

Le FP9 au service d'un projet politique et d'une stratégie européenne

Boite à idées

Contributions des organismes suivants, Membres du CLORA



IFSTTAR



Propositions clés

- Bâtir une politique garantissant les intérêts stratégiques européens en matière de R&I, et assurant l'exploitation des résultats en Europe.
- Appliquer le principe de réciprocité quant à l'accès aux programmes respectifs de l'Union européenne et de ses partenaires internationaux.
- Mettre la réalisation des défis globaux au centre de la stratégie de coopération internationale, via une coopération approfondie avec les pays en voie de développement. Cela implique notamment la création d'un ARC – African Research Council – soutenu par la DG DEVCO.
- Créer des appels « territorial connections » ayant pour but de mettre en relation universités, entreprises et organismes de recherche dans le cadre d'écosystèmes territoriaux cohérents.
- Intensifier la communication des résultats scientifiques et de leur impact économique, social et environnemental, utilisant tous les canaux
- Faciliter le développement de plateformes d'échange entre citoyens et acteurs de la R&I, permettant la valorisation de l'intelligence collective en créant le dialogue entre scientifiques et citoyens.
- Se doter d'une revue internationale généraliste de diffusion scientifique de haut niveau, en Open Access, soutenue et financée par l'Union européenne

Introduction : le FP9 au service d'un projet politique et d'une stratégie européenne

L'Europe est confrontée à des défis multiples : montée des populismes, fracture territoriale, enjeux démographiques... Ces défis simultanés sont liés, les rendant particulièrement complexes à relever. Construire des solutions durables et efficaces nécessite une feuille de route avec des jalons et des objectifs priorités, ainsi qu'une stratégie pour investir en R&I.

Ainsi, la réalisation d'avancées sociales, environnementales et économiques repose sur la capacité des autorités publiques européennes, nationales, et locales à conjointement identifier, prioriser des objectifs, puis à investir dans la recherche et l'innovation pour les atteindre. En cohérence, il est nécessaire de créer les conditions pour inciter le secteur privé à participer à cette démarche.

Un investissement de la R&I fidèle aux promesses de Lisbonne

Les Etats membres de l'Union européenne se sont engagés à atteindre l'objectif des 3% du PIB européen consacrés à la recherche. Cela nécessite une augmentation de l'investissement européen, public et privé.

Le financement de la recherche et de l'innovation est plus que jamais nécessaire à la croissance économique et à la création d'emplois, et indispensable pour relever les grands défis mondiaux (agenda 2030) menaçant nos sociétés.

Au niveau européen, un 9^e programme-cadre financé à hauteur de 120 ou 160 milliards d'euros (confère respectivement aux propositions de Christian Ehler et de Pascal Lamy) contribuerait à atteindre l'objectif des 3% du PIB de l'Union Européenne, et à promouvoir une recherche collaborative d'excellence en Europe

Une politique de recherche intégrée et à fort impact au niveau européen

Le niveau européen est particulièrement pertinent pour financer la recherche et l'innovation. Il promeut une approche collaborative impliquant des partenaires issus de l'Europe entière. La valeur ajoutée du programme européen tient au fait qu'il s'inscrit dans un projet politique, celui de l'espace européen de la recherche et d'une Europe compétitive, durable et inclusive.

Propositions :

- Dans le cadre du pilier « défis globaux », il convient d'encourager aussi des consortia de taille moyenne (1-3 millions d'euros), plus flexibles, afin de se limiter aux partenaires essentiels.
- Une mission devrait être consacrée aux grandes crises politiques et sociales européennes : l'Etat de droit, le fossé économique entre les territoires et la redéfinition du projet européen, tenant compte des modalités d'interaction entre sciences et politique et permettant la participation des citoyens.
- Le concept de missions devrait s'inscrire dans une logique de valeur ajoutée européenne, et constituer une opportunité de définir des politiques plus harmonisées et intégrées au niveau européen :
 - en contribution à la réalisation des grands défis qui entraînent l'acceptation et l'engagement de la société civile ;
 - en surmontant les silos de financement, permettant ainsi de concentrer des ressources conséquentes (fonds nationaux, régionaux et privés qui s'ajouteront aux financements européens pour la réalisation d'objectifs définis) ;
 - en surmontant les silos institutionnels, bénéficiant de la coordination de l'ensemble des politiques européennes et des synergies horizontales entre la DG R&I et les autres.

Garantir un retour socio-économique de la R&I sur le sol européen

Il est nécessaire de prendre des décisions stratégiques et politiques en matière de propriété intellectuelle pour préserver l'intérêt des industriels (et de l'ensemble des acteurs européens). En la matière, l'Europe doit se doter d'un cadre effectif pour garantir ses intérêts économiques et stratégiques.

Pour cela, trois options sont envisageables :

- L'Union européenne pourrait se doter d'une législation incitant les acteurs financés majoritairement par des fonds publics européens à exploiter les résultats de la recherche financée en priorité sur le sol européen. Cette législation pourrait prévoir, en dernier recours et sur des domaines ciblés, une disposition inspirée du Bayh-dohle act américain qui donnerait à l'Union européenne une licence d'exploitation des résultats de la recherche financée sur fonds publics (cette licence ne serait utilisée par les autorités que lorsque c'est absolument nécessaire pour garantir les intérêts européens).
- Alternativement, dans le cas de résultats uniquement exploités à l'extérieur de l'Europe, sans atteinte aux intérêts stratégiques européens (domaines ciblés), le partenaire exploitant reverserait à l'Union européenne un pourcentage des revenus obtenus grâce à ces résultats, dans un cadre établi par l'accord de subvention, jusqu'à atteindre, au minimum,

- la subvention publique initiale. Cette compensation financière serait ensuite réinvestie dans la recherche et l'innovation en Europe.
- La Commission européenne pourrait généraliser la clause de première exploitation sur le territoire européen à tous les projets, en donnant la possibilité aux participants « d'opt-out » en précisant leurs raisons.

Une stratégie de coopération internationale cohérente et lisible

L'Europe doit se doter d'une réelle stratégie internationale pour la recherche, cohérente et lisible. La collaboration scientifique avec les pays en développement est une condition sine qua non pour atteindre les objectifs de développement durable (ODD) et pour réduire les inégalités entre et dans les pays du monde.

Propositions

- Affecter une ligne budgétaire du PCRI à la coopération internationale pour la réalisation de défis globaux en lien avec l'agenda 2030. Dans ce cadre, la participation des pays tiers serait expressément prévue, avec un pourcentage substantiel de fonds dédiés.
- Consacrer 5% des financements de la DG DEVCO à la R&I des pays en voie de développement. Ceci devrait inciter à une meilleure articulation entre les programmations DEVCO et R&I.
- Aligner des grandes missions européennes du 9^e PCRI sur la réalisation effective des Objectifs de Développement Durable.
- Dans le but d'aider au développement de l'écosystème africain de recherche, l'Union européenne et les Etats membres devraient encourager la création d'un African Research Council (ARC) en s'inspirant des bonnes pratiques du programme ERC.

Accords d'association : pour une politique d'ouverture stratégique

La science est globale par nature, et la possibilité de coopérer avec tous les pays du monde est fondamentale pour la faire progresser.

Le rapport Lamy préconise des accords d'association au programme cadre sur la base de l'excellence, et sans critère géographique, citant notamment le Canada comme partenaire potentiel. Pour la grande majorité des pays actuellement associés au PCRI, le rapport entre contribution et retour financier est très excédentaire. Cette situation est particulièrement inquiétante notamment s'agissant des projets mono bénéficiaires (ERC, MSCA et EIC), pour lesquels la valeur ajoutée de la coopération internationale est moins évidente. L'arrivée potentielle de nouveaux pays associés (y compris le Royaume-Uni) risque d'accentuer ces déséquilibres et de désavantager les Etats membres de l'Union européenne.

Propositions

- Les accords d'association doivent être financièrement neutres (évitant ainsi les bénéficiaires nets), notamment via un mécanisme de réévaluation annuelle des contributions.
- Un système de financement « pay as you go » pour les pays associés est envisageable (comme mis en place actuellement pour certains pays-tiers via les matching funds)
- Le principe de réciprocité quant à l'accès des chercheurs européens aux programmes nationaux de recherche des pays industrialisés et BRICs devrait être le corollaire du principe d'ouverture du FP9 à ces pays.

Restaurer la confiance de la société européenne en la science.

Les changements globaux impliquent des transformations dans les modes de vie des citoyens et le 9^e PCRI devra accorder une place importante aux interactions entre la science et la société. L'appréciation du progrès scientifique et technologique par les citoyens devrait être considérée et non laissée aux seuls marchés. Parallèlement, on constate la montée de l'expertise associative (Cf. négociations internationales sur le climat). Il est dès lors important de prendre en compte les nouvelles attentes des citoyens et de restaurer leur confiance en la science.

Propositions

- Pour les sujets qui s'y prêtent, la science participative doit être amplifiée dans chaque Etat membre avec une approche coordonnée au niveau européen, basée notamment sur le partage de bonnes pratiques et une méthodologie éprouvée¹.
- Il importe de développer des plateformes d'échange entre les citoyens participants et les chercheurs, notamment sur la collecte de données et la nature des problématiques. Ces plateformes permettraient une meilleure compréhension de la démarche scientifique par la société, la valorisation de l'intelligence collective et l'émergence de nouvelles méthodes, plus participatives et plus inclusives.
- Valoriser et étendre les bonnes pratiques (au niveau européen, national et régional) à l'ensemble du FP9 et prendre en compte l'approche participative dans les travaux de l'ensemble des directions générales de la Commission.
- Intégrer dans les actions de formation l'apprentissage de la démarche de science participative (MSCA, Erasmus +).

Mieux communiquer la science européenne aux citoyens européens afin de rendre accessibles les enjeux et les résultats produits

Les résultats scientifiques sont issus d'une méthode structurée, collective, et validée qui les rend légitimes. La Commission européenne et les acteurs de la R&I européenne doivent vulgariser la méthode scientifique et les résultats de la science pour le grand public. La valeur ajoutée européenne des programmes de recherche doit être mise en avant : les participants doivent se faire à la fois les émissaires de la science et du projet européen. Il faut aussi illustrer et communiquer l'impact économique, social et environnemental de la R&I européenne.

Propositions

- Intensifier la communication des résultats scientifiques et de leur impact économique, social et environnemental, utilisant tous les canaux (médias nationaux et européens, réseaux sociaux). Cela implique d'amener la science européenne dans les grandes émissions des chaînes nationales et européennes et de créer des spots ludiques et accessibles.
- Renforcer les partenariats avec les musées scientifiques et les associations, dont les ONG, pour promouvoir les résultats des projets européens.
- Mettre en place une plateforme européenne de conseil en stratégie de communication pourrait aider à exploiter le potentiel de visibilité des résultats de la science européenne.
- Les missions du FP9 pourraient chacune bénéficier d'une stratégie de communication spécifique.

Créer une publication européenne de haut niveau

Le marché de la publication scientifique généraliste de très haut niveau est aujourd'hui dominé par des groupes britanniques, américains et internationaux. Ils pratiquent par ailleurs des prix bien supérieurs à leurs coûts. Une publication européenne généraliste de haut niveau, soutenue par des fonds publics, aux tarifs contrôlés permettrait de :

- Promouvoir une souveraineté européenne pour la propriété des publications européennes de haut niveau ;
- Reprendre le contrôle de l'ensemble du dispositif d'évaluation des chercheurs et des établissements ;
- Diminuer les coûts de publication en sortant de la logique de profit par l'investissement public.

Proposition :

- Se doter d'une revue internationale généraliste de diffusion scientifique de haut niveau, soutenue et financée par l'Union européenne, en contrôlant les coûts de publication et de lecture. Cette revue sera entièrement au service des utilisateurs et sans objectif de profit.

- Exploiter au maximum les possibilités offertes par le numérique afin de valoriser le contenu scientifique mais aussi fournir le plus de services possibles pour faciliter le travail des chercheurs et des innovateurs.
- Cette revue serait entièrement en Open Access, et participera ainsi d'une politique européenne volontariste de science ouverte, ciblée et délibérée, qui doit permettre de promouvoir les valeurs européennes dans le monde.

Promouvoir l'innovation dans les écosystèmes et créer une Agence Européenne de l'Innovation

A l'issue de la phase de pilote, l'EIC pourrait être revu. Tels que présentés actuellement, les outils de l'EIC mettront principalement l'accent sur l'innovation proche du marché en soutenant les innovateurs individuels dans une approche bottom-up (un individu ou une entreprise). Ce soutien individuel présente des risques en matière de compétitivité et d'impact : les innovateurs ayant été soutenus par l'EIC pourraient ensuite être rachetés par des concurrents hors-UE. Par ailleurs, il semble contre-productif de dissocier l'innovateur de sa chaîne de valeur et de son écosystème.

Le président Emmanuel Macron a soutenu la création d'une "Agence européenne pour l'innovation de rupture" pour renforcer la compétitivité de l'Union Européenne. Cette agence et l'EIC s'inscrivent dans des logiques différentes : les deux entités n'auraient pas le même degré d'implication dans le pilotage des projets financés.

Propositions

- Dédier une partie de l'activité de l'EIC, sur appel à propositions, au financement de l'aide à l'exploitation des résultats de projets de recherche à fort potentiel ayant été financés par les PCRI successifs.
- Etablir des règles préventives pour protéger les intérêts de l'Union européenne dans le cas où un innovateur soutenu par l'EIC est racheté par une structure extérieure à l'Union.
- L'EIC devrait également soutenir les écosystèmes territoriaux, qui permettent non seulement de faire émerger l'innovation, mais aussi de renforcer l'impact de l'innovation, en irriguant les territoires et en renforçant la compétitivité et l'emploi au niveau local et Européen. Cela pourrait prendre la forme d'appels à proposition dédiés et transversaux dans les piliers 2 et/ou 3 du FP9 (Cf. proposition Territorial Connections – Annexe I).
- Doter l'Europe d'une agence pour l'innovation disruptive en soutien aux priorités industrielles et technologiques stratégiques européennes, avec une orientation active de la R&I et une importante prise de risque. Cette structure devrait avoir une gouvernance autonome et flexible.

Créer des liens forts entre la formation et la recherche

Afin d'accroître l'impact des projets de recherche et d'innovation, il est important de renforcer les synergies avec la formation (adaptant les compétences aux résultats de l'innovation). Cela permettrait également de mieux assurer le transfert des connaissances. C'est un chantier essentiel pour mettre la formation en cohérence avec les besoins de la société et du marché, notamment concernant les nouveaux métiers.

Propositions

- Accroître la gouvernance commune entre la DG EAC et les autres DGs.
- Flécher des actions de formation initiale pour assurer la diffusion des résultats de la recherche
- Développer des réseaux d'universités européennes (5/6 universités) impliquant une vision intégrée entre Erasmus + et le programme-cadre, notamment par le renforcement des interactions entre l'éducation et les activités de recherche. A travers ce programme, le renforcement des mobilités fléchées internes au réseau (étudiants, enseignants-chercheurs, personnels de soutien) permettra la mise en place d'actions communes de formation et de recherche et accroîtra la visibilité internationale des établissements. (voir annexe II)

Ce programme pourrait être porté par la DG EAC et financé par Erasmus + et le FP9, en lien étroit avec les fonds structurels.

Poursuivre la simplification pour les chercheurs

La simplification d'Horizon 2020 a donné satisfaction. Elle doit toutefois être poursuivie sur certains points :

Propositions

Sommes forfaitaires

- La Commission doit s'assurer que l'utilisation des sommes forfaitaires ne transfère pas une charge de travail supplémentaire des équipes administratives vers les chercheurs, en situation de responsabilité directe vis à vis de la Commission sur les questions budgétaires.
- Les critères d'obtention des sommes forfaitaires devraient pouvoir être validés sur la base des livrables et/ou des milestones et/ou de l'exécution des tâches du work package. Dans tous les cas, les critères devront rester flexibles.

Communication et information

- Un guide de bonnes pratiques de l'utilisation des sommes forfaitaires devrait être publié.
- L'Annotated Model Grant Agreement (AMGA) est un outil pédagogique important, à faire évoluer constamment et à enrichir d'exemples.
- La Commission européenne devrait faciliter l'adhésion au principe d'Open Science, en créant des modèles et exemples de DMP.

Transparence des procédures

- La transparence du processus d'évaluation devrait être améliorée, notamment par la transmission dès la première étape aux participants de rapports d'évaluation de synthèse plus détaillés, plus précis et moins « lissés ».
- la transparence et la gestion des listes de réserve doivent être optimisées et un retour d'information systématique aux participants concernés est nécessaire.

Règles de financement

- Les règles de financement de la recherche et de l'innovation doivent être alignées sur celles du programme-cadre. Notamment, les règles en matière d'aide d'Etat ne devraient pas entraver l'utilisation des fonds FEDER. Les fonds dédiés à la R&I dans le programme FEDER pourraient être gérés par une agence européenne tout en laissant aux régions européennes la responsabilité de la sélection et de la supervision des projets.

Annexe I : Territorial connections

A new action for European excellence in territorial innovation ecosystems (proposal)

Abstract

“Territorial connections” is a new action intended to bring together Europe’s territories to use the innovation capacities of their ecosystems to develop Europe economically, environmentally, and socially. The action integrates the 9th framework action (FP9) with other funds as a concrete driver for synergies in EU funding, to the direct benefit of its citizens.

Its originality resides in a novel way to leverage the use of the Research and innovation Smart Specialization Strategies (RIS3) whose main priority is to achieve the FP goals and maximize impacts.

The idea is that several regions sharing one or several smart specializations join their forces and challenge their ecosystems to develop together disruptive innovations corresponding to their chosen targets and to the FP priorities. Universities will be the key actors for research, while companies will provide R&D as well as internationalization and business models to promote the most promising results. To reinforce the ecosystems cooperation, special attention will focus on the knowledge triangle interfaces (research/education, research/innovation, innovation/education).

We believe that the dynamics created by the actors of the ecosystems will leverage the regional strategies, enhance creativity and pave the way to new European R&I leadership and industrial champions.

As a preliminary position, we advocate for a return to innovation and research as one of the top priorities in the debate on the future of Europe, and for a global approach of the European budgetary effort. We must not only focus on FP but also defend the cohesion policy, which represents the same amount of budget for R&I support. And we need to mobilize regional and national authorities if we want to reach the 3% GDP objective. We are still very far from this.

The stakeholders² wish to propose the creation of an action that strongly relies on excellence to serve the European innovation ecosystems (see definition below) by promoting shared development strategies between regions³ with a similar theme in their Research and Innovation Smart Specialisation Strategies (RIS3)⁴, to encourage innovations and inventions.

2

(List of Stakeholders to be added)

3

Our understanding of the term region is referring to European territories that were allowed to enter the Smart Specialization Strategy program.

4

Common S3 (Smart Specialization Strategies) should be a horizontal policy element able to provide a framework for all dimensions of the impact via a thematic approach (based on the major scientific fields) integrated with an approach based on the targeted industrial sector (covering the entire innovation chain).

Even though the status of RIS3 is somehow unbalanced between the different European territories, experience shows that innovation is mainly driven by strong territorial innovation ecosystems with universities of excellence at their hearts. Along these lines, Territorial Connections has a strong potential to reinforce the RIS3 concept in FP9 and to accelerate its implementation in Europe, in particular in the Eastern parts of EU27.

The new action should also include a proposal of concrete measures for the future of the structural funds (RIS3) thus enabling them to work as complementary resources in favour of an integrated education-research-innovation approach. Real synergies with the Framework programmes (H2020, FP9) will enable the EU to strategically boost these innovation ecosystems.

This action could also be an innovative tool to mobilize a diverse set of actors towards meeting the challenges of the continent, aligned to the implementation of the next framework programme (see the Lamy report) and the Sustainable Development Goals (SDG).

Defining the targets

Territorial connection is based on consortia (territorial ecosystems of ecosystems) involving territories sharing their RIS3, based on excellence and capacity to achieve goals and maximize impacts. The main target is not to set networks, but to implement R&I projects and contribute to achieve FP goals.

Territorial connection commits to the scientific excellence and European added value principles, but offer a specific added value through excellence, based on ecosystems complementarity to promote new European champions and address the whole R&I value chain from science to jobs.

In this respect, Territorial connection will be a good tool to optimize impacts. Ecosystems complementarity will facilitate widening participation to all kinds of local ecosystems, from western or eastern Europe if they provide specific assets and added value to the consortium.

Leading European regions with R&I smart specialisation strategies are invited to cooperate in a network built on each other's strengths. Four different groups can participate in a network: universities, other civil society actors, businesses and governments.

The action shall particularly target the innovation capacity of universities. They will assume the role of support hubs for innovators, start-ups and SMEs that have a promising potential to develop innovative technologies and/or reach new markets, but do not yet have the necessary resources. By bringing together actors of different regions with different profiles and by putting universities in the centre of the consortia, all participating actors can learn and profit from each other's strengths resulting in more innovation in the ecosystems' value chains.

Defining territorial innovation ecosystems

The innovation ecosystems are the territorial playing fields of the local innovation actors with universities at their heart. Strong universities are an integral part of a successful innovation ecosystem as their research supports the technology development and they educate the experts needed on the job market. Other actors of the ecosystems involve public players (vocational training, research centres, regional authorities, cities, conurbations, public services, etc.), private players (businesses) and civil society (NGOs, associations, unions, etc.), together with "interface"

structures working to accompany and develop innovation projects, such as the technological research centers, technology transfer offices, R&D and business clusters, start-up incubators and accelerators.

Ideally, these actors should complement one another. Universities can use the results of research cooperation to improve training (universities, other civil society actors, businesses and government) and create new knowledge. Businesses can use them to innovate, enhance working methods, strengthen their product range and get access to international markets. Key elements to the success of the innovation ecosystems reside in the development of research-training, research-innovation and training-innovation interfaces and in their appropriation by the actors in the ecosystem.

An action to mobilize place-based innovation towards society and environmental challenges

The stakeholders propose the creation of a new set of actions devoted to meet the challenges of Europe by strengthening the innovation ecosystems approach in the Framework Programme for Research and Development (FP), based on the knowledge triangle, associating the different types of players (institutions, government, civil society and businesses) within the framework of an RIS3. This action would promote partnerships between different European ecosystems by mobilizing the various actors around a specific theme (e.g. sustainable development, marine renewable energy, autonomous transports, digital factories, artificial intelligence, precision medicine, etc.).

The objective is to combine and strengthen the best class innovation ecosystems of several comparable territories by their RIS3. This framework should create dynamics that take into account rapid changes in knowledge, the need for territories to adapt and co-create more integrated development strategies at European level. One of the aims here is to reinforce the H2020 approach by networking European ecosystems to develop innovation and create future European champions.

- This action will mainly be based on a bottom-up approach and on a specific theme. The consortia would themselves propose innovation themes that fall within their RIS3
- The selection criteria for choosing the best project proposals will be based on the excellence of academic actors and the best potential for disruptive innovation
- The consortia could include three to six different territorial innovation ecosystems (five on average), with at most three local stakeholders per ecosystem. The network should include at least three universities of excellence.
- Initial funding will be earmarked for:
 - activities linked to research, training and innovation,
 - actions that will strengthen the interfaces between the elements of the knowledge triangle: technology transfer (the interface between research and innovation), knowledge transfer (the interface between research and initial training), improvement in human capital (the interface between lifelong learning and innovation),
 - facilities that provide structure, such as research infrastructure, that will also be eligible and funded by the structural funds.

Funding will be varied and adapted to the types of actors involved in the project: funding for basic and applied academic research, technology concepts, proof of concept, prototype development,

demonstrators, maturation funds, in-use searches, market surveys, commercial development, training modules, educational engineering, actions in favor of student entrepreneurship, ideas laboratories (science-society interface), organizing debates, etc.

- Funding will be planned for 5 to 7 years. Low TRL basic research will be funded for and assessed after 3 years with a go-nogo decision, taken by the commission experts and validated by the industrial partners, depending on its actual potential for innovation.
- The EU funding will be included in an average range of 10 to 20M€ per project and launched in a form of a pilot action in the 2018-2020 period. The business partners will be co-financed according to their turnover or profit levels
- Incentive measures will be put in place to encourage the inclusion and participation of regions striving to move towards excellence.

Facilitating synergies between the FP, the structural funds and ERASMUS+

Territorial connection is not about cohesion policy. We are not in the capacity building field but in the best class smart specialization networks, contributing to European excellence.

The debate concerning synergies has not yet led to satisfying solutions.

We must move from synergies to co-construction of new common actions and fully recognize the role of regions and cities in the setting-up of excellence in research and innovation. This is a pre-condition to develop effective synergies between FP and cohesion policies.

Since one of the aims of the European Commission is to maximise impact at territorial level, we believe that it is necessary to reinforce coordination between the different EC Directorate-Generals, *and* to enable a convergence of the different funds linked to research and to innovation to better serve ecosystem strategies, and to avoid opportunistic funding. For this, we would suggest to:

- Harmonise the rules of programs linked to research and innovation (ERDF, INTERREG and framework programme) with each other and with national and regional rules, imposing single rules closer to those of the Framework program and removing the problems of state funding.
- Consider TC as being a new approach crossing FP9 and territorial innovation ecosystems and allow the action to mobilize additional funding from cohesion policy and regional budgets with a target of one new euro for 1 FP euro. On these grounds, the global budget of a TC project could reach around 50 million Euros.

Finally, the stakeholders would like to point out that, within the framework of the Erasmus+ consultation, it has also made proposals for structural partnerships that would durably bring together up to six higher education institutions through training and research projects in order to strengthen the European Higher Education and Research Area.

Conclusion

The ultimate goal is to design an action at European level to support excellence in the joint development and management of territories. It includes the notion of sustainability by addressing the needs of civil society and participating in reflection on the future. It allows the emergence of new solutions through a systemic approach including the appropriation and sharing of knowledge between stakeholders. It commits to the excellence principle by joining the resources of best class

RIS3 ecosystems. The expected result should be an open innovation scheme, built as an “ecosystem of ecosystems”, addressing the continuum research-education-innovation with an equal commitment of the academic and the economic stakeholders. It opens new ways, through collaborations between European territories, to optimize and accelerate their developments and achieve the European framework program goals, while creating common dynamics of major innovations at the service of the citizens of Europe.

Territorial connections and other comparable European programs/actions

There are already several European Research and innovation programs integrating territorial components. We point here in three tables the main differences between TC and three other programs/actions, Regions of Knowledge 2, KIC and Interreg

Territorial Connections	Regions of Knowledge 2
Regions are not defined by administrative boundaries	Regions are administratively defined
Participants are from different regions	Participants must be from the same region
Regions must share at least one RIS3	Regions don't need to have a RIS3

Territorial Connections	KIC
Participation of European territories in consortia Research and innovation	Consortia are mainly academic or economic Innovation and market
Bottom-up process	Top-down process
Medium-size action	XXL program

Territorial Connections	Interreg
Transnational program	Crossborder program
Global R&I challenges	Crossborder cooperation
Bottom up process	Partially top-down

Project funding (FP9⁵)

5

As already mentioned, if the action is allowed to mobilize additional funding from cohesion policy and regional budgets with a target of one new euro for 1 FP euro, the global budget of a TC project could reach around 50 million Euros.

Type of actions	Funding range/partner/5 years (M€)	Minimum funding range (M€) (3 ecosystems including 2 partners each)	Maximum Funding range (M€) (6 ecosystems including 3 partners each)	Average funding range(M€) (12 partners)
RIA	0.6 -1.3	4-8	11-23	7-16
IA	0.7- 2.1	4-13	13-38	8-25

Average funding range independent of action type: 7-25 M€

Sharpened average funding range independent of action type: 10-20 M€

Annexe II : European universities

Objective for the creation of European structuring partnerships

- Structure the EHEA and ERA together
- Aims to support common long-term strategies both in education and research between a limited number of European higher education institutions (4 to 6), who have decided to work closely together to provide innovative pedagogies and excellent research, building on their complementary strengths. This network of universities aims to create a mobility space for all types of members (students, professors, researchers, administrative staff) and covers all the fields of partners (training, research, innovation, governance, etc.). These European universities are intended to cover multiple areas of cooperation and not just one single theme.
- The resulting leverage effect will give further structure to relationships between institutions at student, lecturer-researcher and administrative staff levels, with a maximum number of them being able to benefit from this closer cooperation.
- It will also strengthen the virtuous links between research and training and reinforce complementarity between higher education institutions.
- Cooperation should cover all 3 cycles: Bachelor, Master, Doctoral levels, and could be specialised in certain areas
- Ensure sustainability for their *modus operandi*

How?

By supporting a genuine integrated vision between Erasmus+ and H2020/FP9, reinforcing the links between education and research activities by funding activities that are complementary to FP9 and Erasmus+ projects and will ensure the sustainability of the cooperation and long-term common objectives.

1. Strengthen the links between research and education

- ***Develop critical thinking among students, starting at Bachelor level***

Involve research teams of the member institutions in the creation of a module in the curriculum offer of the European university to not only raise awareness about research among students at undergraduate level, but also to develop their critical thinking skills. This module could address the following topics:

- i) explanation on the identification of a scientific question,
- ii) bibliographic research and tools,
- iii) selection of instruments to resolve a scientific question,
- iv) a short stay in a research team in one of the structuring partnerships institutions (could be supported by Erasmus+ KA1),
- v) basis of scientific integrity,

vi) presentation of research professions and the means to enter them.

This course module could be co-developed by different stakeholders from partner institutions and be made available to all students from the partnerships as an integral part of their curriculum. It could be distributed either via videoconference or via the creation of an online platform, and encourage students to work in multidisciplinary teams. H2002 and FP9 beneficiaries would be requested to illustrate this module with concrete cases.

- ***Develop innovation and entrepreneurship skills: from the laboratory to the production and enterprise.***

The creation of a module in the curriculum offer of the members of structuring partnerships will be strongly supported in order to raise awareness about the innovation and entrepreneurship among students at master and PhD level. This module could address following topics:

- i) protection and exploitation of intellectual property resulting from the work of researchers,
- ii) the maturation of innovation projects and technology transfer
- iii) what is entrepreneurship about?
- iv) from research to entrepreneurship (including testimonials of student researchers who have carried out a business project),
- v) the various mechanisms combining research and business creation.

This course module could be co-developed by different stakeholders from partner institutions and professionals in innovation and business creation. They will be distributed either via videoconference or via creation of an online platform.

- ***Life long learning***

Lifelong learning (LLL) is essential for the competitiveness of the knowledge-based economy. It applies to all levels of education and training and concerns all stages of life, as well as the different forms of learning. People who are following LLL are in general older than a student in initial training and may often work in parallel, making mobility impossible during the course of study.

Thus, the creation of pedagogical modules on line adapted to this target, with a mix with a visio with the teachers appears as a solution. The portfolio of on line courses for the different program developed by the teaching staff of the institutions involved in the European university for the students in initial training will be made available to the LLL courses. In the LLL, they'll be here designed to encourage the delivery of skills rather than lead to diplomas

The modules may be designed in the aim to transfer the latest research knowledge.

2. Dissemination of H2020 and FP9 results back into education

- ***Researcher mobility***

There will be a need to strongly encourage integration and dissemination the European research programmes knowledge to this institutional network, once one of the institutions participates in the H2020 and future FP9 projects (e.g. the ERC, MSCA or collaborative research projects) which

should lead to a quasi-systemic transfer of knowledge towards the training of the involved institutions, raising of awareness about the research at undergraduate level and doctoral level (according to the relevance of knowledge) and additionally through seminars (which could be on line) and internships in labs (especially in those which manage FP9 projects) of the members of partnership.

- ***Invited expert mobility***

There will be a need to have a mechanism to invite high level researchers/ teachers/ innovator/ industrialist from a member university staying between 1 and 6 months to deliver lectures, to share their know-how and to expand gateways between the training, research and innovation (he will have the possibility to address his knowledge to all members of the European university, either through virtual and physical mobility (cf. annex 1).

3. Education

3.1. Mobility as a tool to structure and strengthen these partnerships The structuring partnerships will be built on the basis of a multi-annual strategy jointly drawn up by the member institutions.

The European universities will have to demonstrate their willingness to structure their partnership in a sustainable way, notably by strengthening the link between research and training. They could also highlight their complementarities and common features as well as the willingness to strengthen their specialisations and centres of excellence.

They should be flexible and dedicated to a continuous support (5 years with an intermediate evaluation in the 3rd year).

The cooperation between members of structuring partnerships could be additionally supported and assured in terms of sustainability. The mobility will be considered as an important vector for the alignment between heads of department from institutions, lecturers-researchers and students. This mobility is to be addressed to different categories of institutions and will strengthen strategic links and certain areas of specialisation of these institutions.

3.1.1 student mobility

There is a panoply of European programmes / tools to favour the mobility of students. The objective is to have a sufficient number of students concerned. The institutions of this partnership can then choose the right instrument and increase the integrative process step by step and whatever the proposal, a substantial amount of students must benefit from this mobility. The supervised mobility (comparing to the free mobility) shall create real trusty environment, for both students and teachers; it is a key element in increasing mobility. This physical mobility of students can be achieved through three different processes:

- *credit mobility*, which shall concern substantial number of students in another institution member (s) of the partner, which will be part of their curricula from their host institution (studies or internship, whose duration can vary from 2 months to one academic year)

- mobility through double degree diplomas (studies or internship following according to the modalities established by the partners)
- mobility in joint masters or joint diploma (possibility of using Erasmus mundus programme)

Student mobility, via credit mobility, is one of the levers allowing the individualisation of curricula, as well offering the possibility to develop training courses based on pluridisciplinarity promoting the idea of a training program built around of major and minor. This approach is today recognised to ensure better employability.

The doctoral candidates will have the possibility to apply to specific MSCA programme for its mobility

Concerning the mobility of students with disabilities, a charter drawn up by the European Commission would enable the actors concerned to clarify their reception procedure, aiming to harmonise practices between EU member states.

3.1.2 Teachers/ researcher mobility

Setting up double degrees or joint degrees imply mobility of faculties and researchers

- as visiting professor (mobility window for ECTS)
- as professor contributing to the setting of double degree
- as professor contributing of joint degree

It should be noted that the mobility of teaching often allows, in parallel, the emergence of new scientific cooperation during the partner's stay. This is thus an opportunity to reinforce the link between research and teaching.

3.2 Innovative pedagogy

Pedagogical innovation is an opportunity to promote the individualisation of students' training curricula by breaking down the barriers between disciplines.⁶

3.2.1. New approaches of teaching learning

The new pedagogical approaches must be at the heart of the concerns of the members of these partnerships (it would represent a criteria of evaluation). The use of digital tools is a means of facilitating their development and implementation in the curricula.

- self-student enter approach / Flipped classroom⁷

6

One of the pedagogical approaches, the integrated curriculum, which makes it possible to learn around a theme using several disciplines (either multidisciplinary or interdisciplinary or transdisciplinary) is described here: <http://www.ascd.org/publications/books/103011/chapters/What-Is-Integrated-Curriculum%C2%A2.aspx>

7

<http://www.uq.edu.au/teach/flipped-classroom/what-is-fc.html>

- blending learning, combination of face-to-face training and distance learning, helps to optimize time spent in classrooms, individualize courses and improve the quality of training programs.
- problem-based learning (PBL) is a student-centred approach in which students learn about a subject by working in groups to solve an open-ended problem. It can be conducted in both face-to-face training and virtual classrooms.

3.2.2. Virtual classroom

Virtual mobility cannot replace physical mobility. It should be considered as an additional tool enabling new types of cooperation between institutions, notably by contributing to distance learning for joint diplomas or to scientific web-seminars for doctoral students.

It will be useful to encourage the creation of distance course modules in the framework of double degree diplomas in order to allow students to experience the internalisation. These modules could be distributed to classrooms via videoconference but also via a platform and they are particularly adapted to the format of visio conference/ virtual class. It's the way towards international at home and inclusiveness. In addition, the pedagogical approach could follow the 'problem-based learning' method, by fostering the collaborative working mode between students from different institutions involved in the training.

4. How to strengthen the cooperation strategy

4.1. Strengthening the institutional links between the member institutions involved in European universities: an European capacity building

This partnership is based on evolution on common strategies, improvement the functioning of administrative structures and problematic (estate, financing, energy, sustainability concept factor 4, well being of students, HR strategies, leadership and management, governance, as well improvement of internationalisation of the institutions, etc.). These important issues can be dealt inside an infra (between the member of the European university) European capacity building. They may concern the academic and administrative staff with physical and virtual mobility.

Conclusions will be made available to each community lacking the dissemination in sharing their best practices. The objectives will be based on the assistance to one of the partnership members, improvement of the internal process, the quality assurance, dissemination (outside Europe) and the visibility of new practices. It must be made available to all the members.

The members of the European university will propose their own priorities and objectives

4.2. Platforms in service of the structuring partnerships

In order to alleviate difficulties associated with long mobility for certain categories of students, there is a need to strongly encourage the use of tools such as the videoconference or the course modules (credit mobility) uploaded to a platform by a partner institution. Similarly, the use of 'blended learning' in the framework of double degree diplomas will be supported.

Digital sources, in terms of content and recording, could be made available to the community after a period of time agreed between the institutions of the structuring partnership (cf. annex 1).

4.3. Synergies to be strengthened

Greater interactions sought between the ESF and the Erasmus+ programme will come about through a true harmonisation of the rules for funding and the accounting calendars in order to increase leverage (e.g. equipment, long-life learning) and a complementary funding for individual mobility.

Necessary conditions

This integrated vision requires:

- Tighter governance between the three Directorates General (notably the DG R&I, DG EAC and DG REGIO);
- Stronger and more structuring links between the Erasmus+, H2020 programmes and the structural funds, and real research/training interactions that can work in favour of the strategy implemented by higher education institutions;
- The research dimension should be integrated into the Erasmus+ programme wherever possible, and the training into the H2020 programme, in order to facilitate as soon as possible the transfer of research results to the education, notably the education of young researchers;
- Reinforcement of links between the public and private actors.

5. TOWARDS A STRENGTHENING OF RESEARCH AND INNOVATION ACTIVITIES

Once the European universities have been set up under DG EAC umbrella (Erasmus + program, with FP9 complements for support to research activities), the transition from a coordination mode of operation to a more established governance is launched, and the proof of their functioning is acquired (whatever the chosen model), the European universities will have the possibility to reinforce their cooperation via research or research & innovation projects.

1. They could receive funding through existing FP9 calls for proposals, some of which would be targeted at European universities. In this context, several types of calls for proposals could be of interest, such as ITNs, collaborative projects based on missions (see Lamy report), etc.
2. The objectives of these research and innovation projects could, within FP9, be reached by the setting-up of dedicated calls for proposals responding to a specific demand of impact in term of worldwide recognition and also socio-economic impact on the territories.

- calls for proposals whose objective could be to strengthen ecosystems on excellent research and innovation projects (link to the "territorial connection" CPU proposal). These projects will have socio-economic repercussions on these different

territories, tighten the links between these ecosystems (links with local actors - start-ups, companies, poles) on the basis of excellence.

- Research and innovation project of a laboratory without walls (bringing together laboratories from these institutions members of these European universities) to increase the quality and scientific originality, the transfer of knowledge produced and contribute to the international visibility of these universities. In this context, the results will have to play a driving role in the training. These projects will also need to strengthen the dynamics of the ecosystems concerned.