

Indicative thematic factsheets from the EIT Strategic Innovation Agenda¹

Factsheet 1: Innovation for Healthy Living and Active Ageing

1. THE CHALLENGE

Health, demographic change and well-being have been identified as major societal challenges which will be addressed within the framework of Horizon 2020. The overarching aims of any action to address this challenge should be to improve the quality of life of European citizens of all ages and to maintain economic sustainability of the health and social care systems in the face of increasing costs, shrinking human resources and citizens' expectations for the best care possible.

The challenges relating to the health and social care sectors are numerous and closely interlinked. They range from chronic diseases (cardiovascular, cancer, diabetes) together with overweight and obesity, infectious (HIV/AIDS, tuberculosis) and neurodegenerative diseases (exacerbated by an increasingly ageing population), to social isolation, reduced wellbeing, increased dependency of patients on formal and informal care, and multiple exposure to environmental factors with unknown long-term health consequences. In addition, barriers to the application, exploitation and deployment of new findings, products and services prevent effective responses to those challenges.

The response to these challenges has been defined in Horizon 2020 as aiming "to provide better health, quality of life and general wellbeing for all by supporting research and innovation activities. These activities will focus on the maintenance and promotion of health throughout our lifetimes, and on disease prevention; on improving our ability to cure, treat and manage disease and disability; supporting active ageing; and on contributing to the achievement of a sustainable and efficient care sector, including local and regional services and the adaptation of cities and their facilities for an ageing population."

¹ [Decision No 1312/2013/EU](#)

2. RELEVANCE AND IMPACT

A KIC on innovation for Healthy Living and Active Ageing will help meeting Horizon 2020 priorities, namely those defined in the context of the societal challenge "Health, Demographic Change and Wellbeing".

This thematic field is highly relevant from a societal and public policy point of view. Questions of healthy living and active ageing have a bearing on nearly all sectors of our lives and society, and very often call for regulatory action. The health and social care sector is also highly relevant from a socio-economic perspective, since it is one of the sectors on which most money is spent (public and private);² and the sector does not only offer opportunities for economic and technological innovation, it also has a great potential for social innovation. Ageing population is a challenge for public services and requires for example the development and improvement of local services and urban adaptation.

The socio-economic relevance can be further underlined by the fact that Europe benefits from the presence of a solid pharmaceutical sector and well-developed health and social care systems providing jobs to millions of people across the Union. The sector is also one of the biggest high-tech manufacturing sectors in the Union. The potential for growth in these areas is very high since an ageing society means an increase of aggregated demand for care and independent living products and services.

Other sectors also come into play, such as tourism. The ageing population is formed to a large extent by a generation which is used to travel and is still willing to travel, has high quality demands, and hence has a growing need of accessible services (transport, hotels, entertainment etc.). More accessible tourism services can boost the competitiveness of the whole sector and would promote further inclusion of the ageing population.

Not least, the Union benefits from a world-class level of research and education in this area. In many Member States excellent research infrastructures and institutions

² Spending on health differs from country to country. Share in GDP ranges from 1,1 to 9,7 % and from 4 % to over 18 % of total public spending. Health related sectors have a high R&D intensity: pharmaceuticals and biotechnology outnumber by far any other sector (15,9 %); health care equipment and services are also very high (6,8 %).

do exist which provide an attractive basis for industry involvement in the planned activities of the EIT.

The challenges related to healthy living are valid across Europe. The responses, which can be provided by a KIC, require intensive co-operation between excellent, multidisciplinary and multi-sector teams with participants from all sectors of the knowledge triangle (higher education, research and innovation). A KIC on this theme would have the added value of linking the activities of innovation and higher education with the already existing excellent research base. In doing so, it will put particular emphasis on higher education curricula, new skills development (needed e.g. for technology development but also for elderly care), strengthening entrepreneurial aspects in order to foster the development of a highly entrepreneurial workforce in the area, to support the development of new products and services, and to strengthen existing value chains or even create new ones.

Examples of potential products and services that could be created through a KIC go beyond technology applications (such as applications that treat, code, standardise and interpret data in areas such as cancer, cardiovascular diseases; or tools for risk assessment and early detection), and could trigger social innovation with new concepts improving for example lifestyle management and nutrition, fostering active and independent living in an age-friendly environment, or maintaining economically sustainable care systems.

Focusing on the systemic aspects of European health and social care systems and support to active ageing, a KIC on this thematic field would also include a stronger co-operation between large and smaller, more specialised, firms for greater knowledge circulation. In addition, a specific added value a KIC could provide in this area could be the creation of innovative partnerships at the local level which is of particular importance in the services sector.

Through its integrative approach to the knowledge triangle, a KIC on healthy living and active ageing would be therefore a key contributor to addressing the 'European paradox': adding value to the Union's excellent position in scientific research, and transforming this asset into innovative products and services, and new business opportunities and markets.

The major risks associated to the success of a KIC under this theme are mainly related to the necessary accompanying innovation and policy regulatory framework conditions, which could require some adaptations KICs are not directly aiming at addressing³. Therefore KICs need to liaise with ongoing Union and national innovation and policy activities on these matters (see next Section).

3. SYNERGIES AND COMPLEMENTARITIES WITH EXISTING INITIATIVES

Health and active ageing related issues are strongly supported by many Union initiatives. Such initiatives encompass a broad range of policy domains in addition to the health sector, such as economy, security and the environment. They therefore indirectly contribute to such targets of Europe 2020 as R&D/Innovation, employment and social inclusion.

A KIC on innovation for healthy living and active ageing will closely co-operate with the pilot European Innovation Partnership (EIP) on Active and Healthy Ageing. It will take into account the concrete actions presented in the EIP Strategic Innovation Plan and contribute to delivering its objectives. It will create complementarity in education and training key actors, but also in providing a unique structured network of practitioners well placed to identify framework conditions and best practise on policy, regulatory or standardisation issues having an impact in the sector. In the context of the EIP, a KIC in this area can also contribute to the Lead Market Initiative – eHealth which aims at stimulating the market for innovative eHealth solutions through its focus on policy instruments (standardisation, certification systems and public procurement).

Coordination will be also fostered with the Joint Programming Initiative (JPI) to boost research on Alzheimer's and other neurodegenerative diseases, and the JPI 'More Years, Better Lives' - the potential and challenges of demographic change and the JPI "A Healthy Diet for a Healthy Life". A KIC in this area will speed up and foster the exploitation of excellent public research pooled together by these JPIs, and thereby address fragmentation in the innovation landscape.

A KIC will also strongly build on and capitalise upon the major research results of the Joint Technology Initiative on Innovative Medicines and of the numerous

³ For example in terms of patient's access to high quality medicines, which is delayed because of legislation for approving new drug products on the market with more time dedicated to tests and certification and for setting prices and reimbursement modalities.

framework programme research projects addressing this thematic field (such as the health research programme or the ICT research activities on health and ageing) to boost technology transfer and commercialisation via entrepreneurial top talent. Likewise, it will coordinate with the work of the Ambient Assisted Living Joint Programme and the Competitiveness and Innovation Programme.

In conclusion, a KIC in this area would be complementary to these activities since it would focus on transdisciplinary activities within the knowledge triangle with a strong focus on innovative products and services and entrepreneurial education.

4. CONCLUSION

A KIC which focuses on the broader issue of innovation for healthy living and active ageing meets the criteria put forward for the selection of KIC themes:

- It addresses a major economic and societal relevant challenge (lifelong health and wellbeing of all, while maintaining economically sustainable care systems), and contributes to the delivery of the Europe 2020 agenda and its objectives on employment, innovation, education and social inclusion.
- This KIC focus is aligned with priorities defined in Horizon 2020 and complementary with other Union activities in the health and social care areas, in particular with the corresponding JPis and the EIP on Active and Healthy Ageing.
- It can build on a strong research base and on a solid industrial sector which will be attracted by a KIC. It is able to mobilise investment and long-term commitment from the business sector and offers possibilities for various emerging products and services.
- It will address the European paradox, since it will capitalise the Union's strong research base and find new innovative approaches to improve the quality of life of European citizens and to maintain economic sustainability of the health and social care systems.
- It creates sustainable and systemic impact, measured in terms of new educated entrepreneurial people, new technologies and new business. It will foster new technological developments and social innovation.

- It aims at overcoming the high level of fragmentation of the whole health and social care sector; and will bring together a critical mass of excellent research, innovation, education and training stakeholders along the sector.
- It takes a systemic approach and thus requires transdisciplinary work involving different areas of knowledge, such as medicine, biology, psychology, economy, sociology, demography and ICT.

Factsheet 2: Raw Materials⁴ – Sustainable Exploration, Extraction, Processing, Recycling and Substitution

1. THE CHALLENGE

Modern society is totally dependent upon access to raw materials. Access to raw materials is essential for the effective functioning of the Union economy. However, the triptych of decreasing finite natural resources, an ever increasing human population, and rapidly increasing levels of consumption in the developing world are putting increasing demands on the planets' raw materials and natural resources. These factors are some of those responsible for the predicted increase in natural resource consumption during the next decades.

As highlighted by the Resource-Efficiency Roadmap and Horizon 2020, we should aim to ensure accessibility, availability and sustainable use of raw materials that is needed for the European economy and for the satisfaction of our well being, whilst achieving a resource efficient economy that meets the needs of a growing population within the ecological limits of a finite planet.

2. RELEVANCE AND IMPACT

This thematic field is highly relevant in terms of economic and societal impact. Raw materials are crucial for the world economy and quality of life; increasing resource efficiency will be key to securing growth and jobs for Europe. It will bring major economic opportunities, improve productivity, drive down costs and boost competitiveness.

Whilst the Union does have an excellent research pedigree and various centres of excellence exist, much more could be done to capitalise on this within this priority area. A KIC would be particularly suited to this.

Aligning with other Union activities, a KIC in this area should concentrate on fostering a knowledge hub and centre of expertise on academic, technical and practical education and research in sustainable surface, subsurface, deep-sea, urban and landfill mining, material management, recycling technologies, end of life management, material substitution and open trade, as well as global governance in

⁴ In this factsheet, the narrower definition of "non energy, non agricultural raw materials" will be used in order to reduce potential overlap with existing Climate Change and Energy KICs, as well as with other future KIC priority areas such as food.

raw materials. This would act as a broker and clearing house for European centres of excellence on these related topics and manage a research programme of strategic importance to Union industry. For this reason and in order to maximise the impact of the actions and avoid any duplication with Union activities, including the EIP on Raw Materials, the KIC will provide the necessary complement in the areas of human capital (i.e. training, education) for the technology innovative pilot actions (e.g. demonstration plants) for sustainable land and marine exploration, extraction and processing, resource efficient use, collection, recycling, re-use and substitution.

At the same time it could include targets around becoming a technology pioneer by creating pilot schemes and demonstrators of innovative processes and solutions, involving for example the use of economically attractive and sustainable alternative materials, including bio-based materials of strategic importance to the Union. It can consequently trigger the expansion of existing markets and creation of new ones, namely in the areas of sustainable exploration, extraction and processing, resource efficient materials management, recycling technologies, and materials substitution. It will be necessary to assess impacts and develop innovative, cost-effective adaptation and risk prevention measures for particularly sensitive habitats, such as the Arctic.

A KIC in this area will be very important to overcome the barrier which lack of technology constitutes. Technical innovation is required to develop a host of complementary technologies that could change the shape of traditional mineral and raw material value chains. This is an area that requires further work to develop new processes and in order to optimise and commercialise existing knowledge in this area. The entrepreneurial approach of a KIC would be particularly suited to addressing this issue.

Another added value element of a KIC on raw materials is its contribution to addressing the sector's limited networking opportunities. In fact, the disparate nature of the various involved research areas means that there are limited opportunities to meet researchers within different subject areas and benefit from the cross pollination of ideas and collaboration that will be required to foster cost effective low carbon, environmentally sound solutions. Networking within a KIC, bringing together stakeholders from the three strands of the knowledge triangle across the whole value chain would contribute to overcome this weakness. It will

give the possibility for enhancing both technology, knowledge and know-how transfer, as well as to provide researchers, students and entrepreneurs the knowledge and skills necessary to deliver innovative solutions and to turn them into new business opportunities.

3. SYNERGIES AND COMPLEMENTARITIES WITH EXISTING INITIATIVES

The Union has identified this priority field as one of the grand challenges. A KIC would contribute to Horizon 2020, namely to the societal challenge related to the sustainable supply of raw materials and resource efficiency. It would contribute to the proposed EIP on Raw Materials. The EIP on Raw Materials will provide overarching frameworks to facilitate alignment and synergies among existing supply and demand-driven research and innovation instruments and policies in the field. This will cover technology-focused activities, but also the identification of framework conditions and best practise on policy, regulatory or standardisation issues having an impact on innovation in a given sector or challenge. A KIC in this area would create complementarity in educating key actors, but also in providing a unique structured network of practitioners. It would provide a solid basis for supporting other innovation-related actions which will be carried out in the framework of the EIP, and for the success of which human resources are an absolute necessity.

It will also be well placed to support the EIP in the identification of framework conditions and best practise on policy, regulatory or standardisation issues having an impact on the sector. A KIC would also strongly build on and capitalise the results of the numerous research projects of the 7th Framework Programme addressing the topic, in particular those funded in the framework of the nanosciences, nanotechnologies, materials & new production technologies, and environment themes.

Similarly, it would build on eco-innovation market replication projects, under the CIP (Competitiveness and Innovation Programme), where material recycling has been one of the priority areas. Such experience will continue with Horizon 2020, namely in the context of the climate action, environment, resource efficiency, and raw materials societal challenges.

In addition, synergies with the European Rare Earth Competency Network, set-up for the critical raw materials called rare earths, shall be sought.

A KIC in this area would seek complementarities and synergies with those activities and should focus on transdisciplinary activities within the knowledge triangle with a strong focus on innovative products and services and entrepreneurial education.

4. CONCLUSION

A KIC in this area is most suited to address the challenges outlined above. It also meets the criteria put forward for the selection of KIC themes in the SIA:

- It addresses a major economic and societal relevant challenge Europe is facing (the need to develop innovative solutions for the cost-effective, low carbon and environmentally friendly exploration, extraction, processing, use, re-use, recycling and end of life management of raw materials), and contribute to the delivery of the Europe 2020 agenda and its objectives on climate and energy, employment, innovation and education.
- This KIC focus is aligned with priorities defined in Horizon 2020 and complementary with other Union activities in the raw materials area, in particular with the EIP on Raw Materials.
- It is able to mobilise investment from the businesses sector and offers possibilities for various emerging products and services – namely, in the areas of sustainable extraction and processing, materials management, recycling technologies, and materials substitution.
- It creates sustainable and systemic impact, measured in terms of new educated entrepreneurial people, new technologies and new business. It offers, in particular, opportunities for social value creation by making efforts towards addressing the goal of sustainability of the whole product lifecycle: using raw material more efficiently and improving effectively the recycling and recovering of raw materials.
- It includes a strong education component which is lacking in other initiatives, and will bring together a critical mass of excellent research and innovation stakeholders.
- It requires transdisciplinary work involving different areas of knowledge, such as geology, economics, environmental sciences, chemistry, mechanics and

multiple industrial areas (construction, automotive, aerospace, machinery and equipment, and renewable energies).

- It will address the European paradox, since Europe counts with a strong research base and a weak innovation performance on this area. It offers opportunities for innovation in sustainable mining and materials management. Substitution and recycling can promote further sector change and enhance investment activities through the creation of new products, services and supply chain approaches.