



# IMPLEMENTATION PLAN 2022-2024

*JOINT PROGRAMMING INITIATIVE  
'A HEALTHY DIET FOR A HEALTHY LIFE'*

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## Abbreviations

CSA	Coordination and Support Action
DG RTD	Directorate General for Research and Innovation
EC	European Commission
ECN	Early Career Network
ECS	Early Career Scientists
Eol	Expression of Interest
ERA	European Research Area
FAIR	Findability, Accessibility, Interoperability and Reusability
F4F	Fit4FOOD2030
HE	Horizon Europe
IP	Implementation Plan
JFA	Joint Funding Action
JPI FACCE	Joint Programming Initiative Agriculture Food Security and Climate Change
JPI HDHL	Joint Programme Initiative Healthy Diet for a Healthy Life
MaNuEL	Malnutrition in the Elderly
MB	Management Board
MFA	Membership Fee Arrangement
R&D	Research and Development
RI	Research Infrastructure
R&I	Research and Innovation
RRI	Responsible Research and Innovation
SAB	Scientific Advisory Board
SCAR FS WG	Standing Committee on Agricultural Research Food Systems Working Group
SFS	Sustainable Food Systems
SHAB	Stakeholder Advisory Board
SRA	Strategic Research Agenda
TRL	Technology Readiness Level
WHO	World Health Organisation

# CHAPTER 1: INTRODUCTION





# 1. Introduction

The Joint Programming Initiative “A Healthy Diet for a Healthy Life” (JPI HDHL) celebrated its 10<sup>th</sup> anniversary in 2021, and continues to connect the thematic areas of food, nutrition, physical activity and health as a self-sustaining initiative from 2021 onwards. As such, JPI HDHL will continue to work towards achieving its vision, which is that *by 2030 all citizens will have the motivation, ability and opportunity to consume a healthy diet from a variety of foods, have healthy levels of physical activity and that the incidence of diet-related diseases will have decreased significantly*. While the focus of JPI HDHL is on healthy diets, a holistic food system perspective is taken, and the transition to healthier diets must take place in an environmentally sustainable and fair way. Within the JPI HDHL member states work together to address major societal challenges related to food, physical activity, nutrition and health more effectively and systemically.

The strategic goal of the JPI HDHL is to improve dietary patterns in an environmentally-sustainable way, based on insights and developments in food, nutrition and the social and health sciences, and to develop evidence-based recommendations for healthy diets and for innovative formats for food products. Together with changes in physical activity this should have a major impact on public health, increasing quality of life and prolonging meaningful and productive life, simultaneously reducing the environmental burden of diet.

A Strategic Research Agenda (SRA) is developed every four years by the Scientific Advisory Board (SAB). The SRA provides a framework for coordinated and structured research activities in order to achieve tangible societal impact. This Implementation Plan (IP) is an operationalisation of the SRA and describes the ambitions for the next three years both for research oriented funding activities and for other core activities.

## 1.1 Looking back: how did we get here?

Over the past 10 years, JPI HDHL has worked on a programmed approach to align national Research and Innovation strategies, fund new research that benefits from multilateral collaboration, increasingly engage stakeholders and increase dissemination of research results in order to facilitate true understanding of the relationship between diet, physical activity and health and to increase impact.

Figure 1 summarizes the key achievements of JPI HDHL over the last 10 years.





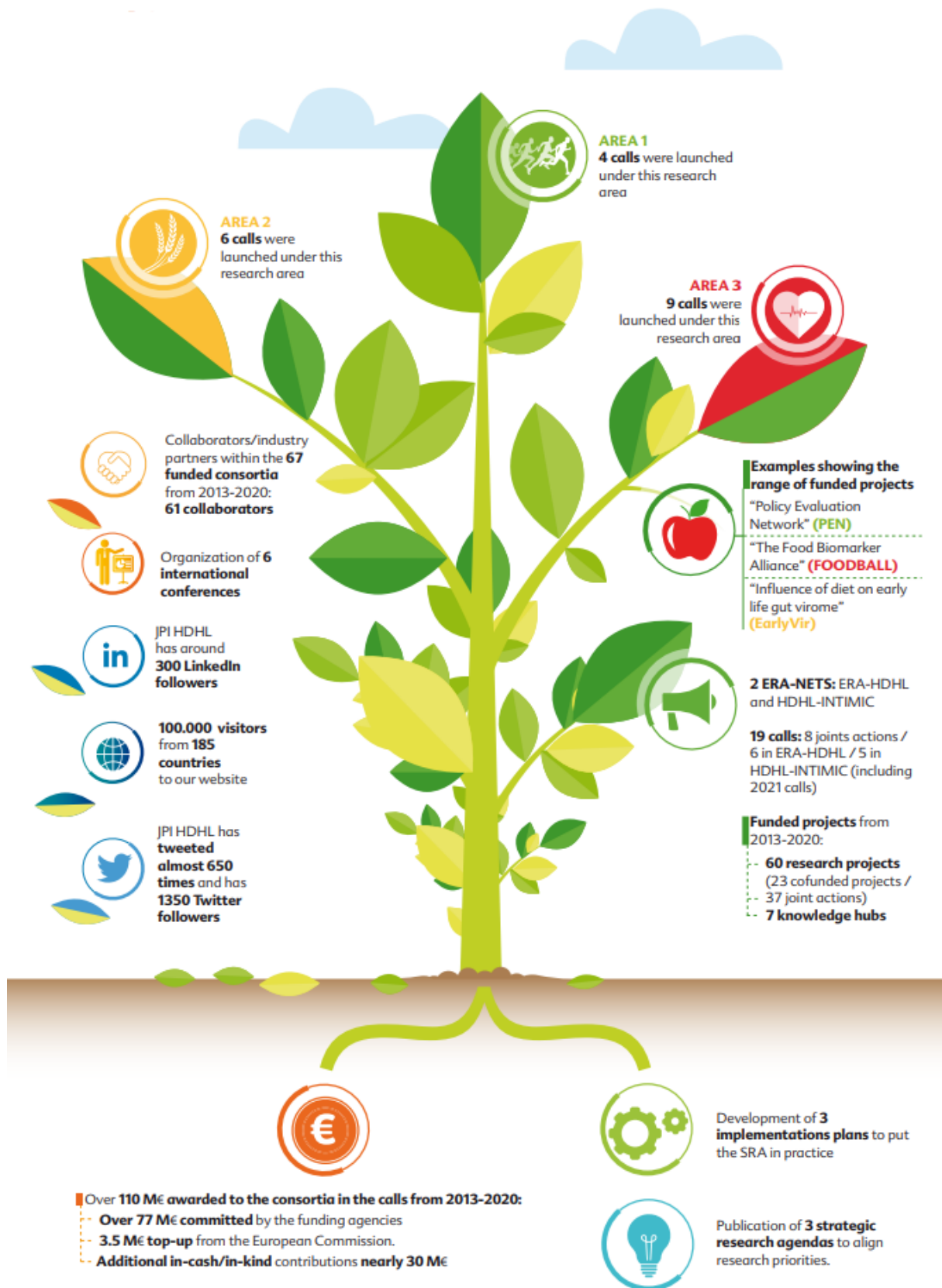


Figure 1 - 10 years of JPI HDHL



After being supported by two CSAs (Coordination and Support Actions) in the past, the JPI HDHL became a self-sustainable initiative in 2021 supported by 15 full member countries which pay an annual membership fee, and five non-paying observer members. The JPI HDHL is governed by a management board (MB) consisting of representatives from ministries of health, agriculture and science as well as from research funders from the involved full member countries. The MB comes together three times a year to take decisions and discuss strategic and operational directions.

An external evaluation was carried out in 2020 to assess the impact of the JPI HDHL along three dimensions, namely alignment of policy at the national and European level, level of excellence in science and societal impact. The uptake of research outcomes into policy, healthcare, industry and further research can take many years. Therefore, the purpose of the evaluation was to develop an evaluation framework and perform a first analysis of the impact. The evaluation showed that the JPI has already reached some significant impacts in the first decade of its existence:

- 1) **Alignment:** Although alignment is especially difficult to measure, the evaluation found that the level of participation of member countries tends to be constant over time and members are more likely to increase research funding rather than decrease it, showing commitment to the work of the JPI HDHL. Regarding alignment with the research policy and activities of the European Commission, there are concrete examples of the JPI's ability to influence agenda setting, such as the involvement of the JPI in the Fit4Food2030 CSA and the development of the Sustainable Food Systems (SFS) Partnership. For a more in-depth analysis of the effectiveness of the JPI, a systematic comparison with other initiatives was recommended by the evaluators.
- 2) **Research excellence:** The bibliometric analysis revealed that JPI HDHL papers on the whole are excellent, and the level of multidisciplinary is fairly high regarding the diversity of topics in the papers and co-authorship. A few JPI HDHL projects yielded new research communities. Further research could be undertaken to determine connections between different projects, how the connections evolve over time and whether collaboration continues outside the scope of the JPI HDHL.
- 3) **Societal impact:** In the end, this is what the JPI HDHL is all about: addressing societal challenges related to food, nutrition, physical activity and health. The evaluators concluded that the JPI HDHL has been active in disseminating outputs and building a community around its topics, although it is challenging to include non-academic partners in such activities. The uptake of research results is still limited, mainly because most projects ended relatively recently. Some projects are close to achieving interesting societal impacts such as the MaNuel Knowledge Hub. Overall, the diversity of the JPI HDHL portfolio allows for having both short term and longer term impacts.

### 1.1.1 Joint Funding Actions

Over the last decade, 26 countries from within and outside Europe worked together in the JPI HDHL, collaborating voluntarily to increase the impact of research investments, minimise duplication of research effort, and to collectively advance the insights needed for the transformation to a healthier, more sustainable society.

To date, the JPI HDHL has funded a total of 67 transnational consortia, including 61 collaborators and 37 industry partners, with a total budget of more than 106 million euros, of which 80 million euro was committed by funding agencies (including 3.5 million EC cofunding) and 26 million euros was provided in-kind.





### 1.1.2 Non-funding activities

A key element of the JPI HDHL holistic programming approach, is the fact that it does not only fund research but also works actively on i) alignment ii) stakeholder collaboration and engagement and iii) communication, dissemination and impact.

Alignment entails processes are harmonised and connected and resources are used effectively, where needed most. Stakeholder collaboration and engagement is vital for ensuring research projects ultimately serve the complex societal challenges related to food, nutrition, physical activity and health “on the ground” and include the perspectives of different stakeholders. Ultimately outcomes of the JPI HDHL funded research projects need to reach the right stakeholder target group to ensure they are used and to achieve lasting change. Therefore stakeholder collaboration, engagement and communication, dissemination and impact are prominent elements of this IP’s non-funding topics part.

### 1.1.3 The wider landscape

JPI HDHL, in close collaboration with other actors, has made important steps in bridging different disciplines, perspectives and interests to improve the impact of R&I around food, nutrition, physical activity and health.

While there are many lessons to be learned and shared from the work in the past 10 years, one of the main recurring issues is that nutrition often falls in the gap between the themes of health and food. JPI HDHL stands for the need to bridge that gap, to ensure that nutrition research and policy receives the attention it deserves.

The EU Horizon Europe framework programme is shaping an important part of the landscape in which the JPI HDHL operates. At the time of writing, the consortium which the JPI HDHL is a partner of was awarded CSA funding for the implementation of FOODPathS. This three and a half year project will design the selforganizing ‘Prototype Partnership for Sustainable Food Systems (SFS) for people, planet and climate’ by following a systems approach and catalysing a change in mind-sets. The Prototype serves as the first version of HOW the future Partnership will function, including all its components such as the innovative, effective and inclusive governance model, SRIA supporting Food2030 priorities, a self-learning-organising *Modus Operandi*, and its inclusion in a Network of Partnerships and Food System Initiatives.

Another HE partnership which is relevant to the JPI HDHL is the ERA4Health partnership. At the time of writing, a pre-final version of the SRIA was being developed, after an online consultation and a workshop in early March 2022. The key topics for the nutrition and health theme (and partly the public health and prevention theme) are largely based on the JPI HDHL SRA. The JPI HDHL secretariat will also keep an eye on the developments of other partnerships which might contain elements that are relevant for the JPI HDHL and to which a connection could be made in future (f.e. Transforming Health and Care Systems).

The activities of both these partnerships are expected to be highly relevant to the focus area of JPI HDHL. However, there is no dedicated EU partnership to address all aspects necessary for the promotion of healthy diets for all, with on the one hand their connection to a wide range of chronic diseases and on the other to environmental sustainability. Therefore JPI HDHL has an important task over the coming years to bring together the programming and outcomes of both partnerships and its own work. By doing so we can ensure that the crucial intersection of food, nutrition, physical activity and health will not get lost in the gap between the food and health domains, as has so often been the case.



## 1.2 Looking ahead

To achieve further impact on the societal challenges related to food, nutrition, physical activity and health, this current implementation plan for the years 2022-2024 is developed in accordance with the Strategic Research Agenda (SRA) updated in 2019. The main theme is the integration of the food, physical activity and health areas.

One of the foci the coming years will be on building on the strong collaboration with the European Commission through continued strategic exchanges as well as the JPI HDHL's involvement in the development and implementation of the Sustainable Food Systems Partnership through the FOODPathS CSA, and forging close connections with the ERA4Health Partnership. Other important themes for the coming three years are stakeholder engagement, communication and impact.

Looking ahead even further, it is expected that the JPI HDHL will commission a next Impact Evaluation in another three to four years to be able to compare outcomes and gauge the progress of the JPI HDHL. During this IP period specific outcomes of the Impact Evaluation carried out in 2020/2021 will be addressed (for example in section 2 regarding alignment and in section 4 regarding stakeholder collaboration and engagement).



# CHAPTER 2: Alignment



## 2. Alignment

Alignment between national and European research policies and programmes is a key element of the JPI HDHL programmatic approach. Ultimately alignment is expected to lead to increased impact by ensuring resources are combined in the most effective way and priorities, agendas and procedures are harmonised between countries. There are different strategies to increase alignment, ranging from coordination of research efforts, harmonising regulations with regard to funding, connecting existing projects to networking with strategic stakeholders at national and international level. Figure 2 below provides an overview of the different categories of alignment.



### Categories of alignment



Figure 2 - Alignment at different levels

### 2.1 What has been done so far?

#### National alignment

JPI HDHL's alignment efforts over the past three years have focused on multiple levels. At the national level, the goal of alignment activities has informed countries' national programmes, priorities or activities as a consequence of the adoption of the 3<sup>rd</sup> edition of the common Strategic Research Agenda in February 2019. National alignment activities focused on ensuring JPI HDHL presence during EU events such as the World Food Day high level event in October 2019, on sharing experiences from the Fit4Food policy labs approach, on national consultations and on the development of communication material. And ultimately, the fact that countries joined forces to fund calls shows strong alignment of research priorities.

#### European alignment

At the European level, the JPI HDHL joined efforts with the Food Systems Working Group (FS WG) of the Standing Committee on Agricultural Research (SCAR), JPIs OCEANS and FACCE in undertaking strategic exchanges and presented a [joint position statement](#) outlining a concerted vision on R&I for a future-proof food system to the healthy planet directorate of DG RTD in the first quarter of 2020. This was also distributed to the networks of the involved parties and various relevant contacts in the



European Commission. It was later used as a prime source of input for the first version of the template of the Horizon Europe partnership on Sustainable Food Systems (SFS).

Overall, the JPI HDHL has been closely involved with the development of both the SFS partnership and the ERA4Health partnership. The JPI HDHL has positioned itself strongly as a bridging initiative which links the areas of health and food (systems) in both partnerships. The JPI HDHL focus areas of policy, behaviour, food processing and the food environment align with the SFS partnership and the areas of nutrition, health and chronic disease align with the ERA4Health partnership. As ERA4Health has little focus on food itself (but nutrition and diet are included), and the focus of the SFS partnership is on the food system, but not directly on the mechanisms of health and disease, the risk arises that nutrition research falls into a gap between these partnerships. The bridging role of the JPI HDHL will be crucial between these partnerships, to ensure that challenges in food, nutrition, physical activity and health continue to be approached with a systemic perspective and to decrease fragmentation in these highly interlinked fields. During the previous IP period the JPI HDHL was involved as one of the partners in the development of a CSA proposal which was approved in the first quarter of 2022. The overall goal of this CSA project FOODPathS is to design the self-organizing 'Prototype Partnership for Sustainable Food Systems (SFS) for people, planet and climate' by following a systems approach and catalysing a change in mind-sets'. This will enable the JPI HDHL to co-develop the partnership and advise on topics to be covered.

Also in the first quarter of 2020, the JPI HDHL submitted a letter to the director of the Healthy Planet Directorate, to communicate its intention to strengthen the exchanges with DG RTD and synergy between the initiatives and to elaborate on its expertise in different areas.

### **FIT4FOOD2030**

The JPI HDHL, through the secretariat coordination at ZonMw, worked closely with many important stakeholders as well as the European Commission in the Fit4Food2030 (F4F) project, a Horizon 2020 CSA. F4F aimed to increase the impact of R&I on the transition of our food systems, and ZonMw was leader of the work package that coordinated the national policy labs. Experiences and lessons learned from both the policy and city labs, and from the project overall, were shared with the JPI HDHL network through various formats and platforms. In its role as a partner in the Fit4Food2030 project, especially through the Think Tank established under the project, the JPI HDHL contributed to national alignment with the EC as well as supporting the EC to develop its strategy and position around Food and Nutrition Security. During the coming IP period, JPI HDHL will continue to build on the key outcomes and lessons of F4F, including those in the area of national alignment around food systems and R&I (policy).

### **International alignment**

With regard to international alignment, Canada has continued to be involved as a full member in the self-sustainable model when the CSA 2.0 finished. Israel also remains connected as an observer member. As planned, the secretariat focused its efforts on engagement of countries in South America. However, due to political unrest and the Covid-19 pandemic international travel was not possible, making international engagement extremely challenging. Given the limited success of previous efforts on international alignment, and also because of the substantial human and financial resources required, it was decided in consultation with the MB that this will not be a priority in the next three years. Nevertheless, the JPI HDHL will continue to consolidate its cooperation and engagement with observer countries and explore possibilities for them to become full members, and follow-up on opportunities with third countries should they present themselves.

## **2.2 Aims for the next 3 years**

The overall aim is to continue improving alignment at the European and national level.

The specific aims are the following:



- Consolidate and strengthen collaboration and alignment with EC (specific DGs), and other relevant European programmes, platforms or bilateral dialogues.
- Further develop vision on alignment with Horizon Europe, in particular on how to connect to relevant partnerships (Sustainable Food Systems, ERA4Health and potentially other relevant ones).
- Actively advocate an overall systemic approach to food, physical activity, nutrition, health and: Demonstrate the benefits of the JPI-HDHL and its systemic approach with new Horizon Europe initiatives related to food, nutrition, physical activity and health research.
- Increase number of funders per country participating in joint funding activities and broaden member state base when opportunities arise.

The activities planned under each category are explained in the next four paragraphs.

### 2.2.1 Alignment with EC DGs – priority activities

- Continue to undertake strategic exchanges (1 or 2 x per year) with DG RTD Planet and People Directorates.
- Invite EC representative to meetings of the JPI HDHL governing boards, to increase exchange and coordination (at least one per year).
- Revitalise connection with DG Santé through one strategic exchange a year and by participating in relevant events and platforms.
- Participate in relevant events (i.e. annual online forum meeting in November and one or two Horizon Europe online info sessions) organised by the International Bioeconomy Forum (established by DG RTD and aimed at sharing knowledge on policy, strategies and actions through four different working groups, of which the Food Systems Microbiome and the ICT in precision food systems are most relevant for the JPI HDHL).
- Follow developments, around relevant European policy frameworks (e.g. Green Deal/Farm2Fork initiatives) to ensure alignment and connection.

### 2.2.2 Alignment with Horizon Europe partnerships and EU missions – priority activities

- Continue active role in the development and implementation of the SFS Partnership (through the FOODPathS CSA) and the ERA4Health partnership and position the JPI HDHL as a unique bridging initiative between the two partnerships for the interconnection between food, physical activity, nutrition and health.
- Explore coordination of calls within the research areas of JPI HDHL and/or stimulate joint calls between the national funders (f.e. if JPI HDHL topics are absent from the EC framework programmes and other initiatives, in particular the partnerships). Refer to section 3 of IP.
- Organize at least one webinar about the interrelation between food, physical activity, nutrition and health and the unique, systemic approach of JPI HDHL\*.
- Explore potential linkages with EU Missions: Cancer, Oceans and Waters, Soil and Adaptation to Climate Change.
- Stimulate/facilitate participation of JPI HDHL representatives in Horizon Europe events (aim for two to three events per year).

### 2.2.3 Alignment with other JPIs to address societal challenges from a systemic perspective – priority activities

- Participate in JPI joint event foreseen for the last quarter of 2022 or the first quarter of 2023 (also relevant for positioning of JPIs vis-à-vis Horizon Europe) when this is organized
- Explore at least one joint activity (such as a workshop, funding call, knowledge hub, working group call, based on previous experience with FACCE and Oceans) with one or more other JPIs (Urban, Water, FACCE, Oceans a.o.).
- Continue to actively engage with chairs of other JPIs through the regular JPI chairs meetings.





#### 2.2.4 Member state base and national alignment – priority activities

- Explore organizing workshop(s)/info sessions on JPI HDHL in general and on specific funding activities for potentially interested, non-MB funding organizations, including JPI HDHL processes, participation benefits and societal impacts to increase number of funders
- Stimulate and facilitate communication and coordination with national interdisciplinary mirror groups (f.e. through using existing toolbox).
- Develop showcase material (i.e. a digital publication) to demonstrate the benefits and added value of the JPI HDHL\*<sup>1</sup>.
- Continue to promote lessons and experiences from Fit4Food2030 and build on this (f.e. new ways of carrying out research and innovation for food system transformation).
- Actively engage with observer countries about opportunities to become full member and explore relevant contacts of SHAB members.

#### 2.2.5 Other activities

- Connect to EU presidencies of JPI member countries (France, Czech Republic, Sweden, Spain, Belgium).
- Update leaflet(s) and other existing promotional material for potential new members/funding partners to be disseminated through existing network of MB, SAB, SHAB and promote JPI HDHL products more actively and intensely\*.
- Explore systematic comparison with other JPI initiatives to allow for a more in-depth analysis of the effectiveness of the JPI HDHL in terms of alignment.
- Explore potential for workshops on themes such as for example: a) nutrition, physical activity and cancer, b) nutrition, physical activity and neurodegenerative diseases c) health inequalities d) nutrition, physical activity, health and gender

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<sup>1</sup> Activities marked with an \* will be an integral part of the communication plan for 2022 – 2024 (which is referred to under 5.3.1).



# CHAPTER 3: JOINT FUNDING ACTIONS





### 3. Joint Funding Actions

As outlined in section 1, the JPI HDHL has the strategic goal to improve dietary quality in an environmentally-sustainable way, based on insights and developments in food, nutrition and the social and health sciences, and to develop evidence-based recommendations and innovative formats for food products. Together with changes in physical activity/sedentary behaviour this should have a major impact on public health, increasing quality of life and prolonging meaningful and productive life, simultaneously reducing the environmental burden of diet. One of the ways in which the JPI HDHL works on achieving this goal is by stimulating and funding research in its three areas namely: 1) citizens, diet and behaviour, 2) food for health, 3) diet, health and disease. To this end the JPI HDHL implements so-called Joint Funding Actions (JFAs) based on the principle of variable geometry. This means that countries or funding organisations decide on a call-by-call basis whether they will participate in a JFA and how much they will contribute. The JFAs encompass three types of funding instruments, including knowledge hubs and network initiatives, outlined in Box 1 below.

#### Stakeholder engagement

For certain JFA research topics (depending on the topic and aims of the call) there is an increased need to engage stakeholders, to boost impact and usefulness of outcomes. The JPI HDHL has started to stimulate this, by making it a mandatory aspect of the PREPHOBES research call, which was launched in January 2020, and will continue to stimulate and/or require this in more of its research calls in the future, depending on the specific topic and aims of the call. The PREPHOBES research call will be evaluated after it ends in 2022 to distil lessons on stakeholder engagement for future calls.

#### Topics and funding instruments of JFAs

The developments around the Horizon Europe partnerships also mean that the JPI HDHL will need to remain flexible in terms of choosing the right combination (type of funding instrument and topic) for each JFA round. The JPI HDHL should assume a proactive role in alignment and coordination with the partnerships. With regard to the SFS partnership, this will be done through the CSA FOODPathS in which the JPI HDHL is a partner and which has the specific objective of developing and testing a prototype SFS partnership.

In terms of the selecting funding topics and instruments, there are several possible scenarios foreseen, depending very much on the extent to which the specific JPI HDHL areas are covered by the partnerships:

- Annually one topic from the JPI HDHL implementation plan could be implemented through a partnership, and one through the JPI HDH.
- Another scenario could be that for one or two years, the calls launched within ERA4Health do not cover food/health related topics, as a wide range of topics is considered. If this would be the case, JPI HDHL could still launch one of two calls annually. Ultimately, this will be decided by the involved funders.
- If the topics addressed by the partnerships cover all three areas of the JPI HDHL adequately, the JPI HDHL could opt for focusing its funding efforts on knowledge hubs and network instruments, to complement the classic research calls funded through the HE partnerships. At the same time the JPI HDHL should continue its non-funding efforts such as alignment, connecting the partnerships, disseminating research results to various target groups and engaging stakeholders, to enhance impact of research in the JPI HDHL areas.

Overall, as a priority the JPI HDHL should ensure that the three areas in its research agenda continue to be researched and supported in the new HE framework in the next ten years. At the same time, the JPI HDHL should keep a certain level of flexibility to be able to adequately respond to HE developments and function as a bridging entity between the partnerships, to ensure resources are used effectively and the ERA (European Research Area) in the JPI HDHL fields is strengthened.



To increase the impact of research outcomes further, activities will be undertaken regarding Responsible Research and Innovation which includes FAIR data principles, adopted by the MB during the previous IP period. The potential for innovative funding mechanisms will also be explored.

### 3.1 Harvesting results of the last 10 years

The JPI HDHL has launched 19 JFAs so far, of which the last three are still in progress. Five JFAs were implemented under the umbrella of ERA-HDHL and five under HDHL-INTIMIC. Over the last eleven years 70 transnational consortia have been funded through classic calls, and seven knowledge hubs have been financed.

Most of the research calls that have finished, have been evaluated, while others are still ongoing or have finished very recently and still need to be evaluated. The finished research consortia and knowledge hubs have yielded a variety of interesting results. Intestinal Microbiomics has resulted in dietary guidelines for elderly and for parents of young children. The MANUEL knowledge hub (Malnutrition in the Elderly) has developed a toolbox for clinical practice and policy recommendations to provide support to facilitate identification, prevention and treatment of malnutrition in older persons across health care settings. The DEDIPAC Knowledge Hub has developed and tested a toolbox containing an integrated instrument for the assessment of sedentary behaviour and determinants suitable for surveillance purposes. NUTRICOG has yielded interesting findings regarding nutrition and cognitive function pointing to an important role of  $\Omega$ -3 fatty acids, tryptophan, flavonoids and selenium intake in reducing cognitive decline or neurodegenerative diseases. Other projects have provided concrete recommendations for follow-up research.

The results of these funded projects are even more important and relevant in light of the challenges posed by climate change. In particular, the role of sustainable food (systems) in addressing the food, nutrition and related health challenges stemming from climate change is essential. European policy frameworks such as the Green Deal and the Farm to Fork strategy advocate for a transition towards a more plant-based diet. However, this plant-based diet also needs to be a healthy and nutritious diet, for which the outcomes of the JPI HDHL and the bridging role it provides between nutrition, health and food systems, is crucial in contributing to the developments in this field.



## **Funding instruments**

There are several distinct funding instruments used by the JPI HDHL, described in this box.

**Classic call:** This is the standard funding instrument of the JPI HDHL for implementing a research call. Before officially publishing a joint call the partners develop a joint vision on the call topic, specify an earmarked budget and agree on the criteria for eligible projects, call procedures and timeline. Some of the JPI HDHL's classic calls were implemented as ERA-NET cofund actions under Horizon 2020. This instrument supported the joint funding of trans-national research projects with a financial contribution by the European Commission.

*Examples of classic calls within JPI HDHL: Prevention of unhealthy weight gain and obesity during crucial phases throughout the lifespan (two-stage call, 2020-2023), Development of targeted nutrition for prevention and treatment of undernutrition in elderly (one-stage call including rebuttal, 2020-2023).*

**Knowledge hubs (also networks/platforms):** Knowledge hubs are networks consisting of selected research groups within a defined area of research. They bring together interdisciplinary research groups to optimise research outcomes and increase their impact by facilitating the exchange of information among the actors, creating critical mass, pooling existing knowledge and data to conduct joint research. Researchers of the participating countries who wish to become member of the knowledge hub, submit an Expression of Interest (EoI), of which the most promising will be selected through the involvement of external experts and following pre-determined criteria. After a networking meeting of the selected research groups, the consortium develops a network proposal which will undergo an independent evaluation, but without competing proposals as in classic calls. The result of the evaluation is a recommendation for funding, a recommendation for funding with some revision or a recommendation to reject the proposal (or certain work packages thereof).

*Examples of knowledge hubs within JPI HDHL: Food and Nutrition Security Knowledge Hub SYSTEMIC (2020-2023), Knowledge Platform on Food, Diet Intestinal Microbiomics and Human Health (2019-2022).*

**'Light' instruments:** In addition to classic calls and knowledge hubs, there are also so-called "lighter" funding instruments, usually with smaller budgets. The main objective of these lighter instruments is usually capacity building and knowledge sharing. This type of funding instrument can include (but not limited to): the development and financing of training courses, research exchanges, graduate schools, internships, summer schools, paper awards, working groups or top-up funding for already running projects.

*An example of a light funding instrument is the Rapid Action Call "Working groups on diet-related chronic diseases", which was launched in the second half of 2017 and supported projects that ran until 2018. During the previous IP period no light funding instruments were used. However, the aim is to make more use of light funding instruments during this IP period, because it can complement the classic calls and knowledge hubs or networks and be set up more quickly and flexibly.*

## **Other terms**

**Variable geometry principle:** deciding on a call-by-call basis which countries and which organizations from these countries will participate in a JFA and what their contribution will be, hence the list of participating funding organizations and level of available funding differs per JFA.

**Era-NETS:** Horizon2020 funding instrument designed to support public-public partnerships in the coordination of their activities and to provide EC 'top-up' funding for a JFA. JPI HDHL had two ERA-NETs namely ERA-HDHL (until January 2022) and HDHL-INTIMIC (until May 2023).



## 3.2 Funding areas and instruments

Together the JPI HDHL members fund transnational competitive calls for proposals in the three areas defined in the SRA. The JPI does not see these three areas as separate themes, they are interconnected and interacting, which is also emphasized in the SRA and implemented in the latest JFAs. Depending on the topic of the call for proposals a fitting funding instrument is chosen: a classic research call, knowledge hub or a 'light' funding instrument (see Box 1). Based on the SRA and on latest developments in the field, the JFAs for the coming period are described in paragraph 3.5.

A key strength of the JPI HDHL is its flexibility with regard to the funding instruments. With the partnerships ERA4Health and SFS currently in development, the JPI HDHL is in the position to choose the most appropriate funding mechanism and to strengthen or complement future projects funded by the partnerships, to ensure that the JPI HDHL research agenda is implemented over the next few years. The use of light instruments will be explored more actively during this IP period.

To further increase the impact of funding activities and ultimately societal impact during this IP period, the JPI HDHL will specifically explore stronger involvement of stakeholders (including patients and end-users) along the research chain, from proposal development to implementation (as outlined in chapter 4), when appropriate and depending on the topic and goal of the research call.

## 3.3 What has been done during the last three years?

A total of six JFAs were launched during the past three years, two in each year. In 2019 METADIS and SYSTEMIC were launched; in 2020 PREPHOBES and PREVNUT and in 2021 FOOD\_HYPERSENS and STAMIFY. A summary of these JFAs is provided below.

METADIS was launched in 2019 with the aim to support transnational, collaborative research projects that address important research questions regarding the effects of food (components) or diets and/or food processing on overweight and related metabolic diseases. An additional objective was to support Early Career Scientists in the area of food, physical activity, nutrition and health.

SYSTEMIC, the Knowledge Hub on Food and Nutrition Security was launched in collaboration with JPI FACCE and JPI OCEANS. This network hub was created with the aim of improving the understanding of food and nutrition in an evolving environment (i.e. climate change) by combining three dimensions: networking, capacity building and research. The project runs from 2020 – 2022 and aims to address the challenges posed by climate change on food systems and encourage healthy, environmentally sustainable diets. National and transnational collaboration in R&D projects together with the transfer of knowledge and technology is the major aim of the research teams working within this project.

PREPHOBES was launched in 2020 with the aim to support research projects that focus on the development, implementation and evaluation of innovative strategies designed to prevent or reduce overweight and obesity, in defined target populations based on certain life stages. To increase the impact of the research and facilitate its later use in future policies on lifestyle interventions and public health, this call strongly encouraged the active integration of stakeholders (e.g. patient and/or consumer organisations) or citizen science approaches. These partners should be engaged in the research process from conception of the study to dissemination and implementation

PREVNUT was launched in 2020 with the aim to support research projects that will improve the prevention of undernutrition in older adults, either by improving the understanding of how the balance between nutrition, lifestyle and physical exercise can prevent undernutrition or by the development of innovative food products.

FOOD\_HYPERSENS was launched in 2021 with the aim to determine how food ingredients and food processing methods can induce or prevent the occurrence of food intolerances and allergies among consumers.





STAMIFY was launched in 2021 with the aim to encourage the development of improved methods and tools designed to assess and monitor diet and physical activity in order to help promote a healthier lifestyle.

In June 2020 JPI HDHL organized a workshop on the link between nutrition, physical activity and Covid-19; to identify knowledge gaps. The workshop consisted of key note addresses from health and nutrition experts and an interactive and lively panel discussion. The topic selected for 2022 will partially build on the discussions and insights from the workshop as it focuses on nutrition and the immune system (NUTRIMMUNE, refer to paragraph 3.5).

### 3.4 Aims for the current IP period

The JPI HDHL aims to deliver on its strategic research agenda by launching five JFAs in the period from 2022-2024; one JFA in 2022 and two JFAs in each of the two following years. The five JFAs will cover all three research areas outlined in the SRA, namely:

Area 1: Citizens, diet and behaviour – measuring, monitoring and changing dietary and physical activity behaviour

Area 2: Food for health: Providing safe and nutritious food products for a healthier and sustainable diet, working towards a secure future food-system

Area 3: Diet, health and disease: targeting the mechanisms that prevent lifestyle-related disease and promote health

### 3.5 Approach and activities to reach the aims

The intended funding actions will have different foci which include:

- INVEST – into 1) competitive research projects that bridge the gap between food, nutrition, physical activity and health and 2) into research projects in JPI HDHL areas which are not included in or addressed by the two HE partnerships.
- CONNECT – different research disciplines and fields, but also science-society and science-policy (i.e. more intensive engagement of stakeholders along the whole research chain)
- SUPPORT – capacity building, especially for Early Career Scientists, to increase the impact of research outcomes and strengthen the linkages between the science, policy and practice arenas.

The JPI HDHL has identified research gaps and priority topics for the coming years. However for the current period the exact distribution of topics between 2023 and 2024 has not been determined in order to allow for flexibility regarding the HE partnership developments. The JPI HDHL will launch one to two calls annually, and will actively explore opportunities to collaborate with other EU initiatives or partnerships. At the time of writing, the FOODPathS project is in its inception phase and the JPI HDHL is a partner in the implementing consortium. One of the FOODPathS work packages (WPs) is the development of the Strategic Research and Innovation Agenda (SRIA) for the Sustainable Food System (SFS) partnership enabling the JPI HDHL to advise on and influence the topics included in the SFS partnership.

In order to come to a decision on the specific call topics for the coming three years, an interactive process of co-creation was facilitated by the JPI HDHL secretariats. In early 2021 the SAB and SHAB held a joint meeting to start shaping the call topics for the current IP. Based on the outputs of this joint meeting, the SAB developed a document outlining potential concrete research topics under each areas. The SHAB was then asked to provide further input to this document after which the final list of annotated topics was worked out by the SAB and provided to the MB for voting. Through this vote, the Management Board selected the following call topics for 2022-2024.



## Topic for 2022 – NUTRIMMUNE: - Nutrition-responsiveness of the immune system: interplay between infectious diseases and diet-related metabolic diseases and the potential for food-based solutions (Area 3 with connection to area 2)

### ***Background***

Poor diets and nutrition are major drivers of non-communicable diseases (NCDs). Globally, there are over 2 billion adults with obesity and related NCDs such as type 2 diabetes. The interplay of infectious diseases and diet-related metabolic diseases (i.e. non-communicable and communicable diseases) is of emerging importance globally. With new infectious diseases such as COVID-19, which are more severe and more fatal in individuals with obesity or diabetes, the role of comorbidities in the susceptibility to and severity of infectious disease has become more visible to the public and policy makers. Other infectious diseases such as respiratory infections, HIV, tuberculosis, hepatitis, and zoonoses that contribute to the considerable global health burden are also likely and in some cases known to be influenced by both nutrition and metabolic diseases. A better understanding of the complex interplay between nutrition, immune function and resilience (including the inflammation component) and human health will enable society to be better prepared for future pandemics and will decrease the burden of metabolic diseases.

### ***Aim of the call***

The aim of this call is to support transnational, collaborative research projects that gain a better understanding of the interactions between nutrition and immunity within the context of their interplay between infectious diseases and diet-related metabolic diseases. Relevant research questions may include (but are not limited to) the generation of scientific evidence for differences in individual susceptibility to and the severity of infectious diseases in people with diet-related metabolic diseases such as obesity or type 2 diabetes. Research should focus on the underlying mechanisms by which nutrition, food composition and/or dietary patterns affect immune function (e.g. both innate and adaptive immune function, and microbiome). The roles of host genotype, body weight and composition, lifestyle factors such as physical fitness, and stress can also be considered. Proposals should focus on one or both of the following topics:

1. Establishing the cause-and-effect relationship between nutrition, immune function and infectious diseases in the context of diet-related metabolic disorders. Building on existing knowledge to further identify mechanisms of action (including common molecular pathways), projects will:
  - Advance understanding of how nutrition, foods and dietary patterns modulate immune system homeostasis, response (e.g. inflammation), dysregulation and susceptibility to infectious disease across the life course in people with diet-related metabolic diseases.
  - Explore how nutrition may contribute to infectious disease risk in people with diet-related metabolic diseases at various stages including prevention of, severity of, recovery from, and rehabilitation after an infectious disease.
2. Development of innovative food solutions.

Proof of principle studies are desired in order to support the development of effective diet-related health-improvement strategies and/or food products to promote a healthy immune system in people with diet-related metabolic diseases and their application at any stage of the infectious disease process.

### ***Expected impact***

The main impact is to gain better insights in the optimal nutrition to promote a healthy immune system (clinical outcomes beyond deficiencies) and an optimised nutritional status to better cope with external immunological challenges such as future pandemics. Results are expected to have a societal and translational impact for future nutritional guidelines.



Furthermore, there is the potential of specific foods or food component-based solutions to protect against infectious disease, reduce the severity of infections, and improve recovery. The call also aims to promote transnational collaboration, which is necessary for establishing multidisciplinary and complementary consortia that will allow the development of ambitious research projects that meet the identified needs of the JPI HDHL. Moreover, the coordination of the transnational research networks will also contribute to important research-related activities such as harmonisation of protocols, establishment and sharing of data and guidelines or/and sharing of research facilities and capacities. This call will contribute to the establishment of such research networks.

### ***Participating countries and agencies***

Eight countries and ten funding agencies are participating in the NUTRIMMUNE call: France (ANR), Germany (BMBF), Ireland (HRB and DAFM) Israel (MOST), Italy (ISS), The Netherlands (ZonMw), Spain (ISCIII and AEI) and UK (UKRI-MRC).

### **Topics for 2023 and 2024 (exact division between the two years is still to be determined based on developments around HE Partnerships)**

## **Promoting healthy and environmentally sustainable diets by changing the food environment (area 1 with connection to area 2)**

### ***Background***

Most attempts to change dietary behaviour focus on individual behaviour and less on the surrounding food environment. The whole food environment including retail, food affordability, accessibility and availability as well as the social and digital environment needs to be considered, thus seeking to bring together the supply and demand sides of the food chain economy in order to achieve persisting behaviour changes.

### ***Aim of the call***

The aim of this call is to promote healthy and environmentally sustainable diets by changing or modifying the food environment. This could include research by:

- Promoting interdisciplinary approaches which consider the whole food environment (including supply and retail/food services), not only focusing on consumers/citizens, but also on how other stakeholders (national, regional, or local, and private or public sector) can be motivated to actively change the food environment. This topic could also cover research on viable new business models and how public policies could contribute to these;
- Combining healthy and environmentally sustainable diet approaches to facilitate the transition from a meat-based to a more plant-based healthy diet which may include seafood and/or insects (avoiding unsustainably and/or unhealthily processed foods and those with an unfavourable nutrient content) and identifying as well as tackling conflicts that this combination might entail;
- Identifying obstacles and barriers for behaviour changes towards a more plant-based healthy diet and approaches to overcome these barriers, e.g. strategies to change the attitudes of consumers and other actors in the food chain or tax adjustments, to facilitate this transition;
- Investigating (health) economic implications of the dietary transition towards a more plant-based diet for all players in the food chain, e.g. effects of food taxes and subsidies, applied to both the supply and demand sides of the food economy, with a particular focus on the effects regarding socioeconomic disparities as well as avoiding indirect economic losses like pre-mature deaths and reductions of DALY (Disability Adjusted Life Years);



- Unlocking and integrating tools like the internet of things (IoT) to support dietary shifts toward a healthy and sustainable diet, including tools enabling consumers to make an informed choice from purchase to consumption.

### ***Expected impact***

Since the individual's dietary behaviour is strongly influenced by the surrounding food environment, it is an important leverage point for persisting behaviour changes. This call will result in new and innovative measures for a dietary shift at different levels from food supply, food purchase to consumption and even disposal of foods towards a healthier and more sustainable diet. In addition, the call will have an impact on policy by providing stronger evidence also for the health economic implications of the transition towards a more plant-based diet.

## **Identifying novel strategies and approaches to reduce health inequalities through promoting healthy diets and/or physical activity (area 1 with connection to area 2)**

### ***Background***

Since unhealthy diets and inadequate physical activity exacerbate risk of poor physical and mental health, there is a need to understand, predict and, ultimately, permanently change citizens' and consumers' lifestyle and health behaviours, in particular those of more socio-economically disadvantaged groups. Importantly, research has shown that many current intervention strategies that target the individual do not result in sustained improvements in dietary and/or physical activity behaviours.

### ***Aim of the call***

The aim of this call is to develop novel strategies and approaches to identify, understand and target determinants and mechanisms of behaviour change maintainable over time for diet-related behaviour and physical activity (including sedentary) behaviour. These may include, but are not limited to:

- Exploring and targeting the connection between social inequality and health behaviour and developing strategies (including interventions) to engage societal groups in healthier behaviour, with specific focus on deprived, marginalised or disadvantaged groups (including specific subgroups such as children and older people from low-income groups);
- Integrating the perspective of citizens (e.g. motivations, documented barriers) for behaviour changes and dietary transitions towards healthier and more environmentally sustainable diets.
- Analysing and promoting supportive social networks and best practices like the "too good to go" approach or local community initiatives and structures in the context of reducing food waste and supporting poorest people with the aim to mitigate the effects of poverty on eating behaviours;
- Interventions may include but are not limited to targeting the food environment and the built environment (in relation to physical activity), increasing health literacy and fiscal approaches (use of both taxes and subsidies). Interventions may focus on different areas/settings (day-care, school lunches, business canteens, shared gardens, retirement homes) as well as different target groups;
- Engagement of industry should be encouraged, at least for food production & retail (triple helix approach Science / Consumer / Industry);
- Active citizens and industry engagement as well as public involvement and participatory approaches, alteration of the choice environments, nudging, co-creation of interventions and, systems approaches.



### ***Expected impact***

The funded research projects will create a persisting impact on existing policies by identifying, involving, and supporting local groups and citizen scientists. Local communities will be empowered to change and exploit their food environment by using their own resources and sharing best practices rather than being passively under the influence of the food environment. The expected results have the potential to reduce health inequalities by promoting healthy diets and/or physical activity through targeted approaches in different public areas such as schools, day-cares, and hospitals as well as in different cultural settings, where appropriate.

## **Novel ingredients and food technologies for improved foods (sustainable, safe, healthy foods, area 2 with connection to area 3)**

### ***Background***

The growing world population enforces increased supply of healthy and sustainable food that can originate from underutilised or new resources. Research and technology are needed to transform these resources into new consumer food products. The development and application of innovative food technologies and the use of novel food ingredients, even though perceptions may be different, greatly contribute to the production of safer, healthier, and more sustainable food. To achieve the best possible result, trying to mediate among these three paramount aspects, new research needs to address all the elements of the extremely complex steps within the food system, including logistics, environmental, and bioeconomic dimensions. It will also be important to contextualize every new food developed through innovative approaches within the framework of a healthy, balanced and sustainable diet.

### ***Aim of the call***

This topic focusses on new food ingredients and their contribution to healthy, sustainable diets. Important aspects to be addressed in this regard are safety, nutritional quality, digestibility, bioeconomic aspects, and consumer acceptability of novel ingredients and food. This could include research on:

- Investigating new components (e.g. plant-based, marine ingredients, insects, side stream valorisation, biomass, cell cultures etc.) as a source of nutrients and functional food ingredients (e.g. protein, fibre, bio-active compounds etc.).
- Ensuring food safety in the entire food chain focussing on residues, degradation products and (process) contaminants including aspects of sustainable food processing and side-stream valorisation.
- Improving nutritional and/or health quality aspects of (and/or through) new food processing technologies and new ingredients as well as their impact on health.
- Ensuring consumer acceptance of new products and more sustainable technologies, i.e. addressing knowledge barriers, enhancing sensory properties of food from new sustainable (protein) sources or functional ingredients (e.g. foods containing bio-actives).

### ***Expected impact***

The food system is in rapid transition due to the demands of food security and resource sustainability. The results of this call will contribute to developing more sustainable ingredients through application of resource-efficient food processing technologies. Simultaneously, these approaches will help to preserve or improve the nutritional quality of food ingredients that positively impact human health and will thereby assist in preventing non-communicable diseases linked to the diet. Increasing the knowledge about new alternative food resources will contribute to the future food supply and provide a wider portfolio of healthy and sustainable food products for the consumers. This call will also have an impact on the acceptance of the new food products by focusing on a better perception of the advantages, in terms of safety, nutritional quality, and sustainability.



## Modulation of brain aging through improved lifestyle (area 3 with connection to areas 1 and 2)

### **Background**

Increased lifespan, in combination with progress in combatting other non-communicable diseases, means that dementia is now a leading cause of death in Europe. There are no proven treatments for dementia so the focus is on prevention. Epidemiological studies show that obesity, poor nutrition and lack of physical activity increase the risk of dementia but there is limited evidence of how better nutrition and increased physical activity could slow down brain ageing and lower dementia risk.

In 2015, JPI HDHL launched the joint action “Nutrition and Cognitive Function” (NutriCog) to promote research activities addressing the interrelation of diet and cognitive function. Five consortia were funded from 2016-2021. Their results can provide the basis for dietary preventive strategies and recommendations to guide individuals and populations towards health-promoting dietary habits.

This new call will focus on brain ageing and will broaden the view on preventive measures by including physical activity.

### **Aim of the call**

The aim of this call is to focus on brain ageing and on the view of preventive measures by including physical activity. This may include, but are not limited to:

- Research proposals should focus on underlying mechanisms that are amenable to modulation by nutrition (particularly improvements in dietary patterns) and/or physical activity.
- Investigations should employ biomarkers/surrogate outcomes that relate strongly to dementia risk.
- Mechanistic studies may make use of well-justified animal models or emerging model systems such as stem cell-derived brain organoids (“mini brains”).
- There may be opportunities to use omics approaches (f.e. metabolomics and metagenomics) and brain imaging linked to robust measures of diet, nutritional status and/ or physical activity in well-characterised prospective cohort studies in elderly.
- Research proposals may focus on population groups at risk, e.g. those with obesity or with specific genotypes, who may benefit from particular dietary and/or physical activity interventions.

### **Expected impact**

The global burden of dementia is predicted to triple by the year 2050. Outputs from this call are expected to provide the evidence base for effective intervention strategies that will help to lower the risk of dementia and other adverse manifestations of poor brain ageing. This will include new mechanistic understanding of how dietary choices and physical activity behaviors influence the trajectory of brain ageing that will underpin the development of new products and services for middle-aged and older people. In the longer-run, improved brain ageing is expected to enhance independence and to lower the individual, family and societal costs associated with dementia.

## 3.6 Responsible Research and Innovation

Responsible Research and Innovation (RRI) has emerged relatively recently “as a means to democratise and legitimise processes of science and technology and to improve their societal impact. It is a dynamic, iterative process by which all stakeholders involved in the practice of R&I become mutually responsive and share responsibility for the outcomes and processes of the R&I.”<sup>2</sup> RRI is all about increasing impact of research to address societal challenges. As an example best practice, FIT4FOOD 2030’s process requirements for RRI are provided in box 2 below this section.

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<sup>2</sup> European Commission, Directorate-General for Research and Innovation, *Research & innovation for accelerating food system transformation : operationalising FOOD 2030 through living labs*, Publications Office, 2021, <https://data.europa.eu/doi/10.2777/374723>





A way to make R&I more responsible and impactful, especially through the involvement of stakeholders, is to apply the concept of participatory action research – “a framework for creating knowledge that is rooted in the belief that those most impacted by research should take the lead in framing the questions, design, methods, analysis and determining what products and actions might be the most useful in affecting change<sup>3</sup>.” This concept will be explored for specific research calls in the coming IP period.

<p><b>Diversity &amp; inclusion</b></p> <p>As RRI aims to be responsive to societal needs, it is important that a broad selection of stakeholders is involved in R&amp;I in a co-creative process, thus ensuring their needs are heard. Diversity and inclusion can be achieved by involving a variety of stakeholder groups and relevant voices during the entire R&amp;I process.</p>
<p><b>Openness &amp; transparency</b></p> <p>Openness and transparency about R&amp;I is achieved through involvement of stakeholders including the public. This ensures accountability/liability of scientists and innovators towards the public, but it also supports sharing insights and information with the public, or educating them about science and innovation.</p>
<p><b>Anticipation &amp; reflection</b></p> <p>Anticipation of the future is also important. For example, foresight studies can contribute to ensuring that R&amp;I will provide improvements in the future for problems that may not be obvious today. Continued reflection on the R&amp;I process ensures relevance.</p>
<p><b>Responsiveness &amp; adaptive change</b></p> <p>Responsiveness and adaptive change are about the ability of scientists and innovators to adapt the outcomes of their R&amp;I activities to the societal evaluations, in order to make sure that they are valued. It includes flexible process management and monitoring/evaluation during research, development and/or implementation.</p>

Box 2 – Responsible Research and Innovation process requirements

### ***Open science and FAIR Data***

Key elements of RRI are openness and transparency, which include the concepts open science and FAIR data. The latter can be seen as an operationalisation of open science. As outlined in JPI HDHL’s most recent SRA, the JPI HDHL adopted the FAIR data principles in 2016, whereby FAIR refers to Findability, Accessibility, Interoperability and Reusability, which entails that all the research funded by the JPI HDHL must adhere to these principles. As reusability is a specific element of the FAIR data principles, the JPI HDHL strongly encourages the use of existing data in proposals. In terms of open science, data accessibility and knowledge sharing, are both vital to addressing societal challenges related to JPI HDHL’s research areas and beyond. Therefore the JPI HDHL needs to follow the open access policy aims of the EC, which stipulate that all publicly-funded research should be openly accessible.

In practice the above means that research projects need to go beyond “ticking the box” of submitting a data management plan, but really infuse the RRI approach and its principles into the research process, even after the projects ends. During this IP period the JPI HDHL will also explore if there are possibilities for providing an extra boost to projects to enable them to make their data FAIR and increase their impact. Another important question for the next three years is how the JPI HDHL can support to build the capacity of researchers in RRI either directly or through universities and funders? During this coming IP period, the JPI HDHL will continue the dialogue on RRI to explore this.

### **Research Infrastructure (RI)**

The developments in open science and FAIR data need to be supported by appropriate Research Infrastructure (RI). However, RI is both costly to establish and to maintain. Therefore, during this IP period, the JPI HDHL will explore connecting its projects and initiatives to existing RI such as METROFOOD-RI and FNH-RI.

<sup>3</sup> <https://participatoryactionresearch.sites.carleton.edu/about-par/>



### 3.6.1 What has been done during the last three years?

To implement the FAIR data principles in the JPI HDHL funded projects, JPI HDHL performed a pilot study FAIR data in the “Nutrition & the Epigenome” call. This pilot study aimed to evaluate and improve the implementation of a data management strategy in projects. The pilot study is divided into two phases; the application phase and the monitoring phase. The results of the pilot study of each phase will be shared and discussed with the Scientific Advisory Board (SAB) and the Management Board (M)B and if needed the procedure will be improved.

Although Responsible Research and Innovation (RRI) is a very important approach in order to increase impact and transparency, it has not received the attention it deserves over the last three years. Therefore for this IP period, specific activities have been formulated focusing on RRI.

### 3.6.2 Aims of the current implementation plan

The focus for the coming three years will be on stimulating the re-use of existing data and on ensuring generated data is open access.

Specific aims:

- Continue to stimulate RRI through open science and the implementation of FAIR data principles in projects (especially data reuse)
- Obtain further insight into existing RIs and their potential opportunities and gaps regarding JPI HDHL research areas

### 3.6.3 Approach and activities to reach these aims

Priority activities

- Distribute reference guide on RRI resources to researchers and funders (adapt and update guide developed under Fit4Food2030 project)
- Organise workshop(s) for (early career) researchers on RRI – FAIR data, including open science and research excellence (to include impactful research), data management
- Identify existing RIs and connect to potential partners such as ESFRI (European Strategy Forum on Research Infrastructures, FHN-RI and METROFOOD-RI.
- Continue to explore the role of the JPI HDHL in capacity building on RRI.
- Explore possibilities for providing an extra boost to projects to make their data FAIR and increase impact (during or after project period).
- Explore potential for participatory action research in JPI HDHL projects, to increase applicability and impact of research.

Other activities

- Develop a showcase on the added value of data re-use of a specific JPI HDHL project to make researchers aware of the need
- Explore potential for open access system whereby the JPI HDHL and funders are informed when an article is published, financed under a specific call.
- Organise workshop with MB on future financing strategies for RI

## 3.7 Exploring innovative funding mechanisms

Now that JPI HDHL is an autonomous entity, financed and governed by its members, there is opportunity to reflect on and explore different funding mechanisms, for further stimulating research uptake and long-term impact. Different funders and ministries have different regulations about what they can and cannot fund. Sometime the regulations even differ between organisations in the same country. For example in the Netherlands ZonMw the healthcare research organisation is able to fund different types of organisations, beyond pure research institutes while NWO, the Dutch Research Council is only able to fund research institutes.



Therefore a specific aim for this IP period is:

- To explore innovative funding mechanisms for increased flexibility and impact

The activities proposed to reach this are the following:

- Explore possibility of adjustment of regulations around research calls to increase adaptability
- Reexplore potential approaches for enhancing dissemination and implementation of results of specific projects (during or after project period) with specific member states who are interested to increasing the impact of the JPI HDHL.



# CHAPTER 4: STAKEHOLDER COLLABORATION AND ENGAGEMENT





## 4. Stakeholder collaboration and engagement

A substantial element of this IP is stakeholder collaboration and engagement. In order to ensure that research programming is driven by actual societal needs and to increase impact, it is vital for the JPI HDHL to intensively collaborate and engage with different stakeholders from a range of fields.

### 4.1 What has been done so far?

Over the last three years, the activities to increase stakeholder collaboration and engagement predominantly focused on developing guidelines on how stakeholders can become involved in activities and in the dissemination of project results. Regular exchanges are held with the JPI HDHL's two advisory boards, the Stakeholder Advisory (SHAB) and the Scientific Advisory board (SAB). The SAB is instrumental in the development of the Strategic Research Agenda (SRA, developed every four years) and in advising on specific topics for the JFAs. The SHAB is instrumental in advising on stakeholder engagement approaches along the entire research chain and in signalling societal research needs. With regard to the former, the JPI HDHL has made this a specific element of the research call criteria; researchers need to increase the impact of their research by actively integrating relevant stakeholder groups in the research process.

The PREPHOBES call, focusing on the development, implementation and evaluation of innovative strategies to prevent or reduce overweight and obesity, was the first call in which stakeholder engagement was a prominent component. During the coming IP period, the JPI HDHL will endeavour to assess and document the lessons learned during this call (as described in chapter 5) and continue to encourage the involvement of stakeholder groups in its research projects.

With regard to the stakeholder cooperation base<sup>4</sup>, the number of industry partners collaborating in JPI HDHL projects has been steadily increasing over the last 3 years, resulting in a total of 37 industry partners within the 67 funded consortia. Also, in contrast to the previously funded Knowledge Hubs, the two most recently supported hubs (Knowledge Platform Intestinal Microbiomics (KP IM) 2019, SYSTEMIC 2020) have an industry partner as part of the consortium, adding another valuable perspective to the collaboration in these hubs.

In collaboration with EIT Food a well-received (pilot) training activity for Early Career Scientists (ECSs) in the framework of the HDHL-INTIMIC METADIS call was organized and took place virtually in March 2021. Another training activity focusing on increasing impact of research was organised during two mid-term seminars of the JFA Nutrition and the epigenome (ERA-HDHL). In addition to this, during the METADIS review seminar the chair of the SHAB gave a presentation with the following topic: "Research, stakeholders and impact: is communication the missing link?"<sup>5</sup>.

### 4.2 Aims for the next three years

The overarching aim is to increase stakeholder collaboration with a range of stakeholders to facilitate improved connection and exchange between research, policy and practice. This way evidence-based practice as well as practice-based evidence can be increased and research outcomes can be increasingly used for addressing societal challenges.

The specific aims for each of the stakeholder groups are the following:

- Facilitate and strengthen collaboration with SHAB members.
- Increase engagement across the policy science interface in all three research areas
- Strengthen collaboration between the JPI HDHL and stakeholders (including industry) operating within the fields of food, nutrition, physical activity and health.

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<sup>4</sup> Diagram to be added

<sup>5</sup> Potentially to be presented as a case study in a separate box with quotes/comments from participants, if feasible



## 4.3 Activities for the next three years

### 4.3.1 Overarching activities

- Organise training for researchers on how to connect and market/communicate with industry stakeholders, similar to the training provided to the researchers funded by the METADIS call. (which was organised with EIT Food). As this training was evaluated very positively similar training activities will be explored for this IP (including potential funding sources).
- Explore the organisation of a training activity for researchers on how to reach policy makers i.e. realise impact (potentially to be combined with training above).
- Explore the organisation of a training activity for researchers on connection between research and practice (potentially to be combined with trainings above).
- Establishment of Early Career Networks (ECNs) or similar initiatives (based on the experiences with the PEN ECN) for specific projects or JPI HDHL as a whole.
- Attend relevant events and (re)present the JPI-HDHL.
- Explore (secretariat together with MB, SHAB and SAB) the possibility of and necessity for engaging directly with the general public (citizens, consumers, patients).

### 4.3.2 Specific activities

#### Facilitate and strengthen collaboration with SHAB members

- Implement priority elements of the stakeholder collaboration plan:
  - (Re)present JPI HDHL at events (workshops, conferences, webinars etc) organised by SHAB members and at other events when the opportunity arises.
  - Communicate information about events (workshops, conferences, webinars etc) organised by SHAB members on JPI HDHL website and newsletter and vice versa on SHAB\* member websites and newsletters (also communication).
  - Actively connect WHO (SHAB member) to SAB and project consortia for sharing relevant data (WHO has a wealth of surveillance data e.g. on food intake).
- Facilitate, when possible, the organisation of SHAB meetings at WHO office to increase exchange and connection

#### Strengthen policy-science interface

- Collect and share good practices from individual member countries on how to improve the policy-science interface and better connect research and policy (i.e. Fit for Food Policy Labs, SCAR, Ireland provides opportunities for researchers in government departments for data driven policy development)).
- Explore suitable formats for interactions between policy makers and scientists (and whether PEN could potentially trial these (approx. one per year)).

#### Strengthen collaboration between the JPI HDHL and stakeholders in the field

- Explore the development of mechanisms for co-creation and stakeholder engagement in all stages of a research project (from start to finish), when appropriate for the topic and aim of the call (such as with PREPHOBES call).
- Actively obtain input from stakeholders in the field and SHAB on (out-of-the-box) strategies and activities to raise impact of JPI HDHL research, both in terms of stakeholder engagement in funding as well as in non-funding activities (aim for one survey and one interaction per year).

#### Strengthen collaboration with industry stakeholders

- Explore mutually beneficial ways to connect industry stakeholders in research (e.g. ensuring alignment with JPI HDHL vision, goals, ethics and responsible research)
- Actively engage with EIT Health, EIT Food and possibly other EITs throughout the IP period as this could increase the impact of the JPI HDHL projects:





- With EIT Health explore the possibility of joint educational activities and joint programming potential (f.e. as was done in the METADIS call, also refer to overarching activities under 4.1.1).
- With EIT Food explore participation at their networking events and joint training activities (appr. one or two per year).
- Explore cooperation with EITs to connect what is funded by JPI HDHL and to support a further flow through the knowledge chain towards implementation.
- Explore potential joint funding activities – in areas where a flow between TRLs (Technological Readiness Level) could be established.

#### 4.3.3 Other activities

- Stimulate and facilitate MB members to map key government departments and policy makers in their respective countries (for targeted dissemination).
- Co-organise workshops, webinars and other events on relevant JPI HDHL themes with SHAB members, as and when feasible and relevant (one per year).
- Organise workshops or sessions with researchers, field stakeholders, policy makers and/or industry representatives on outcomes of calls and/or specific projects (one per year).
- Undertake further research to determine connections between different projects, how the connections evolve over time and whether collaboration continues outside the scope of the JPI HDHL.

Activities marked with an \* will be an integral part of the communication strategy for 2022 – 2024 (which is referred to under 5.3.1 in the next chapter).



CHAPTER 5: COMMUNICATION, DISSEMINATION AND IMPACT





## 5. Communication, dissemination and impact

The specific activities under this category will focus on the communication of JPI HDHL's strategic activities and its bridging role between nutrition, physical activity, health and food systems and on disseminating the outcomes of JPI HDHL funded projects.

The European research and innovation landscape is in transition. The Horizon Europe partnerships are taking shape and the JPI HDHL is in a unique position to play a bridging role between the areas of nutrition, food (systems) and health. It is therefore important that the JPI HDHL strategically articulates and communicates its unique value and position over the coming years.

Over the last 11 years the JPI HDHL has produced impressive research outcomes. However, one of the challenges is how to communicate and disseminate these outcomes in such a way that they are used by a wide range of stakeholder groups and contribute to creating societal impact. Therefore, communicating and disseminating project outcomes is also a priority for the coming three years.

### 5.1 What has been done so far?

At the start of the last IP period, the communication strategy was updated. The specific activities over the past three years focused mainly on 1) renewal of the website 2) increasing use of social media and 3) creating new and improving existing promotional material.

The JPI HDHL website received a complete overhaul in 2020. A new layout was developed which enables easier navigation. The JPI HDHL was also more active on various social media channels, such as Twitter, LinkedIn and YouTube. As a result of this and the website improvement, the number of social media interactions as well as website visitors has increased steadily. The 6<sup>th</sup> JPI HDHL conference was held online in April 2021, after being postponed by ten months due to the Covid-19 pandemic. Over 250 participants joined the conference, which was divided into two half days. The conference theme was linked to the 10<sup>th</sup> anniversary of the JPI HDHL: *supporting the connection between food and health towards a systemic approach*. In the last quarter of 2021 interviews were undertaken with two SAB members, experts in the field of nutrition and health. The interview was also translated into German and distributed at the national level.

### 5.2 Aims for the next three years

The overarching aim for the coming IP period is to improve communication and dissemination of outputs for increased impact. The underlying specific aims are the following:

- Improve communication about project results to policy, science and practice
- Increase the translation from research results into practice
- Intensify stakeholder engagement along the entire research chain for all projects

### 5.3 Activities for the next three years

The activities under this category are focused on communication and dissemination in order to increase impact. Some of the activities are linked to the JPI HDHL communication strategy, which is being developed alongside this IP.

#### 5.3.1 Priority activities

- Establish a communication working group of MB members (either from the former editorial committee, a new body or an extension of the Steering Committee) and facilitate the development (or in certain cases adjustment) of templates for information briefs, which can be adjusted at national level and translated into the different national languages to increase their impact/audience, including:



- A brief or leaflet (or adjustment of an earlier version) on the JPI HDHL, its overall added value, specific benefits and bridging role (including health economics angle and non-funding activities as well as funded research), both biomedical and social sciences working together in the future research agenda, involving the whole food, nutrition, health and physical activity research areas. Different versions for distinct target groups will be developed, f.e. the policy arena, stakeholders in the food, nutrition, health and physical activity practice as well as industry\*.
- A clear summary and/or fact sheet/one pager (using infographics) of the impact evaluation report to demonstrate the JPI HDHL impact and added value\*.
- Leaflets/case studies translating the outcomes of joint funding activities and/or individual projects into clear and accessible information, adjusting for different target groups\*.
- Update communication and social media strategies (which are linked to the activities marked by an \*)
- Actively disseminate communication material to different groups of stakeholders\*
- Write information items or tweets about collaboration with EC to illustrate alignment and impact of JPI HDHL\* (see also 1. Alignment)
- Make information about projects and outcomes on JPI HDHL website uniform and easily accessible\*
- Write articles and undertake interviews with key experts from practice, science arena, policy arena and industry on different aspects of JPI HDHL – especially what JPI HDHL connected to or influenced by its activities (at least two per year)\*
- Collect information on project outcomes (approx. 5 to 10 projects) from project coordinators 1 – 3 years after project ends (for this IP a selection will be made from past projects in such a way that the three research areas are covered equally as much as possible) – to gain insight into further outcomes and impact of specific projects
- Develop and disseminate research outputs of specific projects and calls as a whole in the form of one- or two-pagers (refer to first activity under 3 3.1)\*
- Develop documents and/or videos of lessons-learned so far: 1) PREPHOBES (insights about stakeholder involvement process) 2) Food and Nutrition Security Knowledge Hub (insights about cooperation with other JPIs)\*
- Explore the potential for undertaking activities on Responsible Research and Innovation (RRI) – reflexive learning, trans-disciplinarity, adjustment in definition of research excellence incorporating societal applications and relevance. The JPI HDHL could play a catalysing role in creating change in this area (because this is very much about communication, it is included under this activity category).
- Proactively obtain information and updates from researchers to share within JPI HDHL network and beyond\*

Activities marked with an \* will be an integral part of the communication strategy for 2022 – 2024.

### 5.3.2 Other activities

- Facilitate process evaluation of the JPI HDHL (joint programming, achievements and measures to improve the management of the JPI HDHL and its activities).

With regard to the communication items outlined above, it will be ensured that they are well-matched to and build on existing products (i.e. fact sheets).



## CHAPTER 6: SUSTAINABILITY





## 6. Sustainability

In 2021 the JPI HDHL transitioned from being supported by the EC (through CSAs) to being a self-sustaining initiative. While this Implementation Plan was being developed, the outlines of Horizon Europe were starting to take shape. However, it remains uncertain whether the JPI HDHL can be supported by a future CSA or a similar type of coordination fund from the EC in the near future. Therefore, in the current IP the JPI HDHL aims to remain a self-sustaining initiative supported by its member states. The added advantage of this approach, is that it is an intrinsically driven initiative and there is a strong sense of ownership among its members.

### 6.1 What has been done so far?

The previous IP defined the last 2 years under the CSA JPI HDHL 2.0 as a transition period. During this period the terms and conditions of the sustainability arrangement for the JPI HDHL were developed, including a Terms of Reference and a Memorandum of Understanding between the members. The self-sustaining continuation of the JPI HDHL is supported by annual membership fees since the start of 2021. Many member countries were committed to continuing their international collaboration through JPI HDHL and consequently signed a Membership Fee Arrangement (MFA). Fifteen countries committed to paying the fees, thereby remaining full members of the JPI HDHL. Another five countries were not in a position to pay a membership fee at the time, but wished to stay connected to the JPI HDHL, and thus became observer members.<sup>6</sup>

### 6.2 Aims for the next three years

Specific aims:

- Striking a balance between membership fee and member base (f.e. a large member base with a more modest fee and a smaller member base with a higher fee).
- Actively position the JPI HDHL, its unique approach, in relevant Horizon Europe partnerships (this is linked to section 2 Alignment as well) as well as in the wider ERA ecosystem.

### 6.3 Activities for the next three years

- Facilitate the co-creation of a renewed or updated vision for the JPI HDHL in order to reposition itself in the HE partnership ecosystem
- Update the comparison (carried out during the previous IP) of the sustainability strategy of other JPIs and determine lessons for JPI HDHL.
- Act on opportunities arising for potential alternative funding such as CSAs.
- Actively represent JPI HDHL in events about Horizon Europe partnerships (refer also to chapter 2).
- Undertake regular interaction with Horizon Europe partnerships SFS and ERA4Health to ensure JPI HDHL's topics are represented in the partnerships (refer also to chapter 2) and that there is synergy in research topics and other activities.

### Connection with Horizon Europe

The JPI HDHL has a unique role in connecting the food/agriculture domain to the nutrition/health domain, and in fostering this interconnectivity the JPI HDHL shows its added value for the European Research Area. However, as mentioned in earlier chapters, the JPI HDHL recognizes that a connection to the European Framework programmes plays a role in its sustainability. The JPI HDHL can actively position itself as the bridging entity between the SFS and the ERA4Health partnerships, which enables a systemic approach, moving away from fragmentation, vital to addressing current and future large societal challenges. Furthermore, since in principal JPI HDHL has no end date, engagement of JPI HDHL supports the sustainability of the activities of the partnerships beyond the duration of the partnerships. The JPI HDHL will stay alert to possibilities for future funding instruments of the EC as

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<sup>6</sup> New map to be developed





potential add-ons to support the implementation of the JPI HDHL Strategic Research agenda as well as to strengthen the JPI HDHL initiative itself.

