



AFRESH Solutions

a Joint Action Plan for Health

Activity & Food for Regional Economies Supporting Health

June 2013



THE AFRESH PROJECT

16 stakeholders from eight European regions work together



Radboud University Nijmegen



Medical Centre



The EU project **AFRESH** is a Regions of Knowledge Coordination and Support Action which brings together partners from science, enterprises and regional governments in regional health clusters for innovation and capacity building. afresh is part of major EU programmes and policies such as the 7th Framework Research Programme, the Europe 2020 strategy for sustainable growth and jobs, as well as the EU Innovation Union seeking to turn knowledge into solutions for society and markets. Within these frameworks, the afresh project will address the regional, national and EU level to seek future support for the developed concepts for further research, investment in products and capacities as well as policy activities.



PROJECT FUNDED BY THE COMMISSION OF THE EUROPEAN COMMUNITIES UNDER THE REGIONS OF KNOWLEDGE PROGRAMME OF FRAMEWORK PROGRAMME 7

EC Project No. 266181



Wirtschaftsförderung
Region Stuttgart

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INTRODUCTION

A **FRESH** (Activity & Food for Regional Economies Supporting Health) is a 3-year project funded by the **European Union's Seventh Framework Programme for Research and Technological Development (FP7)**, which began in September 2010 and is coordinated by the Stuttgart region (Germany). The partnering Consortium comprises **16 partners** from **8 regions** in Europe:

- Észak-Alföld (Hungary), Merseyside (United Kingdom), Nijmegen (Netherlands) and Stuttgart (Germany) represent the physical activity pillar;
- Flanders (Belgium), Galicia (Spain), Languedoc-Roussillon (France) and Mazovia (Poland) represent the nutrition pillar.

AFRESH aims to develop a **trans-national integrated research agenda** for preventing and reducing unhealthy diet- and physical inactivity-related (chronic) diseases, such as type 2 diabetes, obesity, cardiovascular diseases and various types of cancer, by developing **innovative** research ideas as well as products and services within the fields of **nutrition and physical activity**.

AFRESH is supported under the area **"Regions of Knowledge"** (RoK) of FP7, which requires the involvement of the stakeholders from **enterprises, research organisations and regional authorities**.

Emphasis in this project is given to the development of a **common research agenda** and preparation measures for **concrete research solutions** that are innovative, attractive, marketable and interesting to investors from public and private sectors. Further new concepts and strategies for **product and service innovation** are proposed.

The results of AFRESH are expected to have an impact through **better health of citizens** (optimal mental and physical development and performance, less risk of illnesses, well-being and life satisfaction) during the whole lifespan, **reduced health care costs** and **enhanced competitiveness of regional health economies**.



CONTEXT

The AFRESH project was developed to consider two complementary sets of issues:

- I - Tackling avoidable diet- and lifestyle-related non-communicable diseases (designated hereafter as NCDs) related to unhealthy diet and physical inactivity by establishing **strategies and mechanisms** to promote **health and well-being**,
- II - Implementation of the European “Lisbon strategy” at the regional level, with the aim of **driving regional economic growth** and employment through **knowledge and innovation**.

HEALTH: A KEY DRIVER FOR EUROPE'S GROWTH AND PROSPERITY

1. Burden of NCDs

In Europe today there is a **high prevalence of NCDs**, such as type 2 diabetes, obesity, cardiovascular diseases, various forms of cancer, etc., which result from the interaction of various genetic, environmental and risky lifestyle behaviours like smoking, alcohol abuse, unhealthy diet, sedentariness and physical inactivity¹. The burden of disease exists in the majority of the social classes. This poses a significant **threat to the health and well-being** of European populations, including increasing incidence and prevalence of chronic illness, reduction in quality of life and shortening life expectancy². Further it imposes a **substantial economic burden** on European governments, such as increasing strain on health systems, rising health care costs, absenteeism from work due to illness and a predicted doubling of the economic burden of life lost because of NCDs from 2010 to 2030³.

1 http://ec.europa.eu/health-eu/health_problems/other_non-communicable_diseases/ms_fi_en.htm

2 Joint Programming Initiative, 2010 – A healthy diet for a healthy life – The vision for 2030 - <https://www.healthydietforhealthylife.eu/>

3 World Economic Forum, Sept. 2011 - Report “The global economic burden of non-communicable diseases”

Encouraging the European population to adopt **healthier lifestyles** is now a **key public health priority** for most European states.

2. Importance of nutrition and physical activity to NCDs

In 2008, across the 27 countries of the European Union (EU), **59% of adult men and 48% of adult women** were either overweight or obese⁴. A World Health Organization (WHO) report in 2009⁵ estimated that more than half of the population in Europe was believed to be insufficiently active, while 25% of European citizens are completely inactive⁶.

The European Commission White Paper “A strategy for Europe on Nutrition, Overweight and Obesity-related health issues” identified **poor diets and low physical activity levels** across the EU population as a cause of future chronic conditions⁷. The increased prevalence of obesity and other NCDs is indicative of a worsening trend of poor diet (foods with higher energy densities, increased intake of saturated fats, animal products and sugar) and reduced levels of physical activity across the European population⁸. As these lifestyle behaviours, which have a large impact on global health and (indirectly) hinder social and economic prosperity, are avoidable, strategies to **avoid sedentariness, increase physical activity** and **promote a healthy diet** are urgently needed.

Diet and physical activity influence health both together and separately⁹. However, it is the association of poor nutrition with decreasing levels of physical activity that causes the current epidemic of diet-related diseases¹⁰.

4 Joint Programming Initiative, 2010 – *op. cit.*

5 WHO, 2009 - Global Health Risks: Mortality and burden

6 Eurobarometer Survey on Sport and Physical Activity, 2009

7 European Commission, 2007 - White Paper “A strategy for Europe on Nutrition, Overweight and obesity related health issues”

8 <http://eurodiet.med.uoc.gr>

9 WHO, 2004 – Global strategy on diet, physical activity and health

10 WHO, 2003 - Diet, Nutrition and the Prevention of Chronic Diseases. WHO Technical Report Series nr 916

The combination of a balanced diet and adequate levels of physical activity is crucial for optimal physical growth, mental development and performance, and general health and well-being, as well as for reducing the risk of NCDs¹¹. Therefore, **a combined approach** is most likely to have the greatest impact on health and health care costs reduction. Programmes implementing such an approach for the prevention of diseases are crucial in policies to achieve development goals¹².

3. Need for a multi-stakeholder approach

The adoption of unhealthy lifestyles by consumers is intimately linked with the supply of products and services by the economic system and with the promotion of physical activity towards the population by different actors (public healthcare system, sports and fitness, education sector)¹³. Therefore an **integrated approach** to address the burden of NCDs is needed, involving stakeholders from research (prevention, early detection, treatment and care), the **private sector** (development of new technologies, services and healthy products) and **policy-makers** (consideration of the current and projected burden of disease, cost-effectiveness of proposed interventions, etc.)¹⁴ at regional, national and European levels.

In practice, however, European regions face difficulties to build **appropriate structures** to support this collaboration¹⁵.

4. Response at different levels

4.1. At the international level

The WHO recognised the burden of NCDs and developed a **global strategy on diet, physical activity and health**. Member states committed themselves to implement national plans aimed at reducing the risk factors for NCD arising from unhealthy diets and physical inactivity¹⁶.

In order to tackle the above mentioned public health problem, the European Commission suggested in its White Paper¹⁷ to set out an **integrated approach** to contribute to reducing ill health due to poor nutrition, overweight and obesity, through, among others, the development of a “Platform for action on diet, physical activity and health” and the implementation of a “High Level Group on nutrition and physical activity”.

The Joint Programming Initiative (JPI)¹⁸ provides a roadmap across the EU states for **harmonised and structured common research activities** with defined priorities to achieve the promotion of healthy lifestyles through better diet and increased physical activity. The vision of this initiative is the following: “In 2030 all Europeans will have the motivation, ability and opportunity to consume a healthy diet from a variety of foods, have healthy levels of physical activity and the incidence of diet-related diseases will have decreased significantly”. A common Strategic Research Agenda for the period 2012-2020 and beyond has been recently developed¹⁹. It aims at creating added value for Europe by sharing knowledge, expertise and data in order to enable high quality research.

11 Joint Programme Initiative, 2010 – *op. cit.*

12 WHO, 2004 – Global strategy on diet, physical activity and health

13 WHO, 2007 - Proposed second WHO European Action plan for Food and Nutrition

14 World Economic Forum, Sept. 2011 – *op. cit.*

15 Lachat, C. *et al.*, 2005. Public Health Nutrition, 8(3): 266-274.

16 WHO, 2009 – *op. cit.*

17 European Commission White Paper, 2007 – *op. cit.*

18 Joint Programme Initiative, 2010 – *op. cit.*

19 Joint Programming initiative, 2012 – Strategic Research Agenda 2012-2020 and beyond

In 2011, the WHO approved an “Action plan for the implementation of the **European strategy for the prevention and control of NCDs 2012-2016**”²⁰, setting priority interventions, including the reduction of fat, salt and sugar in foods, and supporting interventions, such as the promotion of physical activity.

The European Technology Platform on Food for Life²¹ aims at strengthening the **European-wide innovation process**, improving knowledge transfer and stimulating European competitiveness across the food chain. The delivery of innovative and healthy improved food products, in line with consumer needs and expectations, will have a positive impact on public health and overall quality of life.

20 WHO, 2011 - “Action plan for implementation of the European strategy for the prevention and control of NCDs 2012-2016” - http://www.euro.who.int/__data/assets/pdf_file/0003/147729/wd12E_NCDs_111360_revision.pdf

21 European Technology Platform on Food for Life, Strategic Research and Innovation Agenda, 2013-2020 and beyond

EU’s “Horizon 2020”²² will tackle societal challenges by helping to bridge the gap between research and the market through a market-driven approach, which includes creating partnerships between the private sector and member states to bring together the resources needed. In particular **health and well-being** are **priorities** belonging to the societal challenges identified in the Europe 2020 strategy. Support will be provided to the full spectrum of research and innovation activities in the frame of Horizon 2020.

4.2. At the national level

Over the past few years **most EU member states** have developed a response at the **national level** to deal with the burden of NCDs. Focusing on the eight countries involved in AFRESH, several public policies on nutrition and physical activity have been implemented during the last decades in response to the strong increase in prevalence of overweight/obesity and other NCDs (*Table 1*).

22 EU’s «Horizon 2020» programme to fund Research and Innovation for 2014-2020

Table 1: European policies related to nutrition and physical activity for the AFRESH countries - Source WHO European database on nutrition, obesity and physical activity (NOPA) (status on June 3, 2013)

	BE	FR	DE	HU	NL	UK	ES	PL
NUTRITION								
Adequate labelling of food products	✓	✓	✓	✓	✓	✓	✓	✓
Public campaigns aimed at informing consumers	✓	✓	✓	✓	✓	✓	✓	✓
Pre-school and school nutrition	✓		✓	✓	✓	✓		✓
Evaluation and monitoring of programmes & policies	✓	✓				✓		
Ensure appropriate marketing practices	✓	✓	✓	✓	✓	✓	✓	✓
Public and private research		✓		✓	✓			
Affordability and availability of fruit & vegetables	✓	✓		✓	✓	✓		
Vulnerable and low socioeconomic groups	✓	✓		✓	✓	✓		
PHYSICAL ACTIVITY								
Public campaigns aimed at informing consumers	✓	✓	✓	✓	✓	✓	✓	✓
Increase opportunities to engage in physical activity	✓	✓	✓	✓	✓	✓	✓	✓
Sport/exercise policy	✓	✓	✓	✓	✓	✓	✓	✓
School physical activity	✓	✓	✓	✓	✓	✓	✓	✓
Evaluation and monitoring of programmes & policies	✓	✓				✓		
Public and private research		✓		✓	✓			
Vulnerable and low socioeconomic groups	✓	✓		✓	✓	✓		✓

All AFRESH countries have implemented **national policies on physical activity** as well as **nutrition-related policies**. Some policies are deemed as being of importance/relevance for the 8 countries, e.g. labelling of food products, public campaigns, marketing practices, sport policies and school physical activity. Evaluation and monitoring of programmes and policies, public and private research are less commonly widespread.

4.3. At the regional level

The challenge is to translate the above mentioned national policies to the local level and formulate **contextual strategies** to promote diet, physical activity and health in consumers.

Current research to prevent NCDs ²³ indicates that population-based strategies need to be embedded in local context, communities and cultures. Concrete results will only be achieved with the **involvement of local stakeholders**. Interventions at regional and local levels are crucial to tailor designed and validated general approaches to specific local contexts.

Despite a need for contextual strategies, the current response to the NCDs epidemic is mainly driven by national action, which leads to **an incoherent and scattered approach on the ground**.

ENSURING THE ECONOMIC DEVELOPMENT OF EUROPEAN REGIONS

1. Towards a European knowledge-based economy

The Lisbon Strategy aimed at making the EU “the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion” by 2010 ²⁴. **Cluster development**, promotion and

23 <http://www.epode-european-network.com> & E. Millstone and T. Lobstein (2007) - The PorGrow project: overall cross-national results, comparisons and implications Obesity Reviews, 8(s2): 29–36
24 European Union Parliament - Lisbon European Council, 23 and 24 March 2000 - Presidency Conclusions http://www.europarl.europa.eu/summits/lis1_en.htm

institutional support within the regional, industrial and innovation policies played a crucial role in the Lisbon objectives. Translation of the Lisbon Strategy goals into concrete measures led to the extension of the Framework Programmes for Research and Technological Development into FP7 and the Joint Technology Initiatives.

In the frame of the European Union’s ten-year growth strategy (Europe 2020), the Commission has proposed seven **flagship initiatives** to boost **growth and jobs**²⁵. These initiatives provide a framework through which the EU and national authorities mutually reinforce their efforts in areas supporting the Europe 2020 priorities.

They are part of the following 3 objectives:

- Smart growth: **Digital agenda for Europe, Innovation Union**, Youth on the move;
- Sustainable growth: Resource efficient Europe, Industrial policy for the globalisation era;
- Inclusive growth: **Agenda for new skills and jobs, European platform against poverty**.

Among them 4 initiatives (in bold) are more relevant for public health.

2. Importance of the regional level

There is a need to increase the overall capacity of **regional players** to boost innovation based on **research and technology development** at the European level²⁶. The fact that innovation, elaboration and dissemination in companies – and more specifically in Small to Medium-sized Enterprises (SMEs) – is made easier thanks to the proximity of stakeholders along the knowledge transfer chain gave rise to the development of the local or regional “cluster” concept. The global development of the EU will strongly rely on the regional innovation systems capacities. It is important that European regions invest better and more in research and technological development through the implementation of regional “Research-Driven Clusters”

25 http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/flagship-initiatives/index_en.htm

26 Capacities Work Programme about “Regions of Knowledge”: ftp://ftp.cordis.europa.eu/pub/fp7/docs/wp/capacities/regions/q-wp-201201_en.pdf

(RDCs), which represent a broad network of **regional triple-helix stakeholders** (research organisations, enterprises/SMEs and regional authorities) located in one particular region, bringing together cutting-edge expertise. The “Regions of Knowledge” initiative aims to strengthen the **research potential of European regions**, in particular by encouraging and supporting the development of the regional RDCs.

3. Strategy at the inter-regional level / the need for Joint Action Plans

The “Capacities Work Programme” cited above also considers **trans-national collaboration** as an essential instrument for promoting open innovation and capitalising on the creative potential of Europe. To support the development of RDCs in mentored regions and further development of RDCs in non-mentored regions, the European approach is a necessity. Missing capacities and resources which are vital for developing a competitive RDC can be complemented by other regions.

In order to improve the integration of research agendas of actors in regional clusters, the project partners involved in RoK projects are asked to set up Joint Action Plans (JAPs) describing their **common strategy to drive economic development through research and technological development activities** in the considered field. JAPs promote synergies between regional research and innovation policies and explore

opportunities for mobilising financial support offered by national/regional authorities, private investments and by EU programmes, in order to exploit the synergies between regional, national and EU programmes for research and economic development.

AFRESH: AN ANSWER TO REGIONAL HEALTH AND ECONOMIC CHALLENGES

The AFRESH project contributes by its **dual health** (nutrition and physical activity) and **multi-stakeholder** (triple-helix) approach at a regional level to answer the major challenges expressed **at the European level** for countering NDCs.

AFRESH focuses on the **development of eight regional RDCs** that perform diverse healthy food- and/or physical activity-related activities. In accordance with RoK projects, AFRESH seeks to foster **better integration** of the actions **between regions** and **strengthen capacity** with a view to boosting regional economic development. At the heart of each RDC, **knowledge institutes** drive the research and innovation agenda.

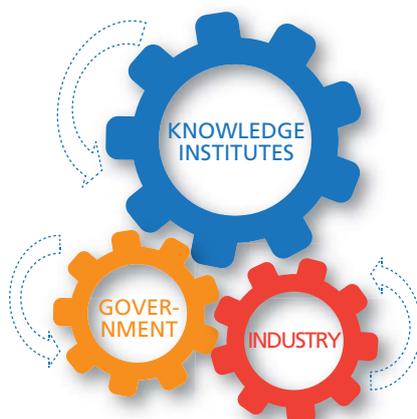
These are the key principles of the AFRESH philosophy that underpinned the project process. This approach is strongly oriented to further develop **cluster strategies and policies** and led to the development of a **Joint Action Plan** that will be presented in the next chapters.



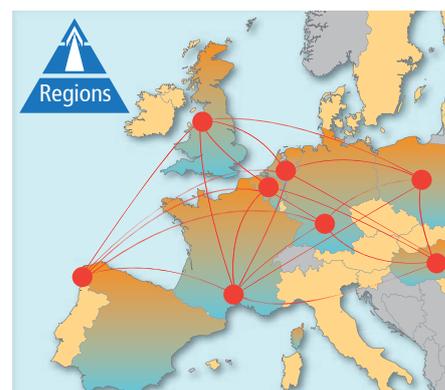
KEY PRINCIPLES OF AFRESH



Dual health approach



Triple-helix stakeholder involvement



Inter-regional cooperation

AFRESH – DEVELOPMENT OF A JOINT ACTION PLAN

About the Joint Action Plan

The AFRESH JAP outlines a **common vision** between the eight European regions involved in the project to address the current **challenges** in the field of nutrition and physical activity for the benefit of health. It outlines the challenges to be tackled and proposes **solutions** to be actioned in order to foster innovative initiatives for research and product or service development related to defined target groups and settings, with the dual purpose of **stimulating European economic growth** and **improving the health of our societies**.

In all eight regions, this JAP will be endorsed by stakeholders from the three components of the triple-helix. It represents a call for action addressed to regional

authorities which can integrate the proposed solutions into their **economic development strategy** as a basis for increased and more focused use of the regional development instruments, as well as to **policy-makers at the national and European levels**.

Methodology

The JAP connects the regional research priorities that were determined following the agreed AFRESH methodological framework (Figure 1). It presents a **common strategic agenda** comprising **four challenges of trans-regional importance**, illustrated by concrete **research ideas** and suggestions for **innovative products, services and policies**.

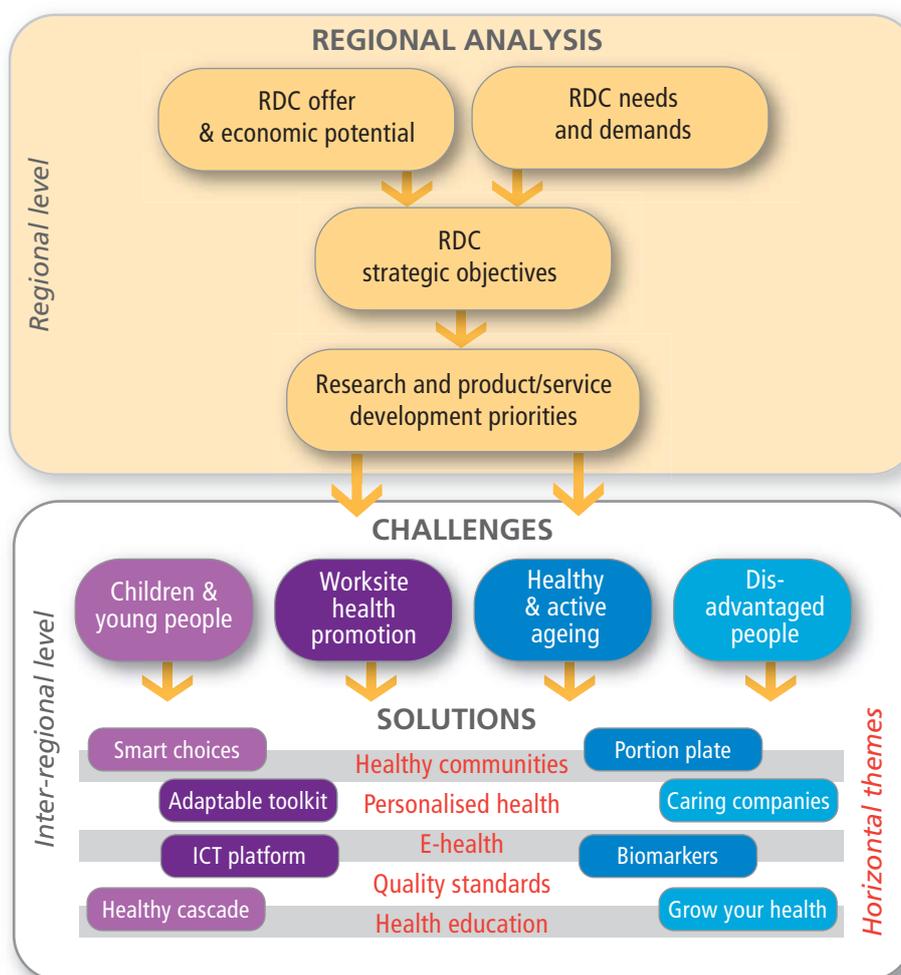


Figure 1: The AFRESH process leading to the JAP development

From regional strategies...

The JAP is underpinned by a number of steps which aimed to analyse and integrate the respective research agendas of the eight RDCs. Project partners within each of the RDCs:

- Analysed the **“offer” of each of the regional food and physical activity RDCs** in terms of competences, skills, research infrastructures, technologies, initiatives, instruments, etc.

The initiatives (regional projects, organisations or facilities) in the field of nutrition and physical activity initiated by the different stakeholders active in the regional clusters (companies, knowledge institutes, governmental organisations, healthcare institutions) were gathered. Based on the list of the initiatives and partners, a stakeholder map was constructed for every region, allowing the analysis of the RDCs structure and of the economic potential of each region.

- Analysed **regional “needs and demands”** which should be addressed by innovative nutrition and physical activity products and services as well as a directory of manifest and latent consumer needs.

Latent and manifest needs and demands were analysed for each region from a consumer perspective in the considered fields covering each part of the triple-helix structure. Qualitative data were assessed in a two wave Delphi procedure through expert interviews, whereas quantitative data were gathered through a standardised questionnaire. The regional offer and demand were compared in a matrix that was the foundation for the next step of the project.

- Completed a **“SWOT and strategic orientation analysis”** to determine regional research and product development priorities for economic development of the food and physical activity RDCs. These regional development priorities centred on the health needs to be targeted by mobilising economical production factors available in the RDCs.

An analysis of strengths and weaknesses of each regional RDC has been performed with the participation of regional partners and stakeholders from the triple helix, giving rise to the determination of three main regional strategic objectives. These objectives were used as the foundation for the development of regional research priorities.

- Organised **on-site study visits** of their flagship regional initiatives.

AFRESH partners and external experts from the other AFRESH regions were provided with the opportunity to gain an insight into the initiatives (projects, structures) offered in the different RDCs, as well as to discuss **regional priorities** and assess **concrete needs**. These visits, consisting of a combination of initiatives in the areas of nutrition and/or physical activity and involving stakeholders belonging to the 3 pillars of the triple-helix, enabled sharing of expertise, experiences and best practises between the different clusters.

... to common challenges

AFRESH challenges were determined as described below:

- The regional priorities were pooled at the project level, leading to an extensive list of **priorities in research and development** in total for the eight regions in the area of nutrition and/or physical activity (see *Annex p.35*). This has led to the identification of common interests among the regions.

- **AFRESH challenges** centred on four target groups/ settings that were deemed as being of trans-regional importance during a workshop bringing together representatives of the eight RDCs. The four challenge areas relate to themes identified within the regional priorities expressed in AFRESH (see *above*) and correspond with the challenges that have to be addressed at the EU level:



Giving children a healthy start

Giving children, young people and their families the knowledge, skills, opportunities and supporting environments to live healthier lifestyles.



Worksite health promotion

Improving “health at work” (with a special focus on SMEs) through interdisciplinary approaches including physical, psychological and social components.



Healthy and active ageing

Enabling longer and healthier lives by defining determinants of health in later life and using them to promote a healthy and active lifestyle.



Better health for the disadvantaged

Reducing health inequalities for these populations by acting upstream on poor diets and physical inactivity.

From research and innovation ideas...

Four Working Groups comprising **AFRESH partners and stakeholders** interested in **nutrition and/or physical activity** have been constituted according to the target groups/settings and challenges listed above. Each Working Group was led by one of the AFRESH regions. These Working Groups generated early stage **innovative research ideas and concepts for new products, services or policies**. In addition, cross-cutting ideas and concepts deemed of transversal importance for the target groups/settings were proposed.

An overview of the **34 most promising initial solutions** proposed by the AFRESH partners and stakeholders was published in the preliminary version of the AFRESH JAP in May 2012.

...to the final AFRESH solutions

A methodological framework was followed to **further develop and consolidate** the AFRESH solutions, **mobilise and motivate the RDCs** in each region to commit to supporting the JAP solutions, and to **identify potential funding opportunities** for new research projects and product/service concepts:

■ The developed **early-stage ideas** were **screened and evaluated** by the RDCs. Each project proposal was reviewed across 3 regions by regional stakeholders/partners with expertise in the considered working group topics. This process enabled the regional partners

and stakeholders to further engage in the project and maintain motivation, and provided an opportunity for additional stakeholders to join the existing project teams.

■ **Funding opportunities** were screened at the European level as well as at the local, regional and national levels. However, matching funding opportunities to ideas and listing funding scenarios to be associated to the solutions was not possible because ideas were too specific. Therefore funding sources for AFRESH projects were identified through exploring funding streams related to broader topics and disciplines, such as prevention, treatment, determinants and assessment/monitoring/surveillance.

During the **review and improvement process** it became apparent that the ideas needed to be restructured and streamlined. The Working Group leaders implemented a **refinement and selection process** of the AFRESH ideas based on the following criteria:

- the necessity of a combined focus of the project idea on **“nutrition AND physical activity”** – in accordance with the AFRESH philosophy
- the **feedback** that was given by the partners and reviewers (on innovation, importance, impact, etc.)
- the involvement of **more than one region** (*i.e.* a trans-regional agenda)
- the **merging of similar ideas**, or ideas that could not meet the combined “physical activity AND nutrition” criteria separately but could when joined together
- the merging of some products/service ideas with research ideas to form **R&D / RTD projects**.

The selection process concluded with **18 consolidated research or product/service ideas**, which are the final solutions proposed by the AFRESH partners and stakeholders. These initiatives represent the **AFRESH solutions to boost innovation in health in Europe**.

Additionally a number of **horizontal themes** were identified. These themes correspond to hot topics running across the AFRESH solutions and are of interest at the EU level in relation to the promotion of health and well-being for EU citizens.

The **AFRESH solutions** and **horizontal themes** are described in the next chapters of this document.



AFRESH SOLUTIONS AND HORIZONTAL THEMES AT A GLANCE

Table 2: Matrix of AFRESH solutions and horizontal themes

	SOLUTIONS	HORIZONTAL THEMES				
		COMMUNITIES IN ACTION	E-HEALTH	PERSONALISED HEALTH	HEALTH EDUCATION	QUALITY STANDARDS
GIVING CHILDREN A HEALTHY START	Innovative technologies for diet and physical activity measurement and behaviour change		●	●	●	
	Healthy cascade – training significant adults and peers as health behaviour change agents	●			●	●
	Healthy FEAT (Healthy Families in Europe, all Ages Together) – a multi-generational approach to promoting physical activity and healthy eating within families	●			●	
WORKSITE HEALTH PROMOTION	Smart choices – incentivising adolescents to adopt healthy lifestyles	●	●	●	●	
	Integrated ICT platform for tailored health advice for employees	●	●	●	●	
	Adaptable toolkit for targeted worksite health promotion	●	●	●	●	
	A quality standard for sustainable healthy companies	●				●
	Defining a framework of indicators for effective worksite health	●				●
HEALTHY AND ACTIVE AGEING	Biomarkers for healthy ageing: towards personalised nutrition and physical activity			●	●	
	Lifestyle intervention programs for older adults at health risk	●			●	
	Using virtual reality and gaming technology to promote nutrition and physical activity during clinical rehabilitation and therapy		●	●	●	
	Quality standards for the provision of physical activity and nutrition in later life care settings	●				●
	Portion size plate: a smart tool for personalised food intake and calculation of exercise minutes		●	●	●	
	Festival of healthy and active ageing – a physical activity and agro-food event to encourage older adults to engage with community services	●			●	
BETTER HEALTH FOR THE DISADVANTAGED	Grow your own health – impact of edible community gardens on the health status of disadvantaged populations	●			●	
	Caring Companies – Corporate Social Responsibility strategies for promoting healthy lifestyles in deprived communities	●			●	
	Development of tools for assessing barriers and motivations towards healthy lifestyles among disadvantaged populations	●			●	
TRANS-VERSAL	Target CHANGE (Targeted Communication of Health, physical Activity and Nutrition messages to Galvanise Europe) – effective social-marketing for health behaviours	●		●	●	



SOLUTIONS FOR THE AFRESH FAMILY

Meet the **AFRESH family**, a typical family from within our regions that demonstrate the **classic lifestyle behaviours** that we are faced with when trying to promote physical activity and healthy nutrition.

The AFRESH family represent the four priority groups and settings described above. Each member has their **own unique patterns of behaviour** and **related problems** that need to be addressed. Their personal stories are used to illustrate the **state of the art and challenges** within that avenue for action.

After each story of the family members the AFRESH **solutions** that were developed to **meet the needs** of that specific target group or setting and **impact on health and well-being** are presented.

THE CHILDREN

JULIA (aged 14) & SAM (aged 5)

Julia and her younger brother Sam live with their parents Emma and Frank.

Julia is at secondary school and hopes to be a beauty therapist when she is older. She is very concerned with her appearance and worried about **being fat**. When she was younger Julia used to go to dance club a couple of times a week and do gymnastics. These days Julia prefers to hang around with her friends; they like to visit the shopping mall and go to **fast food outlets**. Like most teenagers, she is constantly texting and taking pictures on her **mobile phone**, sharing her latest snippets of fun on **social media**.



At home Julia spends most of her time **sitting** watching television and using her brand new tablet. Occasionally she helps out her mum by looking after Sam after school. Sam is a typically happy, energetic young boy who has just started primary school. Sam really likes school and always talks glowingly about his school teacher, Mr Jones.

Sam likes jumping up and down on his trampoline in the garden when the weather is nice but mostly plays on **video games** and watches **kids television** in the winter months as he doesn't know what else to do. Sam's favourite food is **ice cream**. He eats the odd banana but **doesn't like most fruit and vegetables**.

Sam loves visiting his **grandparents**, who often look after him whilst his mum and dad are at work. They always give him little **treats like chocolate and sweets**, which he'll gulp down quickly before he goes home.



STATE OF THE ART

- Physical activity and nutrition are important for children's development and long-term health, protecting against health problems such as obesity, diabetes and cancer.
- Many European children and adolescents are overweight as a consequence of being sedentary, physically inactive, unfit and eating foods that are high in fat, sugar and salt.
- Child behaviours can track into adulthood so it is important to promote healthy lifestyles during the early years when habits are formed.
- Children are a priority target for European action and effective interventions require a multi-level approach to be added.

Solutions for children and young people

Innovative technologies for diet and physical activity measurement and behaviour change

In adolescence, young people's autonomy over their lifestyle choices increases as parental control is superseded by peer influence and self-directed behaviour. Yet many teenagers are **inactive** and consume diets high in **fat and sugar**. The rapid adoption of **smartphones** among teens - who represent the leading edge of mobile connectivity - presents opportunities for **monitoring** and **behaviour change** of sedentary behaviour, physical inactivity and diet.

Output

- **Research:** Review of existing applications and appropriate **behaviour change techniques**. Validation and calibration of **smartphone** and related **multi-sensors** to measure diet and physical activity and identify obesogenic environments.
- **Product:** Development of a smartphone compatible multi-sensor and related **downloadable application** for end user.

Objectives

- Review the effectiveness of mobile technologies and multi-sensor devices to improve health.
- Benchmark existing products and market research to ascertain consumer perspectives on healthy lifestyle applications.
- Develop an existing or new mobile phone, multi-sensor and/or application technologies to measure physical activity (e.g. sensors + GIS data) and diet (e.g. self-reported pictures or scans of foods) with greater sensitivity and accuracy.
- Develop a measurable index for an obesogenic environment.
- Develop a self-learning algorithm that provides personalised recommendations for behaviour change based on monitoring of diet and physical activity and taking into account the environmental context.
- Assess the acceptability and user-friendliness of the application/technology.
- Perform validation/calibration research on the application/technology.
- Evaluate the effectiveness of application/technology in changing behaviour.
- Develop an associated software package for researchers to access, process and analyse data.

Healthy cascade – training significant adults and peers as health behaviour change agents

Inter-personal relationships and social networks play an important role in the life of a young person.

Adults such as teachers, youth club workers and sports coaches can **guide** young people in a positive direction, whilst friends and class mates also provide a **strong influence on behavioural choices**. Healthy cascade seeks to give these individuals the knowledge, awareness and skills to give **informed advice** on physical activity and diet.



Output

- **Service:** Development of a **vocational training concept** (e.g. workshop) for significant adults (train-the-trainer) and young people (peer-to-peer mentoring) that integrates physical activity and nutrition components.

Objectives

- Consult and partner with schools, sports clubs, youth organisations and community groups at the local, regional and national level.
- Collect best practices on related health education from European regions.
- Develop an integrated vocational training concept for significant adults that targets both physical activity and nutrition.
- Develop an integrated vocational training concept for peer-to-peer mentoring that targets both physical activity and nutrition.
- Pilot the components of the vocational training concept with user groups.
- Market and implement the training concept.
- Share and disseminate vocational concept with relevant networks.

Healthy FEAT (Healthy Families in Europe, all Ages Together) – a multi-generational approach to promoting physical activity and healthy eating within families

The family has a **key role** to play in **child activity and eating behaviours**. Children appear to be less physically active during “home-time” and there is a need to learn how to effectively promote **healthy** eating behaviours and physical activity in the family. It is important to understand who the key influences are on children during their “home-time”, and how to involve these family members in an intervention. Healthy FEAT aims to use a **multi-generational approach** to promote physical activity and healthy eating within children.

Output

→ **Research:** Development of a **multi-level intervention** for promoting physical activity and healthy eating **across generations of families** (with a focus on weekend/out of school activities).

Objectives

- Examine who children spend their time with during “home-time”.
- Examine variations in children’s physical activity & sedentary time according to which caregivers they are with.
- Explore inter-generational influences on eating behaviours, and how children’s nutritional intake varies with different caregivers.
- Determine how these factors vary between countries, cultures, and rural/urban settings and by social-economic status.
- Develop a multi-level intervention for promoting physical activity and healthy eating across generations of families (with a focus on weekend/out of school activities).
- Design intervention components to incorporate opportunities for (safe) inter-generational activities, for example, active gaming, mass participation community games, cookery classes, playground games.
- Investigate the impact of these intergenerational activities on the extended family as well as child health.



Smart choices – incentivising adolescents to adopt healthy lifestyles

Promotional schemes to increase sales are widely used in commercial fields (e.g. saving virtual points with purchases in particular retail outlets) but have surprisingly been under-explored for healthy lifestyles.

Adolescents are known to be **influenced by incentives** compared to other age demographics. Consequently there is a need to develop and pilot an **incentive system** for products and services related to healthy food and physical activity that can compete with existing obesogenic stimuli. The Smart choices incentive system will promote **regional social and economic development** and could potentially trigger large scale **positive changes in behaviour**.

Output

→ **Product:** Development of a **healthy choices incentive system** for adolescent purchases of regional products and services via a **mobile application**.

Objectives

- Develop partnerships with local and regional stakeholders and companies.
- Develop a score to classify desirable and undesirable dietary choices and physical activity at regional level. Desirable options will be those that are considered healthy and of importance for regional development.
- Develop and shortlist rewards/incentives potentially effective to achieve changes in dietary choices and physical activity.
- Develop an IT application on mobile phones to deliver an incentive scheme for specific healthy physical activity or regional dietary choices.
- Conduct a pilot study in 4 European regions (cluster randomized intervention trial in schools, target age group is 15 years) to measure how exposure to an incentive system delivered through mobile phones affects dietary choices and lifestyles.
- Disseminate and implement the application.



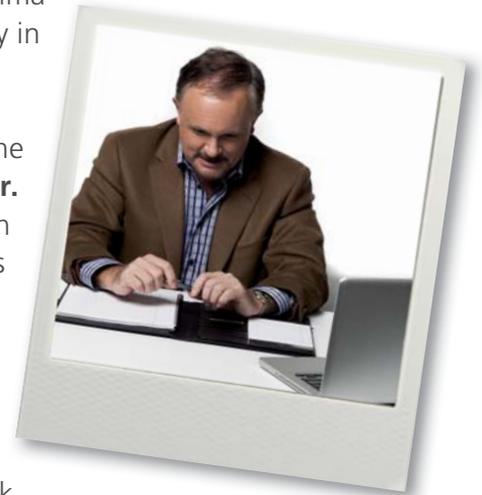
THE PARENTS

FRANK (aged 46) & EMMA (aged 42)

Frank and Emma are the parents of the AFRESH family.

Emma works part-time at the cash desk of the super market A & F. After coming home at noon, Emma cooks **what the kids like**, preferably pizza. In the evening Emma and Frank usually **sit on the sofa** and watch TV. On Sundays the family do something together, like visiting the zoo or watching a movie. Emma is worried about Frank because he is very **stressed** and regularly in a bad mood due to being **overloaded at work**.

Frank works about **ten hours** a day as a software engineer in the medium-sized enterprise Resh. He always goes to work **by car**. He has to take the **elevator** to reach his office on the fourth level of the company's building because the staircase is dark as the lighting has broken. Most of the day Frank **sits** at his desk working on his computer. At lunch he goes to the canteen with his colleagues, who are mostly in their fifties. As the variety of **meals on offer** is very **poor**, they usually have to eat burger and chips. Whilst eating they regularly discuss their **health problems** and the **working conditions** at Resh. Recently Frank was absent for several weeks due to psychological stress that almost led to burnout. Many of his colleagues are **overweight** and suffer from high blood pressure and back pain. They believe that their health problems are caused by **sedentary working conditions** and **high pressure** from the management. They wish the management would support their health by implementing a **worksite health promotion programme**. Resh management are thinking about such a programme because the average age of their employees is 45 and they see an **increase in early retirement**. The management team will only implement such a programme if they can be convinced of its **actual efficacy**, with clear value **for money**.



STATE OF THE ART

- Worksite health promotion (WHP) programmes, as the combined efforts of employers, employees and society, have great potential to improve health and well-being of people at work.
- Main challenges are ageing workers in an ageing society, risk of early retirement and overcrowding of working operations.
- Up to 80% of employees in all over Europe suffer from increased stress at work.
- WHP should be a combination of improving the work organisation, the working environment and encouraging people to participate and change their behaviour.
- The areas of activity for WHP include lifestyles, healthy ageing, corporate culture, work-life balance, mental health and stress, wellness, corporate social responsibility, nutrition, physical activity and health.
- Sensitive indicators and a multidimensional approach are needed to measure effectiveness of WHP.

Solutions for worksite health promotion



Integrated ICT platform for tailored health advice for employees

In the last years an exponential increase in sales of **new communication technologies**, such as smartphones, was observed all over the world. It is very promising to **promote health** through these innovative devices, in combination with **multisensory assessment tools** and **theory based personalised information**. The aim is to provide a service containing personalised programmes and feedback to employees as part of an integrated **online platform** to promote a healthy lifestyle, e.g. through a healthy diet and an increasing volume of physical activity.

Output

→ **Service**: Development of **an integrated multidisciplinary online platform** to promote physical activity and healthy diets.

Objectives

- Develop an integrated platform providing online tools for employees with a focus on health promotion through tailored nutrition and physical activity programmes.
- Provide and launch a website, mobile apps, downloads, personal tailored advice, scientific and qualitative labels.
- Set up and analyse user profiles through a specific algorithm that is able to identify personal health risks.
- Deliver personalised feedback and communication techniques that will be implemented to promote behaviour changes.
- Use multisensory tools including associated algorithms to assess objectively and precisely physical activity and nutrition intakes and behaviours (e.g. accelerometers, smartphone apps, etc.).
- Develop a specific interface for enterprises that will enable them to tackle unhealthy employee's behaviours.
- Develop numeric tools that are included in the platform to collect data for corporate medicine and public health on a regional, national and international level.

Adaptable toolkit for targeted worksite health promotion

A growing number of **early retirees** and the increasing average age of employees due to the demographic change lead to an increasing demand for **intervention programmes for later life workers** to promote a **healthy and active lifestyle**. The transition from work to retirement could offer a potential period to **change behaviour** and **improve health conditions**. In this project an innovative worksite intervention programme will be developed to enable SMEs to maintain health and productivity of later life workers and give employees **perspectives on life after retirement** and a broader knowledge about healthy behaviour in order to **age successfully**.

Output

- **Research**: Development of a **theoretical framework** for a toolkit through a literature search in combination with assessment of the **individual needs and demands** for later life workers under consideration of the companies needs.
- **Product**: Development of a **toolkit 'Worksite health promotion for later life workers'** that is adaptable for other target groups.

Objectives

- Examine the state of the art for worksite interventions for later life workers in the age from 45-65 through literature searches and identifying best practice examples.
- Develop adequate worksite interventions for later life workers matched with employers and employees needs and demands.
- Maintain productivity of the ageing workforce.
- Boost the innovation capacities of participating SMEs.
- Translate the generated results into praxis and develop concrete services for elderly people active in the workforce.
- Evaluate the toolkit by measuring physical, social and psychological parameters.
- Implement services containing personal advices from experts, individual electronic "healthy timetable" for elderly employees, as well as an online feedback and assessment system (e.g. via a personal information manager software).
- Increase personal and interpersonal resources: measure psychological, social and physical parameters; assess work ability of later life workers using the Work-ability-Index (WAI), increase WAI of employees; consider biorhythm.
- Optimise work ability and reach benefits for employees and employers likewise aiming in a greater work satisfaction leading to higher identification with the company.
- Develop a toolkit that provides services adaptable for different target groups, e.g. shift workers, blue and white collar workers.
- Evaluate the intervention on different levels of the socio ecological approach.

Solutions for worksite health promotion

A quality standard for sustainable healthy companies

To persuade people to participate in WHP programmes, high quality opportunities and experiences in **behaviour change programmes** are essential. Therefore, developing and providing tools and information to support SMEs in achieving **optimal health and well-being** of their **workforce** is a very important step. This can be realised through the **'ISO/DIN Health Standard'** for **'The Sustainable Healthy Company'**, which businesses can use as an internal and external communication tool to find, to attract and to retain company employees, and to demonstrate their investments in a **'happy workforce'**.

Output

- **Product:** Development and implementation of a **quality health standard for SMEs** including a company award.
- **Service:** Provision of **tailored interventions for SMEs** including a reward system for employees.

Objectives

- Provide SMEs with information and support to achieve optimal health and wellbeing of their workforce.
- Develop and implement the "ISO/DIN Health Standard" (= Quality Standard) for "The Sustainable Healthy Company".
- Link the standards to a 'free health@work programme' where companies can attend free workshops, training sessions and seminars.
- Organise 'health quality standard events' where people could learn from good practices of other quality standard companies from other sectors.
- Create and use "The Sustainable Healthy Company Award" for company and employer branding.
- Generate a reward system for employees.

Defining a framework of indicators for effective worksite health promotion (WHP)



To persuade managers to invest in WHP programmes, it is necessary to be able to measure the **return on investment**. To evaluate and monitor the **effectiveness** of WHP, a theory- and praxis based **framework** is needed, for example in terms of a socio-ecological approach, including health-related proximal and distal **indicators**.

Output

- **Research:** Theory based review of existing **indicators and methods** to generate an innovative toolkit to measure WHP outcomes.
- **Product:** Development of a **toolkit** to measure and monitor **health performance of employees** and **effectiveness of WHP** through elaborated indicators.

Objectives

- Audit related indicators and methods with regard to objectivity, validity, reliability practicability.
- Implement an assessment and consulting process to develop the indicator framework specific to a company.
- Generate a practical multilevel toolkit for companies to measure, monitor and evaluate effectiveness of WHP as a process.
- Design a practical, clear and user friendly toolkit, suitable for different company sizes including SMEs and large companies.
- Evaluate the toolkit in pilot studies.



THE GRANDPARENTS

LOUISE (aged 69) & *PAUL* (aged 71)



Louise is a retired teacher and happily married to her husband Paul, who used to work in a mattress factory.

The couple has always been **physically active** throughout their life. Paul was predominantly active due to his physically demanding work, while Louise stayed in shape by playing tennis during her free time. Like most people, as they grew older they became **less physically active**, especially when their daughter Emma moved out of the house.



Although Louise still keeps active, going for walks and doing yoga, Paul has been very **sedentary since retiring** and has gained a lot of **weight**. A **lack of exercise** combined with an **unhealthy diet** resulted in Paul getting admitted to hospital one month ago after **suffering a stroke**. Although shocked, the couple was relieved to hear that Paul would make a good recovery, after a period of intense **clinical rehabilitation**.

Louise consulted with their general practitioner about the recent event and was advised that both of them should adopt a **healthier diet** and **increase** their **physical activity**. She hopes that this will facilitate Paul's recovery and that it will help them to stay **free from further serious disease** and illness for as long as possible. They really want to be around to see their grandchildren, Sam and Julia, grow up into **healthy** and successful young individuals.

STATE OF THE ART

- Societal changes combined with advances in medicine have contributed to an exponential growth in the ageing population across Europe.
- The proportion of people aged 65 and older is forecast to increase from 14% in 2010 to 25% in 2050.
- Diseases that are often the typical result of sedentary lifestyle and unhealthy diet have caused a marked increase in the socio-economic burden.
- It is essential to understand the process of healthy ageing from conception/ birth to death, and the role of exercise, activity and nutrition to prevent NCDs.

Solutions for healthy and active ageing

Biomarkers for healthy ageing: towards personalised nutrition and physical activity

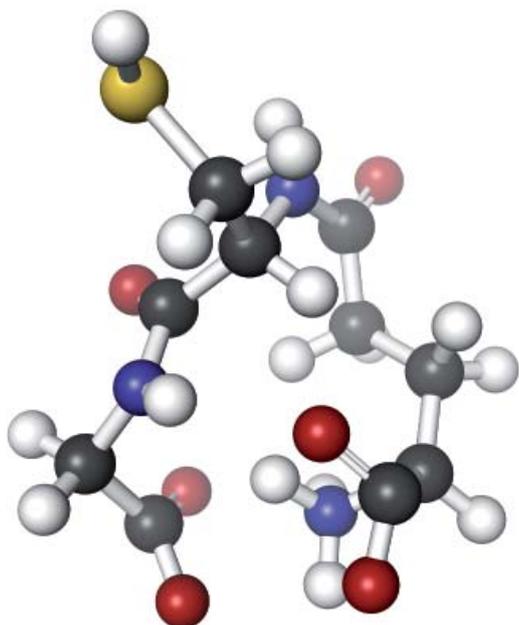
The complexity of biological responses to diet and physical activity, as well as the large **individual variability** observed in ageing people, stresses the need of characterising the **proper physical activity and diet** to prevent **diseases** and prolong independent living. Insight into the **synergistic actions** of a combined diet and physical activity approach could open up avenues to achieve a **healthy lifestyle** and retard **cellular ageing**.

Output

→ *Research*: Identification of **key biological factors** that are associated with (and responsible for) healthy ageing.

Objectives

- Monitor relationships between the macroscopic impact of combined interventions and genetic profile changes.
- Evaluate measures of the gene and protein expression together with metabolite profiles, before and after the intervention, and describe correlations with the more conventional parameters.
- Set novel biomarkers to assess individual health of elderly, and the responsiveness to interventions.
- Comprehensively address the way food and physical behaviours modulate the individual genetic, proteomic and metabolomic predisposition to develop a healthy ageing.



Lifestyle intervention programs for older adults at health risk

The current sedentary life-style of the growing population of elderly populations will lead to potentially **lethal health problems** for the individual as well as an enormous **socio-economic burden** for our society. Whilst the solution is simple, the sustainability of interventions to increase physical activity and promote healthy nutrition is poor. **Promising solutions** to decrease lifestyle related disease risk therefore lie in programs that focuses on the **needs, demands, barriers and motivation** of elderly.

Output

- *Research*: Development of a comprehensive **lifestyle intervention programs** for elderly at risk.
- *Service/Product*: Development of **combined nutrition and physical activity oriented lifestyle intervention programmes** that induce compliance in elderly populations.

Objectives

- Identify determinants of a healthy lifestyle in a large heterogeneous group of elderly with different physical activity levels.
- Explore and develop innovative training interventions to improve physical fitness and enhance health status, but also to improve adherence to long-term exercise training programs.
- Facilitate differentiation between programmes for specific target groups: sedentary subjects be(come) active, whilst subjects with moderate and high physical activity levels should stay active and adopt a balanced diet.
- Define adequate nutritional solutions that support and strengthen the health outcomes of the physical activity measures.
- Improve the understanding of the impact of exercise training in groups with chronic diseases (cardiovascular disease, diabetes mellitus type 2, obesity) to also develop disease-specific rehabilitation-programs.

Using virtual reality and gaming technology to promote nutrition and physical activity during clinical rehabilitation and therapy

The use of **exergaming technology** (active video gaming) is emerging as a method to reduce sedentary time by encouraging **physical activity** in a style that is motivating to the user. **Clinical rehabilitation** is suggested to be an area in which active video gaming can have a **substantial impact** as part of, or as an adjunct to, the intended health benefiting outcomes of therapy. More research is however warranted to establish the **effectiveness of exergaming** and augmented reality to not only promote physical activity, but to also facilitate behaviour change towards **healthy nutrition** during clinical rehabilitation.

Output

- **Research:** Development and validation of a **virtual reality and gaming technology** to promote nutrition and physical activity during clinical rehabilitation and therapy.
- **Product:** Provision of **exergaming technology** that promotes healthy nutrition and physical activity behaviour change during clinical rehabilitation.

Objectives

- Provide a personalised assessment of clinically based lifestyle (e.g. nutritional assessment, food consumption pattern, degree and frequency of physical activity).
- Establish, on the basis of the results, the existence of risk factors related to lifestyle habits that may influence the course of (cerebrovascular) disease.
- Explore patient and practitioner perspectives on the use of exergaming during rehabilitations (qualitative research method).
- Use patient and practitioner perspectives to modify/develop a (cerebrovascular disease related) rehabilitation exergame (in conjunction with game developers).
- Conduct a small pilot study to examine the effectiveness of the game in relation to the intended outcomes (quantitative and qualitative research method).
- Explore the appropriateness of using exergaming to promote clinical and non-clinical outcomes (i.e. general well-being, psychosocial health) in cardiovascular disease survivors.
- Reduce the burden of disease, facilitating the recovery of people affected, which will result in less use of health resources, drug consumption.
- Reduce sedentary time during rehabilitation with the aim to facilitate the reintegration in the workplace, reducing Temporary Disability Time.
- Reduce not only economic costs, but also get added value due to quality of life gained.

Quality standards for the provision of physical activity and nutrition in later life care settings

The elderly population represents an **increasing proportion** of the population within Europe and worldwide. **Poor nutrition and sedentariness** within this population imposes a substantial burden on social-economic costs, resulting from an increase in **lifestyle related diseases**. Defining **quality standards** for adequate nutrition and physical activity provision in elderly care, with the intention to increase **life expectancy** as well as **quality of life**, could reduce the risk of developing **preventable diseases** in vulnerable elders.

Output

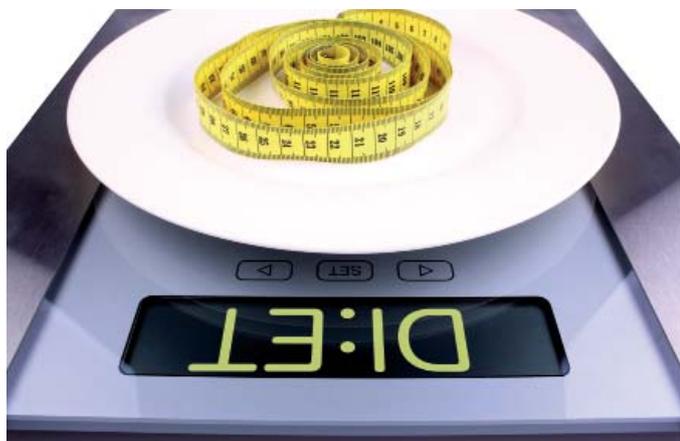
- **Service:** Introduction of quality standards and guidelines for the provision of physical activity and nutrition in elderly care.

Objectives

- Design and collate guidelines that will be provided to care settings of the elderly.
- Advise how elderly care facilities can meet the guidelines and suggest ways they can evidence this.
- Provide training within the areas of nutrition and physical activity to care workers to increase the workers confidence and skill set within the area.
- Audit for a "Mark", and certificate facilities that provide adequate measures for diet and physical activity promotion.
- Create a public database of certified institutions based on the 'Mark', with information about the quality of physical activity and nutrition provided.



Solutions for healthy and active ageing



Portion size plate: a smart tool for personalised food intake and calculation of exercise minutes

Ageing is often accompanied by a decrease in physical activity during work and during leisure time. Many elders therefore encounter difficulty **adapting** their **physical activity** to their **daily nutrition**. Providing a way to personalise the needed amount of physical activity, based on the individual calorie intake, would help them visualise and establish a **balance** effectively.

Output

- **Research:** Assessment of the **effectiveness of a portion size plate** to promote the required physical activity based on nutrition consumed.
- **Product:** Development of a **health promotional portion plate** that can be used in elderly care and by free living elderly.

Objectives

- Conduct basic research to make a database of the nutritional information.
- Develop a technology to weigh and differentiate the food according to each food group.
- Make associations between calorie intake and minutes of physical activity.
- Develop the plate and validate the effectiveness through empirical assessment.

Festival of healthy and active ageing – a physical activity and agro-food event to encourage older adults to engage with community services

There is a substantial range of nutrition and physical activity related **services available** to the elderly that they are unaware of as a client group. In addition to putting emphasis on developing “new” services, work could also be carried out to raise awareness of the **health benefiting services** that are already available for the elderly to access. To reach this purpose, a **yearly event** can be organised, inviting organisations that provide local services for the elderly, focused around the **social determinants of health** to raise awareness and access to them.

Output

- **Service:** Organisation of a **yearly event** with the aim to promote **local organisations** that provide health benefiting services based on physical activity and healthy nutrition.

Objectives

- Audit existing services & build database of contacts.
- Identify date and venue in partnership with local authority and key service providers.
- Design booking system for workshop / taster / physical activity programme and for “Trade Fair” type market place, and devise a yearly planner of activities.
- Develop and deliver marketing campaign and follow up feedback system.
- Set up monitoring systems to measure impact as per objectives above.



THE AUNTY

MATZIE (aged 35)

M

arie, Frank's younger sister, lives with her young baby Emily in the north district of the town.

She can only afford to rent a small bedsit flat in a **deprived neighbourhood** close to the industrial estate, not far away from Resh where her brother works.



Marie did not like studying and left school at 16 to become a waitress. Unfortunately the restaurant she worked at closed whilst she was pregnant with Emily as a result of the financial crisis and since then she has been **unemployed**. As a single mum **life is really difficult** as it is not easy to find a flexible job or to fund childcare arrangements if she works.

Like most of the poor people in her street, Marie lives **day by day**, trying to survive and do the best for her child. Even with the maternity benefits, Marie struggles to find **money** to pay the bills and buy food, though Emma and Frank help where they can. Marie buys what makes her full even if it is **unhealthy** and **exercise** is the **last thing** on her mind.

Marie wishes that more could be done **to help people** like her. She is very worried about baby Emily and wants her to be **healthy** and have a **good future**.



STATE OF THE ART

- 17% of the EU population is at risk of poverty.
- Disadvantaged populations are deprived of some of the basic necessities or advantages of life, such as adequate housing, medical care or educational facilities.
- They have an elevated risk of premature death as well as disease and accident occurrence at any age compared to the other social classes.
- It is essential to reduce health inequalities within these populations by improving their health status.
- The most efficient way to achieve prevention and education among these populations is to engage them in health initiatives.

Solutions for disadvantaged populations

Grow your own health - Impact of edible community gardens on the health status of disadvantaged populations

Disadvantaged communities have a **lack of fresh fruit and vegetable consumption** as well as **exercise**, contributing to **poor health**. This idea aims to determine if people growing their own food are more likely to eat it and become healthier. A **dual approach** allowing testing of research through the implementation of a social innovation programme will contribute to the **reduction of health inequalities** and the **empowerment of deprived communities**.

Output

- *Research*: Development of a robust **structure for community edible gardening initiatives** targeted at disadvantaged communities.
- *Service*: Development of an **urban agriculture training programme** for members of those communities.

Objectives

- Undertake a comparative analysis of existing community edible gardening initiatives in order to explore the most effective means of delivering an edible garden initiative across AFRESH regions (best-practice model).
- Assess the intervention impact (via fruit and vegetable consumption, health status, quality of life, healthy eating knowledge and/or physical activity levels).
- Develop creative and highly visible methods to grow plentiful local food and new techniques for gardening to stimulate and increase physical activity.
- Develop an effective engagement model to reach and engage disadvantaged communities who are marginalised from affordable, fresh and healthy food through social inequality,
- Deliver a corresponding healthy cooking/food preserving training programme.
- Develop social enterprise around local food production and dissemination so that surplus food (not used by communities) can bring in income to the project.
- Deliver policy implications relating to community spaces and regeneration (i.e. incorporating space for healthy gardens in deprived areas) at local and EU levels.



Solution for the whole family: Social-marketing

Target CHANGE! (Targeted Communication of Health, physical Activity and Nutrition messages to Galvanise Europe) – effective social-marketing for health behaviours

Tools such as the internet and new media have increased access to **health information**. However, this information is highly variable in quality and there is a **lack** of clear, consistent and credible **evidence**. Whilst previous public health campaigns have attempted to encourage adoption of health promoting behaviours, exposure to these campaigns is usually passive. Target CHANGE aims to use **research-informed commercial marketing strategies** to promote and raise **awareness of a healthy diet and physical activity**, increase **knowledge and skills**, and influence **desired behaviours** among hard to reach groups.

Output

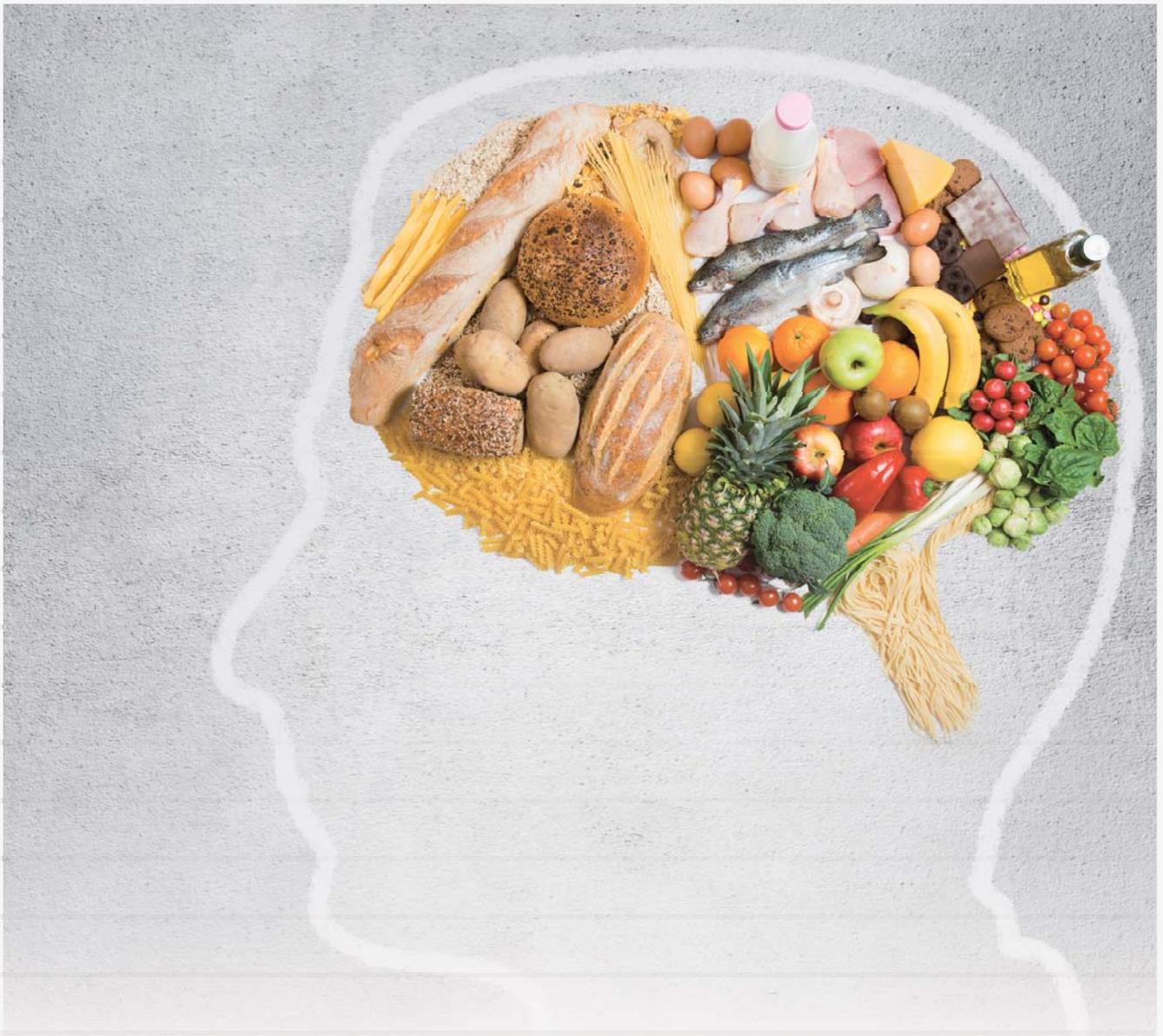
- *Research*: Development of a 12 month **innovative, multi-pronged and targeted social-marketing campaign** for healthy food and physical activity.
- *Product*: Development of a **social-marketing toolkit** for targeted action in European regions.

Objectives

- Develop an innovative marketing strategy to encourage the uptake of healthy food and physical activity behaviours in target audiences (children/families, elderly, disadvantaged, workplaces).
- Create a brand for physical activity and nutrition that excites and engages target audiences.
- Change social norms by developing key health messages from evidence based, credible (theoretically framed) sources in collaboration with target audiences and communicating these messages in a way that resonates.
- Determine preferred channels of health information utilised by target groups.
- Influence social desirability towards healthy nutrition and physical activity behaviours (by countering social images and marketing aimed at promoting unhealthy behaviours).
- Increase and maintain participation in consumption of healthy foods and physical activity.
- Increase knowledge and improve attitudes and beliefs about PA and nutrition.
- Canvass corporate, political and governmental support, including advocacy campaigns to influence stakeholders' frames of reference for social issues.
- Promote partnership with companies and leading brands already popular with target groups.
- Engage local communities and recruitment of local supporters to drive national campaign messages.
- Conduct research, monitoring and evaluation of campaign activity in terms of impact and cost-effectiveness.







HORIZONTAL THEMES

The AFRESH solutions to address the challenges include a number of tools to change behaviour. There were **five key drivers** and hot topics for change that repeatedly emerged across the priority groups (see *Table 2*). These horizontal themes represent the **core components for regional action** and provide a principal focus for **research-driven innovation**. The horizontal themes are:

1. Communities in action
2. e-Health
3. Personalised health
4. Health education
5. Quality standards

1

COMMUNITIES IN ACTION

A healthy environment for healthy people

Communities are at the **heart** of our daily lives, generating the **choice architecture** that assists people in making healthy choices where they live, learn, work and play. Engaging and empowering local communities to take **participatory action** can foster sustainable and effective **population based changes** to tackle **health inequalities**. Changes to community organisations and settings to promote physical activity and healthy eating can provide a catalyst for **improvements in community health and well-being**. Creating enabling environments through healthy community design makes it easier for people to live healthy lives and increases **social cohesion** and a **sense of community**. **Multi-sector partnerships** and collaborations combined with **political support** can make a lasting positive difference to local community health.



2

E-HEALTH

Power to the people: behavior change – anywhere, anytime



In times of austerity, **e-health** has the potential to be a **powerful ally** for the development of **sustainable, healthy lifestyles**. Multi-sector, inter-disciplinary **collaborations** will develop **innovative technologies** that employ **person-centric approaches** to make it easier for people to make healthy choices. Integration of **user-generated data** from mobile technologies, SMART platforms, wireless networks, GPS and sensor technologies will synthesise information on diet and physical activity enabling the user to determine their **own health status**. Persuasive and interactive technologies provide contextual feedback and personalised advice on changing behaviour that resonates with and motivates the user. **Healthy habits** are reinforced and **social communities** promoted through mobile apps and social media tools. e-health solutions can therefore deliver **effective interventions direct to the individual** in a potentially anonymous, timely and tailored manner, regardless of the person's location.

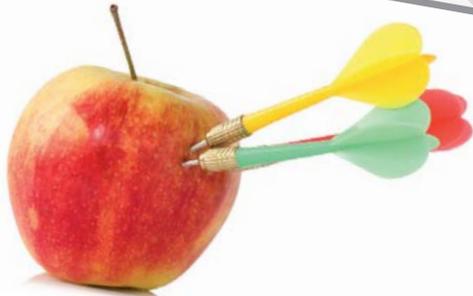
3

PERSONALISED HEALTH

Behaviour change
for the individual

Target groups diversify significantly on **determinants** of health behaviour and a one size fits all approach to interventions often fails to reach the persons that need the intervention the most. **Tailoring**

interventions to the needs of the individual or specific target groups is **more effective** than using generic information in helping people **change health behaviours**, such as diet and physical activity. These personalised approaches are based on an **individual assessment** of the characteristics that are unique to a person, such as their existing knowledge, attitudes, values, behaviour and goals, and related to the outcome of interest. **Personal information** and **targeted behaviour change strategies** are combined to reach one specific person in order to facilitate the process of **behaviour change**.



4

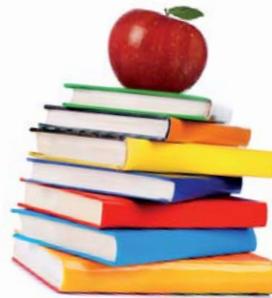
HEALTH EDUCATION

An important building block
for health promotion

Health education means any combination of learning experiences designed to help individuals and communities to take control over their **own health and well-being**.

This can be realised by increasing **knowledge and skills** and influencing **attitudes**. Education is an essential and powerful foundation for **health behaviours** such as physical activity and healthy diets, even if in practice it has been shown that education alone

does not lead to sustainable behaviour change. **Training programmes and materials** can be designed for **all age- and target groups** and can be implemented on **different levels**, like individual, organisational, community, policy and environmental. Interventions can be placed in **different settings** like school, workplace or community. **Multi-level health education** will ensure that health literacy and awareness is passed on from generation to generation, providing the building blocks for a **healthy future** in years to come.



5

QUALITY STANDARDS

Raising standards for physical activity and nutrition

High quality opportunities and experiences in **behaviour change programmes** are essential to promote health and well-being. The development of **quality standards**, outlining the level of service that people should expect to receive, raises expectations of the **performance** that a quality organisation should meet and enables people to **access information** on the quality of physical activity and healthy nutrition provided. Key principles, components and indicators of **best practice** should be defined and used to stimulate organisations – nurseries, schools, workplaces, elderly care homes – to assess the performance of their institution and raise **standards** as needed. Quality assurance can be monitored by an independent body. The provision of high quality, cost-effective **health benefiting services** that fit the needs of the target group will in return offer a **competitive advantage** to organisations.



CONCLUSIONS

This document sets out four **challenges** of **trans-regional** importance that need to be addressed in order to tackle the burden of NCDs at the regional and European level. In response, 18 **innovative solutions** are proposed for boosting innovation in healthy food and physical activity research and product or service development. These solutions encompass five **key drivers** for change necessary for societal health & well-being.

The AFRESH solutions and horizontal themes are in accordance with the **flagship initiatives** of **Europe 2020** (e.g. Innovation Union) and with the **key objectives** of **Horizon 2020** – the EU’s new framework programme for research and innovation. By utilising a triple helix approach that is driven by **research**, the project complements the three core components of Horizon 2020 – “Excellent Science, Competitive Industries and Better Society.” The AFRESH solutions will foster **innovation**, create **jobs** and **growth**, strengthen **SMEs** and tackle **societal challenges** to enable European citizens to live **longer and healthier lives**.

The AFRESH solutions represent opportunities to **work together** in order to achieve **innovation** and stimulate our **regional economies**. In the near future, the project partners should consider possible opportunities for funding within **regional, national and European calls** and develop proposals along one or several solution(s) included in the JAP. Horizon 2020 will be in the next future the main source for such opportunities at the European level. The project partners should also consider opportunities linked to **private investors** like health care insurances and companies involved in health improvement or **venture capital**, European Investment Bank innovation and technology funds, as well as **charities** and **foundations**.

Collaboration and partnerships with **new stakeholders and partners** from research, business and public services will be essential for disseminating the AFRESH ideas and for **future success**. The project participants should enlarge their **networks** by cooperating and joining new EU-wide platforms beyond the regional level to jointly act as **critical mass** for implementing the proposed **innovative solutions** in the field of prevention.



ANNEX: Regional research priorities

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ÉSZAK-ALFÖLD (HUNGARY)

■ STRATEGIC OBJECTIVE

The perceived need of the companies to establish clusters and work together can be a strength in developing new products or services for the attitude formation in childhood in order to make the children health conscious and sport lovers.

→ **Research priority 1: Development of “Lifestyle from the box”, lifestyle recommendations (containing specified sport activity and diet) for children who have diabetes and/or obesity.**

These diseases have been recognised as one of the most important health problems not only in the region but also at European level. The research is about to develop a product, which provides recommendations to avoid childhood obesity and/or diabetes, or to contribute to the treatment of such diseases. The novelty of the product is that different boxes targets different target groups thereby it works as a personalised treatment for children.

■ STRATEGIC OBJECTIVE

Use the experience and willingness of the sports cluster to organise sports events in applying community building for healthy lifestyle development.

→ **Research priority 2: Developing a qualification and assessment system for health conscious festivals, programmes and events.**

The goal is to inform the community of health conscious people about national and international festivals with a focus on positive and negative sides. The most important part of the research is to define the assessment system which can be applied at European level. The results are issued in an annual publication and it also should be available on the internet thereby everyone could gain information about events at regional or European level.

The thematic homepage would offer an advertisement opportunity for the organisers of the event (therefore they are interested in the participation) while the health conscious people are also interested in to receive more information on events which are offering them specific programs. The assessment system is able to provide information for possible participants to decide if an event is worth enough for visiting or not. It is very important to note that the assessment system

targeting health conscious people and health conscious festivals, that is the novelty what differentiates the research from other ones.

■ STRATEGIC OBJECTIVE

Make use of the experience and willingness of the sports cluster to organise sports events and programmes to avoid the negative effects of civilization diseases and comfortably lifestyle.

→ **Research priority 3: Research on developing efficient safe food which can be distributed by the employee with the goal to make the employees healthier, more efficient in work, bearing with higher workload, requiring less sick leave and being more precise.**

The research is focusing on developing efficient safe food for employees that help them to improve general health conditions, exactitude and work efficiency. The healthier employee also means fewer sick leaves and higher workload therefore the safe food (the output of the research) offers clear economic benefits for the employers. The research is focusing on two main stages: food development and verification of positive effects. The safe food dedicated for employees is a range of marketable products which are distributed by the companies at a low cost with the goal to make their employees more efficient at work.

→ **Research priority 4: Complex research on children (aged 8-14) by applying health examination to identify food allergy and providing treatment for them.**

The research program has a high priority in Hungary (but perhaps in other EU countries also) as diagnosis of food allergy in childhood is not implemented regularly by governmental organisations, therefore many children live with food allergy, having symptoms, but without a diagnosis on their health problem. It is clear that a diagnosis at the early stage of food allergy makes the life of children much healthier and comfortable. Food allergy identification also generates market for food companies producing healthy food for people requiring special diet. Developing the method of identifying food allergy can be made with the involvement of Afresh partners therefore ensuring that the method is applicable at European level.

The service (implementation of food allergy identification) could be offered for regional and/or national health authorities at a marketable basis.

FLANDERS (BELGIUM)

■ STRATEGIC OBJECTIVE

Multidisciplinary expertise of Food2know enables our RDC to address the trend for healthy food of consumers, companies and local authorities.

→Research priority 5: Set up a low threshold research program for SMEs to develop new healthy food products for young people and/or the ageing population. The low threshold research program will address the constraints of SMEs to develop healthier products, which will be identified in a first phase.

Food companies have a critical role in providing innovative healthy food products and services. However for small and medium sized companies there are many challenges to develop innovative healthy food products, because SMEs don't have always access to knowledge and expertise or don't have the capacity available. We aim to identify the specific constraints SMEs in our region face to develop healthier products. We want to support the SMEs by setting up a low threshold research program for the development of new healthy products and services specifically for young and/or ageing populations. This program will be low threshold in terms of addressing the specific constraints we identified before.

■ STRATEGIC OBJECTIVE

Multidisciplinary expertise of Food2know enables us to link healthy food with sustainability.

→Research priority 6: To list the regional healthy products and market these products, in order to increase the consumption of healthy foods in combination with supporting the regional economy.

→Research priority 7: To map the supply side for food products in our region, to find out where our products come from. Local products as well as imported products will be investigated, in order to get an overview of the whole chain and see the impact on food sustainability. In the end the threats in terms of food security and sustainability must be identified.

Our current western food system is under stress. We need to evolve towards food production and consumption, providing enough, healthy food but at the same time economically, socially and environmentally sustainable. One of the issues is decreasing the greenhouse gas emissions, which can be partly achieved by consuming more local products. Therefore we will map all the regional healthy products in order to increase the consumption.

Furthermore it will also be useful to study our food supply chain to see where the food in our region is coming from and where the weak links in terms of sustainability are situated.

■ STRATEGIC OBJECTIVE

To promote the link between initiatives of p.a. and food to avoid an overload of information for people.

→Research priority 8: Develop an ICT application that combines food and physical activity from a regional perspective. The application provides up-to-date information about the offer of healthy food and physical activity initiatives in the region and at the same time linked with your energy intake and with your physical activity level.

In our consumption and marketing society, excess choice plus information overload poses a threat. People don't know anymore what to choose. Too much information is directed to consumers and expecting them to make the right healthy choices. However the burden of diet-and p.a.-related diseases requires a new approach. Education alone turns out to be not effective, it should be linked to an available healthy offer. Applying modern media technologies enable us to provide this personalised information where your activity level is linked to your energy intake level, and this linked directly to the regional offer. For instance if you are close to a regional sports activity, this application informs you and makes a link to your energy and p.a. status of that moment.

GALICIA (SPAIN)

■ STRATEGIC OBJECTIVE

Collaborate within the work group on 'functional food, nutrition and health' in the definition and concept of Atlantic diet.

→Research priority 9: Establish joint work agendas with atlantic diet foundations and organisations with the aim of providing the "atlantic diet" concept with scientific content in its relationship with health promotion.

In the era of evidence-based medicine, dietary recommendations to the general public should be founded on the results of large randomised clinical trials with "hard" endpoints.

The lack of first-level scientific evidence on the cardiovascular benefit of the Atlantic diet or its main components (i.e., fresh fish excluding cod, cod, red meat and pork products, dairy products, legumes and vegetables, vegetable soup, potatoes, whole-grain bread, and wine) will prompt us to start recruiting participants for a primary prevention trial. This will be a multicenter, parallel group, randomised clinical trial aimed at assessing the effects based on the Atlantic diet.

■ STRATEGIC OBJECTIVE

The strength of the work group on 'functional food, nutrition and health' can help Ptgal (Galician Agri-Food Technology Platform) developing new business initiatives based on the promotion of healthy lifestyles.

→Research priority 10: Optimisation of the nutrient profile of raw materials besides design and reformulation of processed foods based on healthy criteria.

Nutrient-profiling techniques can help consumers identify nutrient-rich foods that are integral to the Atlantic diet. Being able to assess the nutrient density of individual foods in relation to cost can help consumers identify affordable nutrient-rich foods and make smarter food purchases. However, food rating systems necessarily focus on individual foods without taking meals, menus, or the quality of the total diet into account. Much more work is needed on how different nutrient-profiling systems, which used away from the point-of-sale, can help consumers improve the overall quality of their diets.

■ STRATEGIC OBJECTIVE

The ability of Ptgal to influence decision making can help to develop education and communication programs linking nutrition and physical activity.

→Research priority 11: Identify, select and organise contents to solid nutrition education in school

University will lead the project with Health department and Education Department, University's approach to nutrition education in schools aims to create positive attitudes, skills, and promotes lifelong healthy eating behaviours. School-based activities include school gardens, food processing, visits to food shops and markets, food safety and hygiene and food preparation.

LANGUEDOC-ROUSSILLON (FRANCE)

■ STRATEGIC OBJECTIVE

Development of products & services to maintain and/or improve the health of specific target groups.

→ **Research priority 12: Implementation of health prevention programmes & services in nutrition and physical activity areas towards specific target groups, and assessment of their efficiency.**

In the frame of this action:

- “efficiency” is measured by the benefit/resource ratio,
- the following target populations are considered: elderly, hospitalised persons, children and underprivileged/deprived people,
- “prevention” includes primary prevention as well as therapeutic education.
- A multi-disciplinary approach, from molecular biology to behavioural sciences (human movement, psychology), will be undertaken to tackle this challenge.

■ STRATEGIC OBJECTIVE

Development of innovative products & services linked to sustainable development in response to an increasing (individual and collective) demand.

→ **Research priority 13: Analysis of development opportunities for innovative products & services linked to sustainable development (organic, regional and seasonal products & services) in nutrition and physical activity areas.**

This analysis includes:

- the study of stakeholder (farmers, consumers) strategies for a better adequacy between offer and demand,
- the development of innovations in the agro-food domain encouraging the use of regional raw materials and the promotion of by-products.

→ **Research priority 14: Development of health impact assessments (similar to the already existing environmental impact assessments).**

This action consists in the analysis of the applicability and general implementation (consideration by decision-makers, etc.) of the health impact assessment methodology to:

- actions implemented in the frame of public policies (city planning, housing, agriculture, transport, etc.),
- new products & services.

■ STRATEGIC OBJECTIVE

Development of actions for raising awareness among under-privileged/deprived populations in a more efficient way.

→ **Research priority 15: Analysis of prevention policies limitations and identification of actions increasing their efficiency.**

This action consists in:

- the identification of barriers for responsiveness and implementation of prevention messages, according to specific criteria (sex, age, socio-professional category, etc.),
- the research on communication channels and action levers for a more efficient preventive system, including training for health professionals and socio-educational staff.

It will use a multi-disciplinary approach involving ethics, psychology, sociology, ethnology and communication.

Transversal objective

→ **Research priority 16: Implementation of a trans-regional (between the AFRESH regions) observatory on regional practices and know-how in the nutrition and physical activity areas, and on their impact on health.**

MAZOVIA (POLAND)

■ STRATEGIC OBJECTIVE

Development of nutritional education on different levels according to characteristics of population groups by the strong academic centres in the region and by using the experience of the expanding offer of educational services concerning food, physical activity and health.

→ **Research priority 17: Assessment of nutritional values of the diets of different groups of young consumers and their health (ex. anthropometric indicators), in order to be able to introduce nutritional intervention.**

There is a lack of detailed information on nutritional status of different age group of young population in the Mazovia region. So the purpose is to conduct survey concerning nutritional value of the diet using 24 hour Recall Methodology. Health status will be evaluated on the base of the general health questionnaire and BMI measures as well as health interviews conducted among parents. Results will allow to introduce strategy on improving knowledge regarding healthy nutrition and lifestyle.

■ STRATEGIC OBJECTIVE

Popularisation of healthy lifestyle responding to the increased consumer interest in health with help of the experience of public and business sectors.

→ **Research priority 18: Assessment of diets, lifestyles and attitudes of groups of young consumers, in order to rule out nutritional mistakes and unhealthy attitudes and promote pro-health changes.**

Changing determinants in the consumer environment influence diet and life style make it necessary to study and assess preferences and attitudes towards food as well as nutrition and purchase behaviour on the food market. Outcomes from the research conducted with face-to-face interview method will allow to formulate a strategy for healthy and active life style popularisation.

The study conducted in the frame of research priorities 17 & 18 will fill the gap in the currently existing relevant data and will be a base to create a solid knowledge platform on nutrition deficiencies, mistakes, affordability, eating habits and food preferences for future strategies to overcome barriers in achieving healthy nutrition and introduce healthy behaviour in food consumption and physical activity.

■ STRATEGIC OBJECTIVE

Diversification of innovative product offer on the food, nutrition and physical activity services markets responding to income polarisation of consumers by involvement of business sector in creation supply offer fitted to different economic group of population.

→ **Research priority 19: Assessment of nutritional values of regional/ traditional products and meals in order to reformulate recipes to healthier options, reduce consumption of components that are major risk factors for diet-related diseases.**

The stereotype exists regarding not healthy image of regional food products and meals (too much fat, saturated fat, sugar and salt). Therefore there is a need to assess nutritional value of these foods using recipes and food composition tables which show nutritional value of products and components. This knowledge will enable to reformulate the recipes by changing unhealthy ingredients and technology into healthy ones maintaining regional benefits of the products and protecting culinary heritage of the region.

MERSEYSIDE (UNITED KINGDOM)

■ STRATEGIC OBJECTIVE

Make use of the research excellence in PA of the RDC for grasping the opportunity of E-health and emerging technologies.

→ **Research priority 20: Development of mobile and web technologies for measurement and behaviour change (physical activity and sedentary behaviour).**

There are significant challenges in measuring both physical activity and sedentary behaviour. The use of web-based platforms to receive signals from devices and sensors could offer real-time information on an individual's behaviour. This information could then be used to provide direct, specific individual feedback and prompts in order to change behaviour i.e. reduce sedentary time and increase sedentary behaviour. Web-based programmes such as SHOKK tactics could be used to allow individuals and settings/ organisations to monitor behaviour and track development. The proliferation of SMART phone devices also warrants the examination of mobile applications.

■ STRATEGIC OBJECTIVE

Develop more combined PA and healthy food programmes in order to respond to the need for these combined programmes.

→ **Research priority 21: Development of a combined nutrition and PA intervention (Active play & yum yum yummy) for young children.**

The early years are important for establishing life-long healthy behaviours. One in five children starting school (5 years old) is overweight. Parents and childcare settings need educating on how to promote physical activity and healthy eating at a young age. "Active Play" and "Yum Yum Yummy" are two local programmes co-existing in one city in the region delivering to 3-5 yr old children but to support these aims and maximise effectiveness there is a need for combined interventions, which can then be sold as a resource to other service providers. There is also a lack of activity in the 0-3 (toddlers and infants) age range.

■ STRATEGIC OBJECTIVE

Work on the visibility and identity of the regional cluster and exploit the strong partnerships across the cluster organisations in order to access funding.

→ **Research priority 22: Develop cluster through creation of knowledge transfer partnerships across triple helix organisations.**

There is a problem within the RDC in that some sectors are not well represented (i.e. business) and there is also a lack of awareness between sectors of the issues and mindsets faced by different organisations. Knowledge transfer partnerships can enable public organisations and private sector companies to access the knowledge and expertise of the research institutes. This in turn can work to promote the visibility of the cluster by promoting research driven activity from within. By exploring opportunities for partnerships with companies and local authorities it is hoped that the cluster will strengthen its profile regionally.

NIJMEGEN (NETHERLANDS)

■ STRATEGIC OBJECTIVE

Application of regional knowledge in the area of sports, physical activity and health in order to position the region within the national top sector Life sciences and Health and on the European level in the Health sector.

→Research priority 23: Executing comprehensive cohort studies in order to monitor, or even compare or influence, the development of the population concerning lifestyle and health.

Participants in the Nijmegen cluster share a lot of experience in this type of study. E.g. the Vierdaagseonderzoek (Four Day Marches Research) in which 10.000 people participating in a big walking event are monitored over a period of 10 years regarding the development of their health. Other examples are the Nijmegen Biomedical study in which 10.000 inhabitants of Nijmegen are followed over a period of 10 years concerning their health and lifestyle. Lastly, the Sceneca research collects large amounts of data from yearly recurring fitness tests.

→Research priority 24: Research into the effect of vitality programs on sickness absenteeism and work productivity.

Nijmegen aims to perform this research in order to become the most vital city in the Netherlands. Ten of the largest employers in the region take part in this research program. Amongst the employers are: UMC St. Radboud, the Maartenskliniek and Hogeschool van Arnhem en Nijmegen.

■ STRATEGIC OBJECTIVE

Use regional knowledge in the area of sports, physical activity and health in order to reduce care expenditures.

→Research priority 25: Research into the development and the progress of chronic diseases and exploring the effects of physical activity and sports on the welfare of patients and counteracting the effects of disease.

→Research priority 26: Chain integration in the care industry, by offering products and services that simplify the access of patients to care providers.

■ STRATEGIC OBJECTIVE

Deploying strong regional networking organisations in order to live up to the demand from politics and the government to cooperate in triple helix.

→Research priority 27: Developing innovative products and services in the area of sports, physical activity and health, complemented by changes in the nutrition cluster, aimed at the individual and the individual need.

E.g. the individual sports- and nutrition programs and customised care program. In order to realise the above, cooperation between knowledge institutions and the industry is essential. This cooperation and co-creation is made possible by new field lab infrastructures

STUTTGART (GERMANY)

■ STRATEGIC OBJECTIVE

Use the experience in worksite health promotion of the rather big companies in the Stuttgart region to introduce worksite health promotion in SME's. There are enough actors willing to invest in worksite health promotion. In the meanwhile the health/wellness trend will help to convince companies/employees to establish worksite health promotion.

→Research priority 28: Developing and testing practical strategies (structure, processes, etc.) for worksite health promotion for SMEs including analysing specialities of SMEs.

Companies (especially SMEs) that offer worksite health promotion need effective and efficient strategies in order to establish an organisational structure and responsible human resources with special tasks and competences. These strategies must be developed and tested for the special needs of SMEs.

→Research priority 29: What needs do SMEs have for worksite health promotion? How can these needs be met? What barriers realise SMEs for their worksite health promotion?

SMEs have different pre-conditions, needs and barriers for worksite health promotion in comparison to big companies in terms of financial, personal and structural resources. What are the aims of worksite health promotion for SMEs? What needs do they have? What barriers against worksite health promotion do they realise (e.g. lacking support, competences, willingness etc.)? A strategy is needed, based on analysed needs and barriers, to meet the needs and to get over the barriers. In addition the health/wellness trend could help to convince companies/employees to establish worksite health promotion.

■ STRATEGIC OBJECTIVE

The willingness of the federal state Baden-Württemberg, which has emphasised (worksite) health promotion as one of its main priorities, need to be used to establish worksite health promotion in companies. The health/wellness trend and demographic change should be considered.

→Research priority 30: What conditions are realised by employers and employees as risk for "unhealthy" (e.g. malnutrition, inactivity) attitudes and missing worksite health promotion in frame of changing demographic society?

Many people have an unhealthy behaviour (e.g. malnutrition, inactivity) that leads to non-communicable diseases. Attitude is an important factor that affects our intentions and behaviour. "Unhealthy" attitudes and lacking programs in worksite health promotion are risk for employers and employees in frame of changing demographic society. Do they realise the risk? How can they distribute the risk and programs in worksite health promotion properly in order to be accepted? Does the wellness/health trend help to increase awareness and acceptance?

■ STRATEGIC OBJECTIVE

To increase the willingness of company managers to deal with worksite health promotion by emphasising on the economical benefits of worksite health promotion.

→Research priority 31: What factors are from scientific and practical point of view suitable to prove the economic benefit of worksite health promotion? How can this be assessed and analysed in workaday life?

In order to establish worksite health promotion the willingness of company managers is very important. Establishing organisational structures and personal resources and deciding about financial budgets need the support of leading managers. In order to convince managers, the economical benefit of worksite health promotion needs to be stressed. Performance measures and assessment tools are needed to prove the impact and economical benefit of worksite health promotion. These tools need to be applicable from a scientific view and a practical view.

ABBREVIATION LIST

EU	European Union
FP7	Seventh Framework Programme for Research and Technological Development
JAP	Joint Action Plan
JPI	Joint Programme Initiative
NCD	Diet- and lifestyle related non-communicable disease
RDC	Research Driven Cluster
RoK	Region of Knowledge
SME	Small and Medium-Sized Enterprise
WHP	Work Health Promotion
WHO	World Health Organization



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We thank all AFRESH partners.

Design and layout

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Printed in EU - June 2013

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Way of citation: *AFRESH solutions – a Joint Action Plan for Health*. European project AFRESH: Activity and food for regional economies supporting health (2013). Montpellier, France. www.afresh-project.eu/the-project/documents



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