions took place dealing with the question "how to adapt these techniques". It showed that demonstration project play a relevant role in involving private companies and in raising awareness in the policy sphere. The results and the monitoring of all the Technical Tania solutions will allow us to communicate on nanoremediation methods on pilot sites. These technologies could be transferred to companies and research laboratories to enrich their brownfield clean-up project. These techniques are relevant for dissemination action.
Other input from TANIA project	The importance of relevant internal governance was emphasized during TEE 2 in May 22/23, 2017 in Pécs and TEE 4 in May 15/16, 2018 in Lahti. (work on challenges and policy need). Tania's work permitted to identify policy needs during TEE 2 in May 22-23, 2017 in Pécs and TEE 4 in May 16-16, 2018 in Lahti.

Work plan within TANIA Phase 1 – ELABORATION of the Action

Activities already undertaken at interregional and regional level in Phase 1

Regional activities :

October 1st, 2018, April 4th, 2019, July 1st,2019: meeting with Europe Department. We have met with the ERDF Department several times to suggest an addition of text specific to the clean-up of brownfield sites. A **reference on innovative remediation techniques** has been included **in the ERDF Call for proposals**, axis 1 (1.1.B: Innovation), allowing companies to benefit from funds for their remediation projects and launched in January 2019. We inserted the following paragraph in French (following English translation): "In addition, projects promoting innovation in brownfield clean-ups and rehabilitations, particularly in clean-up techniques, will be eligible. Rehabilitation of wasteland as such is not eligible". We also had exchanges about the communication document.

- October 19, 2018, March 13, 2019: Gisfi / Grand Est working meeting for the next TEE (Finland) – Potential actions and activities for the Action Plan, particularly regarding Action 3.
- December 14, 2018, April 5, 2019: RTPS meeting with stakeholders which included an update on the Feder's calls for proposals: 1.1.B: Innovation "Research and Innovation in the private sector and in which was the paragraph emphasizing innovation in clean-up techniques.

Interregional activities :

- May 22/23, 2017 TEE3 – Pécs and November 28/29, 2017 – Metz: presentation of the project Nanorem (PHOTON WATER TECHNOLOGY s.r.o.). This technical solution is relevant for the Call for proposals.
- May 15/16, 2018: TEE4 – Lahti – Solutions presentation and Good practices. Interactive sessions to understand the solutions proposed and practical examples on novel remediation techniques in Päijät-Häme. TuC study, Nanobond, Innovoc and Dry cleaner will be useful for action 3: these projects develop their own methodology to assess novel remediation techniques which are relevant in terms of transferability.
- October 8/9, 2018: TEE5 – Heraklion – Exchange on solutions (good practices: Nanobond, Innovoc, Nanoiron, Dry cleaner). Example of Innovative solutions for action 3.
- February 17, 2019: bilateral exchange in Florence between GISFI, SOILIA, the Regional Council of Florence and local stakeholders (first exchanges to bring out a project on network of lysimeter stations in different climates, different pollution problems). The results could be used by beneficiaries of action 3.
- February 5/6, 2019: TEE6 – Pécs – Work on the Action Plan (Action 3) enriched by discussion with partners.
- May 27, 2019: bilateral exchange with Finland and Crete at the Gisfi experimental platform (lysimeters) in Homécourt (France) - new exchanges to formalize a pilot site project. The results could be used by beneficiaries of action 3.
- May 28/29, 2019: TEE7 – Nancy – Technical session workshop – presentation of (nano)remediation technologies which can be valued in the regional communication document:

Pierre Faure (University of Lorraine stakeholder – LIEC) provides a presentation titled "Polycyclic Aromatic Compound (PAC) polluted soils: availability and polar PACs".

Romain Coustel (University of Lorraine stakeholder – LCPME) presents a research conducted on "Starch functionalised magnetite for arsenic nanoremediation".

Ilaria Corsi (Tuscany stakeholder – University of Siena) and Carlo Punta (Politecnico di Milano) give a presentation on the results of the recently concluded project NANOBOND: nanomaterials for remediation of marine and fluvial contaminated sediments.

Ville Selonen (University of Helsinki stakeholder – Remsoil Oy) presents his company's Agricultural waste product for controlled release of nutrients in bioremediation.

Transferable Good Practices are important for action 3.

Work plan within TANIA Phase 2 – IMPLEMENTATION of the Action	
Activities planned at interregional and regional level in Phase 2 (January 2020 – December 2021)	
Activity / Description	**Timing**
Launch of the Call	January 2020
Meeting to define the change of governance (ERDF, planning, Innovation)	January/February 2020
Shared governance: analysis of the files (ERDF call) on the issue of decontamination: this governance will make it possible to better target European funds to sustainable development and process innovation projects, ensuring safety and cost reduction.	Review along the year 2020 4 programming committee in 2020 maximum (according to the number of files dealing (nano) remediation
Workshop with the ERDF service to prepare the communication document of the ERDF call for the 2014-2020 programme. Objective: to raise awareness among project leaders on the opportunity to innovate in decontamination techniques (presenting TANIA good practices and solutions).	February / March 2020
RTPS working session on the communication document.	March/May 2020
Dissemination of the document on website : Europe-en-Lorraine.eu and dissemination by the Planning Department during the technical event (common to action 1 and 3).	May – June 2020

Assessment, monitoring and report of the call ERDF with the shared governance after the call release.	End 2020
RTPS meeting with the beneficiaries of the ERDF call for proposals and of the regional Call (action 1) to support the innovative techniques used: maintaining the dynamics and networking of the main actors of contaminated sites and soils (after the call release).	March-June 2021
Results monitoring and feedback to the ROP after the call release.	March-June 2021

Stakeholders involved	
Name of Organisation (/ person)	**Role in Action Plan**
ADEME / Franck Le Moing Environment and energy management agency	Reflection aid to fund very large innovation projects with ERDF co-financing (connection Action 1 and Action 3)
AERM / Philippe Ricour Water Agency	Reflection aid to fund very large innovation projects with ERDF co-financing (connection Action 1 and Action 3)
Région Grand Est – ERDF / Marie Chanal – Yohan Gardiennet	Members of ROP ERDF managing authority : Contribute to develop the communication document and to disseminate it, and to the governance for remediation innovative projects
Région Grand Est – Innovation department / Achim Mayer	Co-founder for innovative projects. implicated in the governance for remediation innovative projects
DREAL / Philippe Liautard (regulatory framework, monitoring of classified facilities for the protection of the environment)	Facilitator for the experimentation of pilot sites to verify that innovative techniques are being implemented and funding of pilot site.
EPFL / Régis STENGER Regional Public Land Establishment - Expert in the conversion of polluted sites and soils	In search of a pilot site and prescriber for local authorities.
GISFI – Noële Enjelvin, Marie-Odile Simonnot,	Partner of Tania. Gisfi studies the functioning and evolution of pollutants and degraded soils of brownfields. Gisfi works in collaboration with industrial partners to

Gisfi is a Consortium of 10 research groups created by the University of Lorraine, CNRS, Inra, BRGM and INERIS.	develop and apply solutions for soil remediation and valorisation. Gisfi will foster the use of nanoremediation in Grand Est. The Gisfi could be involved in an eligible ERDF project or could facilitate projects
CONSOILTING / Jean-Louis Morel External support	Support in scientific and technological expertise : .
GRAND EST – Carine Vuidel, Kakou Khoumchane The Regional Council decides the regional priorities of the programme and makes the financing decisions on projects.	Partner of Tania Change the governance in order to facilitate innovative projects. In charge of the communication and awareness document.

Risk and Contingency Plans		
Description of Risk	**Level of probability (High, Medium, Low)**	**Description of Contingency Plan**
Risk that the call for proposals ERDF will not have the expected success in terms of innovation for remediation projects	Medium	Make more communication on the call for projects

Costs and funding sources	
Costs	**Funding Sources**
Incentives for the ERDF call for projects The amount available is 14 548 451 €	ERDF

Monitoring		
Self-defined Performance Indicators		
Indicator	**Target**	**Means of Verification**
Number of supported projects by ERDF using innovative techniques for depollution	1	Applications

Output Indicators		
Indicator	**Target**	**Means of Verification**
the communication document	1	The document

Territorial Impact
The AP implementation is a way to stimulate the demand for innovative techniques and to improve the dialogue between the different actors. It is also a way to continue to innovate in the decontamination of brownfields.

Date: 28/04/2020_____

Name of the organisation(s) : :

REGION GRAND EST

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Signatures of the relevant organisation(s): _____

Pour le Président du Conseil Régional
Par délégation
La Directrice
Délégation aux Fonds Européens
Nathalie ARNOLD

Date: 05/05/2020_____

Name of the organisation(s) : :

GISFI

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Signatures of the relevant organisation(s): Pierre FAURE-CATTELOIN - Président du GISFI

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