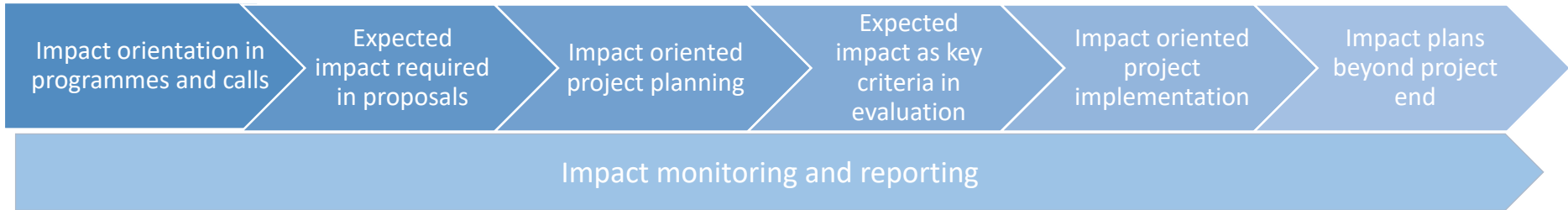


Impact & Impact Strategies in H2020 proposals

Gorazd Weiss, Centre for Social Innovation (ZSI),
Vienna

Impact orientation in all stages



- Most programmes have an impact-oriented approach
- Horizon 2020 balances research and innovation and aims to drive competitiveness/growth and to tackle global societal challenges
- Many programmes encourage collaboration between different stakeholders (researchers, industry including SMEs, public sector organisations and citizens)
- Expected impacts are crucial for successful proposals and projects
- Aspects of the project (activities, partnership, open access of results, etc.) intend to maximise potential impacts

Impact dimensions for the Horizon 2020 programme

Scientific impact

- EU world class excellence in science (theory, methods, knowledge, application of science results)
- Better cross-border and cross-sector coordination and integration
- Emergence of new fields of science in the EU

Economic impact

- Better innovation capability of EU firms, increased competitiveness
- EU technological leadership and reinforced competitiveness
- Diffusion of innovation generating jobs, growth and investments

Societal impact

- Better contribution of R&I to tackle societal challenges (health, quality of life, sustainability, etc.)
- Stronger global role of the EU
- Better societal acceptance of innovative solutions, public engagement, understanding, creativity

Key performance indicators for impact in Horizon 2020 pillars

Scientific Excellence

- Percentage of publications from ERC funded projects which are among the top 1% highly cited
- Publications in peer-reviewed high impact Journals
- Patent applications and patents awarded in Future and Emerging Technologies
- Cross-sector and cross-country circulation of researchers, including PhD Candidates
- Number of researchers who have access to research infrastructures through support from Horizon 2020

Industrial Leadership

- Patent applications and patents awarded in the different enabling and industrial technologies
- Percentage of participating firms introducing innovations
- Number of joint public private publications
- Total investments mobilised (from different funds)
- Number of organisations funded and amount of private funds leveraged
- Percentage of participating SMEs introducing innovations
- Growth and job creation in participating SMEs

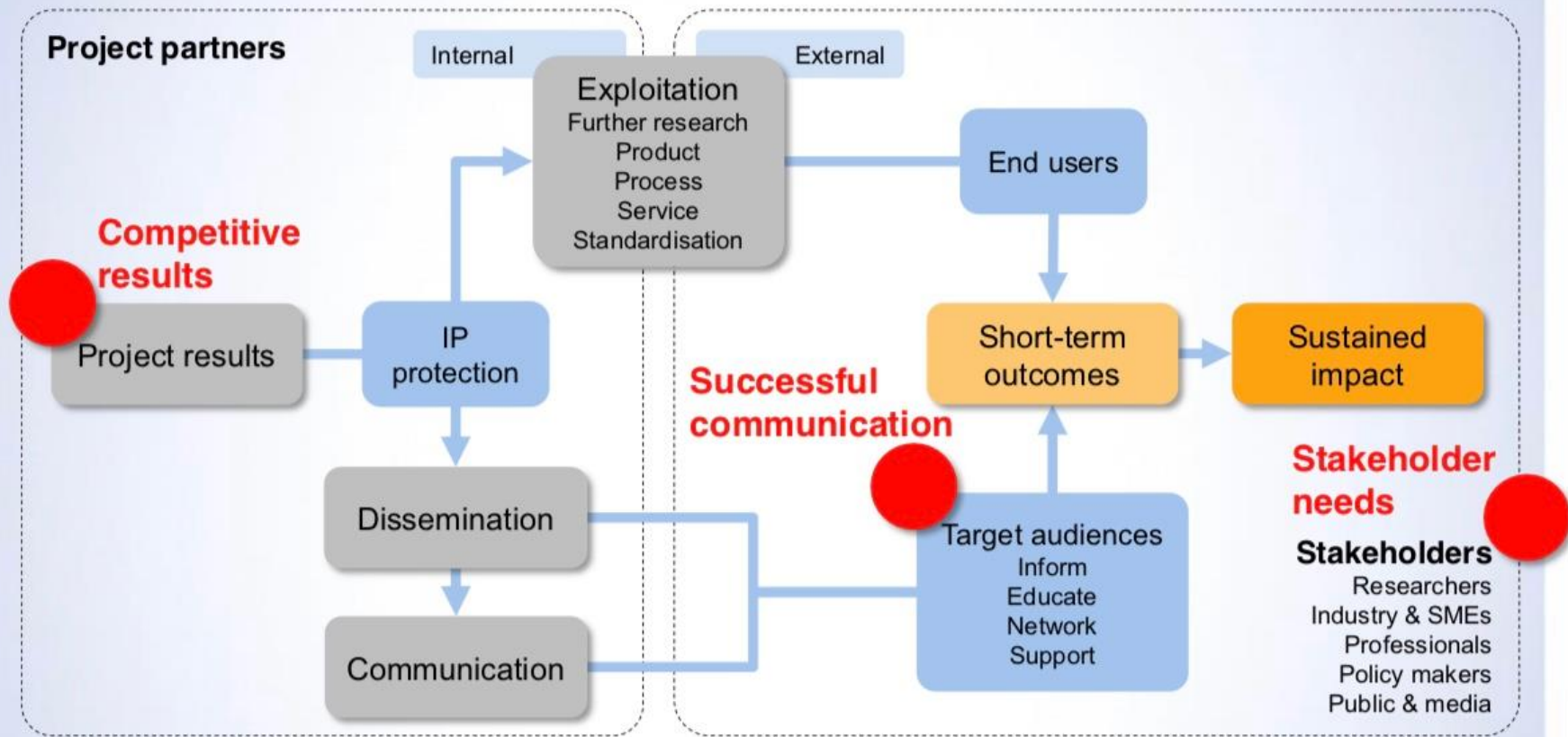
Societal Challenges

- Publications in peer-reviewed high impact journals in this area
- Patent applications and patents awarded in this area
- Number of prototypes and testing activities
- Number of joint public-private publications
- New products, processes, and methods launched into the market
- Percentage of the respective Societal Challenge funds allocated to related research activities

General considerations

- Impact is **not certain**, not under our control, hard to influence and steer, unpredictable and surprising, often depending on external factors and rarely linear
- Impact can be **positive or negative**, intended/expected or not intended/unexpected/unwanted
- Impact takes time to appear and might change or become diffused over time and is often difficult to attribute
- Impact **does not show itself automatically**, to be demonstrated it needs to be tracked, measured and recorded, identifying and quantifying impact may vary widely between different projects

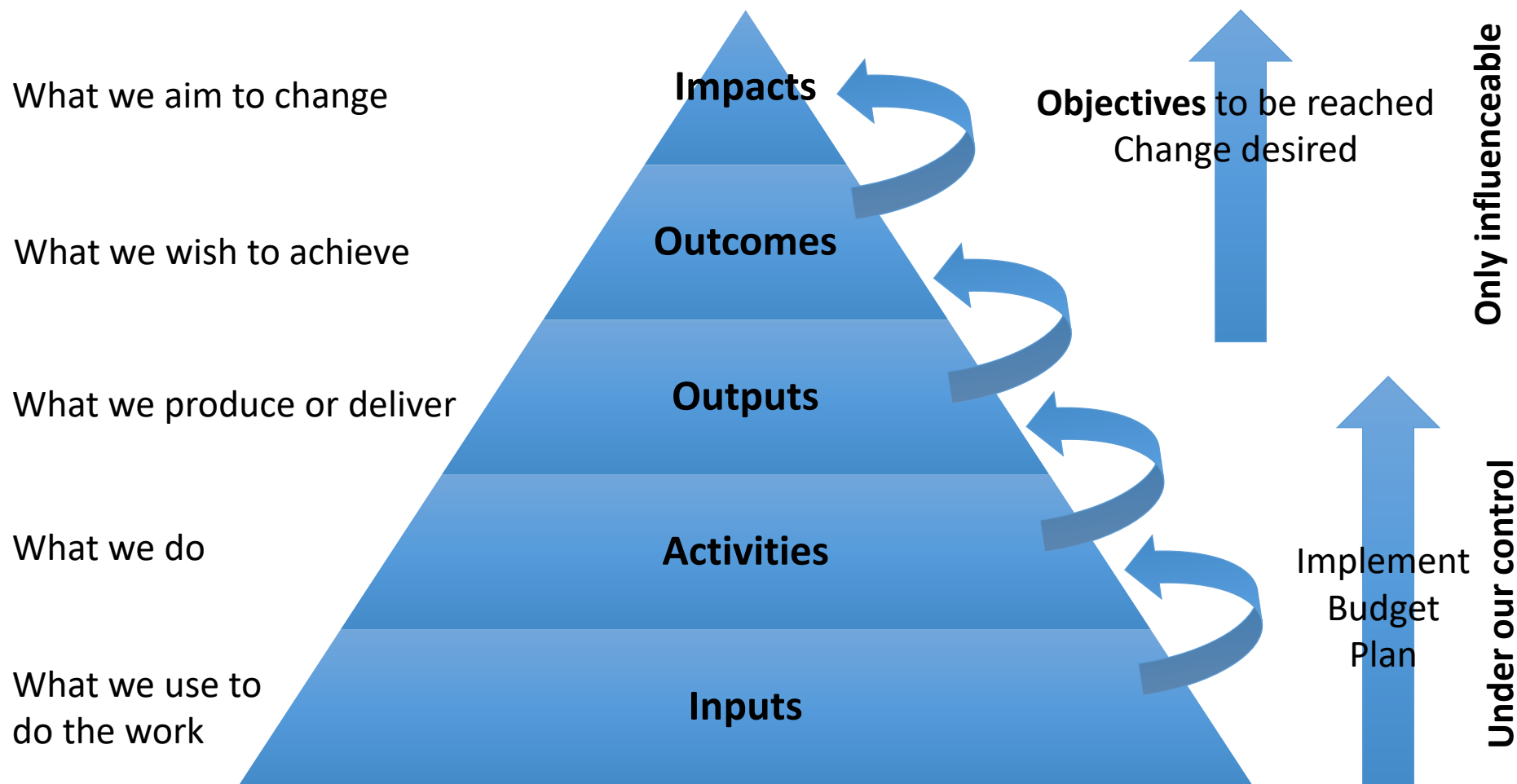
IMPACT IN HORIZON 2020



**Remember the formula
for impact?**



Definition of different elements in an impact model



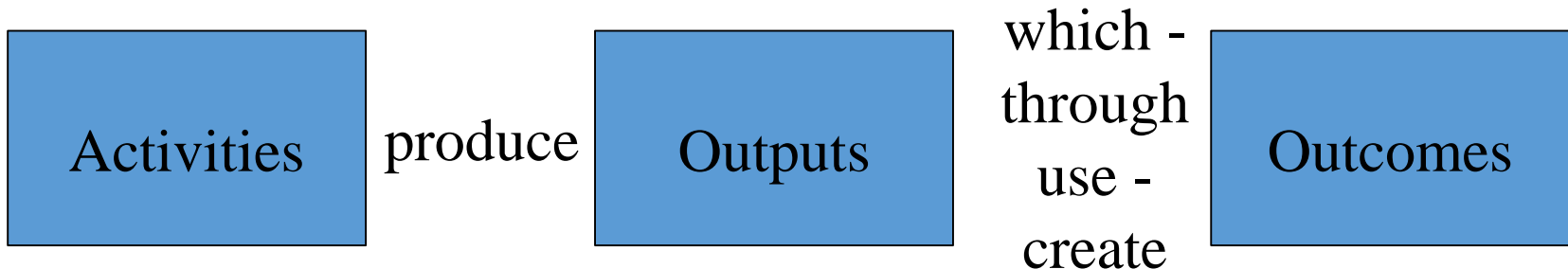
Inputs vs. Activities

<p>Input</p> <p><i>What we use to do the work</i></p>	<p>Resources that are used in the project to implement it (e.g. human resource /personnel/time, money, material resources, equipment). Inputs ensure that it is possible to deliver the intended results of a project.</p>
<p>Activity</p> <p><i>What we do</i></p>	<p>Actions associated with delivering the project objectives. In other words, they are what the involved people do in order to achieve the objectives of the project (e.g. research activities, development of reports and training programmes, development of a policy paper, etc.).</p>

Outputs vs. Outcomes vs. Impacts

Output <i>What we produce or deliver</i>	What is produced during the implementation of an activity (tangible goods and services), what is achieved immediately after implementing an activity. Outputs have no effect if they are not known and not used.
Outcome <i>What we wish to achieve</i>	Mid-term results that are linked to the project aim. A change of behavior, knowledge, policy or practice based on an uptake and absorption of the work. It can be influenced through communication and dissemination, engagement, etc.
Impact <i>What we aim to change</i>	Long-term result/consequence beyond the project, which contributed to the change/benefit to economy, society, public services, environment, health, etc.

From Activities to Impacts



OUTCOME = what happens, if our **target group uses** our outputs!

- they become more knowledgeable (enlightenment!) or
- produce better products or
- reduce the ecological footprint

IMPACT = what happens **by use or non-use** of others than our primary target group (i.e. a 'secondary' or even 'not-intended audience')

Types of effects / impacts

- **Results-oriented impacts**: usually quantitative measurable results (e.g. creation of jobs, new publications, patents, reduction etc.)
- **Behavioural impacts**: changes in the (social, economic, ...) behaviour (e.g. changes concerning innovative behaviour, change of environmental behaviour, change of images & awareness etc.)

Various categories of impacts

- **Scientific/Academic/Research:** This avenue generally focuses on the possible publications, conferences, or any other opportunities that can arise as a result of this project to promote the research field.
- **Socio-economic:** Here, researchers often touch on the new possibilities for job creation, important policy outputs, and overall social benefits of their project.
- **Environmental:** Such applications mostly refer to policy papers or guidance documents produced as a result of the research project.
- **Public engagement:** In this selected avenue, researchers describe varying ways to publicly engage through communication strategies, education, media or social media outlets, and user groups.

Eleven dimensions of the impacts

Science impacts:

Knowledge, Research activities, Training

Technology impacts:

Products, Processes, Services, Know-how

Economy impacts:

Production, Financing, Investments,
Commercialisation, Budget

Culture impacts:

Knowledge, Know-how, Attitudes, Values

Society impacts:

Welfare, Discourses and actions of groups

Policy impacts:

Policymakers, Citizens, Public programs,
National security

Organization impacts:

Planning, Work organization, Administration,
Human resources

Health impacts:

Public health, Health systems

Environment impacts:

Management of natural resources and the
environment, Climate and meteorology

Symbolic impacts:

Legitimacy/credibility/visibility

Training impacts:

Curricula, Pedagogical Tools, Qualifications,
Graduates, Insertion into the job market,
Fitness of training/work, career, use of acquired
knowledge

Identify the parts of the proposal – show excellence in all areas

1. Excellence

1.1 Objectives

1.2 Relation to the work programme

1.3 Concept and methodology

1.4 Ambition

2. Impact

2.1 Expected impacts

2.2 Measures to maximise impact

a) Dissemination and exploitation of results

b) Communication activities

3. Implementation

3.1. Workplan – Workpackages, Deliverables

3.2 Management structure, milestones and procedures

3.3 Consortium as a whole

3.4 Resources to be committed

4. Members of the consortium

5. Ethics and Security

=> Objectives that contribute to broader impact dimension

=> Draft plans to reach expected impacts, knowledge management plan, business plan, management of research data, etc.

=> WP Dissemination & Exploitation & Communication

=> Role of impact/innovation manager with adequate resources

=> Exploitation partner, Communication partner

Part A

(online form)

- Administrative forms

Part B

(to be uploaded
as pdf PDF)

- Excellence
- **Impact**
- Implementation
- Members of the consortium
- Ethics and Security

Impact

- **2.1 Expected impacts**
- **2.2 Measures to maximize impact**
 - a) Dissemination and exploitation of results
 - b) Communication activities

B2: Impact

1st STAGE

2.1 Expected impacts => impact indication can be found in Work programme and specific Call;

- **BUT:** The guidelines are not only in work programs, see also the strategic programme:
- [stratprog overarching version for publication.pdf](#)
- **AND:** keep into mind **Priorities and Focus areas**
- **IN ADDITION** it's good to know that there are different impact dimensions:
 - **structuring impacts** (ERA Roadmap);
 - **scientific impacts**;
 - **innovation impacts** (will project lead to innovative products and processes);
 - **economic impacts** (open the knowledge flows for the innovation process, create new market opportunities, strengthen competitiveness and growth of companies, etc)
 - and **societal impacts** (how the research has relevance for the society)
- **PLUS – several guiding materials:** **Net4Society Factsheet** [Increasing Impact](#)

For a competitive proposal you need...

- Excellent S&T
- Excellent partnership
- Excellent implementation plans
- Excellent results with high impact

The dimensions assessed during the evaluation process for Horizon 2020 R&I Actions are **excellence, impact and quality and efficiency of the implementation.**

The expected impact mentioned in the call references the project frame.

You need to fit your proposal in the big picture.

Call texts and expected impacts

Example

SC1-BHC-07-2019

**Regenerative medicine
from new insights to
new applications**

**RIA Research and
Innovation Action**

Deadline: 16.4.2019



Topic Description

- Less

Specific Challenge:

Regenerative medicine offers hope for untreatable disease and the ageing population, improved quality of life and reduced medical costs. However, so far, regenerative medicine has not yet proved itself in the clinic beyond rare diseases or conditions of limited public health importance. With recent scientific discoveries opening up new approaches to regenerative medicine, the challenge is to use these to extend the regenerative approach to major diseases and conditions.

Scope:

Regenerative medicine replaces or regenerates human cells, tissue or organs, to restore or establish normal function. Projects should focus on innovative translational research to develop regenerative processes towards the ultimate clinical goal of addressing unmet clinical needs of large patient groups. Proposals should be based on new approaches such as genome editing or gene therapy, transdifferentiation or *in vivo* reprogramming, cell therapy and transplantation, 3D bioprinting, organoids or use of combined products (non-exhaustive list for illustrative purposes only). In all cases, proposals should explain in what way their approach is regenerative. Research on improved methods of tissue and organ transplantation is included on the condition that there is a clear regenerative step in the process. The project may focus on any step(s) on the innovation chain, from early testing and characterization of regenerative mechanisms to preclinical research, proof of concept or clinical trial. Sex and gender differences should be investigated, where relevant. Projects should include a section on the proposed therapy's exploitation potential, regulatory and commercialisation strategy and how it would be made available and delivered to patients.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Potential new regenerative therapies to address unmet clinical needs of large patient groups identified.
- Europe's position in translational regenerative medicine strengthened.
- New therapies for major human diseases and conditions, and new approaches for therapy taken further in the development pipeline.

Call text and expected impact

ICT-22-2016

Technologies for Learning and Skills

RIA+IA, Deadline: 12.4.2016
Scope:

Topic Description

Specific Challenge:

Learning today takes place in a context of new interactions between formal and informal learning, the changing role of teachers, the impact of social media, and the students' active participation in the design of learning activities. While there is strong demand for (user-driven) innovation in digital learning, the current environment limits development to silo products, creates barriers to technological and market innovation and cross border adoption of new learning technologies. The challenge is to create an innovation ecosystem that will facilitate open, more effective and efficient co-design, co-creation, and use of digital content, tools and services for personalised learning and teaching. It requires co-creation and co-evolution of knowledge and partnerships between business actors and research players, communities of users, educational and training organisations to develop the appropriate components and services and leading edge learning technologies, which in turn will empower teachers and learners and facilitate (social) innovation in education and training.

b. Research and Innovation Action

Technologies for deeper learning of Science, Technology, Engineering, Mathematics, combined with Arts (STEAM), improving the innovation and creative capacities of learners and supporting the new role of teacher as a coach of the learner. Activities may cover both foundational research (tapping into a mix of disciplines, including SSH disciplines) and/or component and system level design with pilot testing, to support (user-driven) real-life intervention strategies with new enabling technologies (e.g. new interfaces, affective computing, mixed reality learning environments, 3D technologies, wearable technology).

Expected impact:

b. Research and Innovation Action

- Break-through technologies for learning, through novel research-industry collaborations in emerging areas;
- Improved ability to innovate in key economic growth areas by fostering intertwined development of creative and scientific/technological skills.

Examples of impact types

Impact types	Description
Quality of life and health	Impacts where the beneficiaries (both human and animals) quality of life is enhanced (or potential harm mitigated) in particular through improved clinical practices or welfare, security or
Environmental change	Impacts on the natural and/or the built environment and impacts on individuals who benefit as a result, enhanced sustainability
Public policy, public services	Impacts where the beneficiaries are in the public sector and society as a whole or targeted groups are profiting through improved policies, legislation, systems or other reforms
Economic and commercial benefits through products or services	Impacts where research creates jobs and growth in different sectors such as in manufacturing or wealth, e.g. through new companies or as part of international development, impacts where beneficiaries are involved in the in the development and delivery of improved professional services
Culture and attitudes	Impacts where lives are enriched, increase creativity/engagement, social cohesion, stimulate or reframe debates and change behaviour/attitudes
Capacity building	Impacts on technical and personal skills development and education, enabled partnerships, shared and improved practices, improved standards or guidelines

Writing a competitive proposal

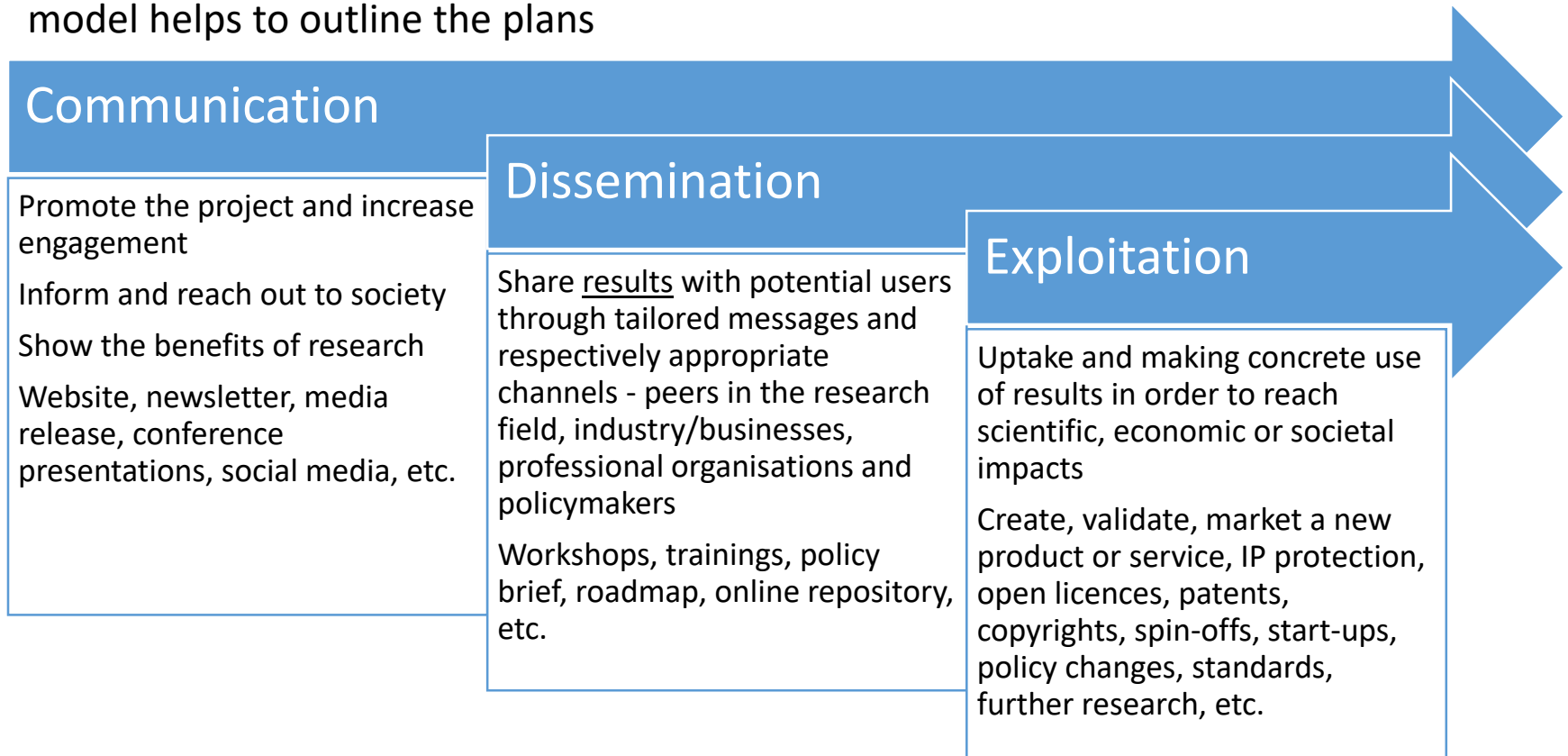
- Proposals need to argue expectations about the immediate **use** of our output by our target groups (= outcome) and plan beyond the projects lifetime
- The proposal needs to outline the theory of change and **cause-effect relations**
- **Tables and graphs** help the evaluators to understand the S&T, economic and social impacts, how they are linked to the project activities, etc.
- Carefully tailored plans need to **include indicators** to measure the outputs and outcomes (verifiable, realistic, etc.) and prepare for the monitoring and evaluation of outcomes and impacts

Be a good partner for impact maximisation

- Support **communication, dissemination, exploitation** opportunities (locally, regionally, nationally and internationally)
- Provide a “**use case**” to test the research results, e.g. technologies developed and organised broad and structured feedback that feeds into further iterations
- Provide **access** to markets or user groups to improve uptake and application of the research results or commercialisation
- Provide **sustainability** perspectives (long-term visibility and use)

Measures to maximise impacts

Pathways to impact are full of loops, revisions, dead ends and iterations, but a linear model helps to outline the plans



Develop roadmaps and plans to outline the most appropriate ways to send appropriate messages to the identified target groups.

Analyse the impacts

Expected impact	Ways in which the benefits will materialise	Corresponding activities	Indicators and targets

What are the reasons for engaging with stakeholders (based on their interests)?

- Awareness raising
- Information sharing
- Co-design and co-development
- Influence their behaviour
- ...

What can be gained for the project?

- Insight and input to the project
- Access to contacts and networks
- Inclusion of new perspectives
- Involvement of end user for piloting and testing
- ...

Prepare plans and roadmaps

- What **outputs** will be **created**? Where are the outputs available during and after the project?
- Who are the **potential users** and why, what needs do the results meet?
- What are the **scientific / technological areas benefiting from the project** (and how does the project contribute)? Which industrial areas benefit?
- How and by whom will **commercial exploitation** be prepared for each of the results (technologies, methods, tools), will there be new products/services, improvements of existing products/services, application in use cases, etc.?
- How will **potential users** be contacted?
- How **openly** will the **results be shared**? *Open access and open data to increase the outreach are a principle in Horizon 2020 (open access publications, data repositories, etc.)*
- If necessary, how will the results be protected? *Costs of IP protection are eligible costs in Horizon 2020 projects*

Impact measurement

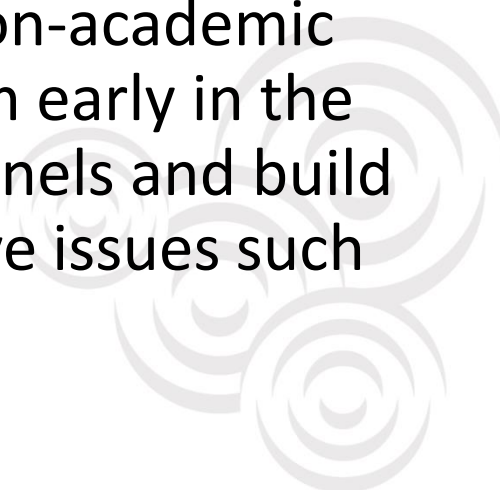
- Identify your **baseline** (starting point), make regular reviews to track change
- Use **qualitative** data from interviews/feedback and collected evidence
 - Feedback e.g. in mails, personal statements, testimonials, focus groups, collected media coverage, awards, reports, evidence of policy debate, changes to guidelines, policies, legislation, regulation, clinical practice, etc.
- And **quantitative** data and statistics
 - E.g. **Scientific impacts**
 - Number of publications
 - Number of workshops and conferences (# of participants, geographical distribution, etc.)
 - Number of doctoral theses
 - E.g. **Public outreach impacts**
 - media coverage, social media user interactions, website user statistics
 - E.g. **Policy impacts**
 - Citation in strategies, policies, by international bodies, in parliamentary debate, etc.
- Identify and communicate **data requirements**
 - E.g. from event organisers => basic event-related data, survey/registration, invested efforts, participation in funding schemes/programmes
 - e.g. for important milestones create an ex-ante survey (focus: expectations/motivations), an on site assessment survey and interviews (focus: satisfaction/feedback), a ex-post assessment survey (focus: lasting effects)

Proxis to measure impact

Key performance indicators to measure exploitation activities	Description	Target value
Business ideas	Specific idea based on the technologies developed	X
Patents	Number of patenting processes by the end of the project	X
Market strategies	Number of technologies for which market strategies are developed and market entry is foreseeable	X
Start-ups	Number of start-ups created based on project ideas	X
Licence agreements	Number of agreements concluded	X
Investments	Euros invested by end-users or project partners	X
Scientific publications	Number of articles published in peer reviewed journals	X
Outreach to associations and international networks	Number of stakeholder organisations interested to apply project results	X
Etc. etc.		

Key performance indicators to measure dissemination activities	Description	Target value
Project website	Number of visits to the project website	X
Newsletters	Number of subscribers	X
Media releases	Number of articles in external media	X
Events	Number of participants attracted to project events	X
Twitter	Number of followers	X
Etc. etc.		

Summary of success criteria

- Link the project to the **policy context** and involve potential end-users and stakeholders in the proposal, e.g. industrial partners or policy makers
 - Identify **how the results of the project would ideally be applied**, describe what success looks like and construct a “theory of change”, anticipate steps needed for the results to be applied in a cause-and-effect-relationship
 - Identify the important **stakeholders** (incl. non-academic ones) and their needs and engage with them early in the process, communicate through several channels and build a partnership, anticipate ethical and sensitive issues such as conflicts of interests
- 

Summary of success criteria

- Develop **impact pathways** and describe carefully measures to communicate the project and to disseminate and exploit the project results (including management of IPR) and allocate sufficient resources (demonstrate effectiveness and efficiency)
- Understand the **risks, challenges and barriers** to application of the project results, e.g. Intellectual Property Rights (IPR), missing skills and competences, lack of access or interest of target groups, include capacity building and training (incl. Citizen science)
- Describe **key performance indicators** incl. target values, use mixed methods and multiple sources for data and select indicators carefully and argue cost-effectiveness, provide benchmarks to other initiatives (e.g. patents / € invested)

Output/Outcome/Impact – Examples (always context specific)

- **Objective:** Increase the innovation output of universities by hiring and training innovation managers
- **Output**– e.g. 50 (instead of 12) innovation managers at the university trained in IPR in the year 2018
- **Outcome** – 74 new patent applications by university staff members in the year 2019 (instead of average 3 per year before)
- **Impact** – one of these 74 new patents will be licensed to a company which uses it for a new product development in 2021

Impact Strategies in H2020- Examples

Impact strategies in H2020

Collaboratively working on different impact strategies

- What types of impact do exist?
- How do you identify the expected impacts?
- How are project objectives matched with expected impacts („Impact strategies“)?
- What does exploitation mean in the context of impact strategies?
- How do you address target groups in you impact section?

5 steps of Impact strategy development

1. Check call and identify expected impacts
2. Determine how project objectives match expected impacts
3. Visualise and describe the specific relation between expected impacts and objectives of the project
4. Develop a plan for dissemination and exploitation of the projects results (contributing to creation of impact)
5. Win the proposal!

Impact strategies - How are project objectives matched with expected impacts („Impact strategies“)?

Ways how to describe the impact your project:

- Show the relation of expected calls and your project objectives

Concrete expected impact (from Call)	Corresponding deliverable and WP	Partners/beneficiaries that will benefit	Indicators
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MoRRI indicators

Gender	Science Literacy	Public engagement	Open Access	Ethics	Governance
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Expected exploitable result	Targeted Market	Type of product	Exploitation route
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- Define clear exploitation strategy for the results

Examples of Impact strategies

Example #1 - Supporting the development of territorial Responsible Research and Innovation - SwafS-14-2018-2019-2020, CSA

Expected Impact:

Consortia are expected to elaborate and implement a more open, transparent and democratic R&I system in their defined territories. Consortia are expected to evaluate their activities and provide evidence of societal, democratic, environmental, economic and scientific impacts.

Involvement in the project should have a measurable transformative and opening effect on organisations involved, which should be sustainable beyond the lifetime of funding. Consortia are expected to contribute to one or more of the MoRRI indicators (for instance GE1, SLSE1, SLSE4, PE1, PE2, PE5, PE7, PE8, E1, OA6, GOV2)^[8], and to the Sustainable Development Goals^[9] (for instance goals 4, 5, 9, 11, 12, 13, 16 or 17).

Example #2 – Rural Renaissance - Fostering innovation and business opportunities Business models for modern rural economies - RUR-2017-2, RIA

Expected Impact:

This action contributes to the modernisation and sustainable growth of rural economies. Applicants will measure the expected short-term impact of the project on the basis of:

- improved tools for entrepreneurship in rural areas, in particular with a database of business cases and supportive environment (e.g. clusters/platforms, technical/scientific services and infrastructure, advisory services, funding opportunities); and
- improved knowledge of business models emerging in rural areas, including a thorough understanding of their potential for development, performance and interest in economic, environmental and social terms and success factors or reasons for failures.

In the longer term, the results will:

- increase the potential for rural economic diversification, added value and job creation in a variety of rural areas thanks to the dissemination of promising business cases;
- make rural economies and societies more resilient to global changes; and
- improve the delivery of ecosystem services resulting from innovative forms of valorisation.

Example #3 – Sustainable Food Security – Alternative proteins for food and feed – LC – SFS-17-2019, IA

Expected Impact:

In the framework of SDG no 2, 9, 12, 13 and 15, The EU's Bioeconomy Strategy 2012 and the Food 2030 SWD, proposals should explain how the activities included will contribute to:

In the short run,

- Far-reaching progress in providing, processing and production of high quality proteins for food and/or feed from terrestrial and/or aquatic origin, moving available solutions from TRL 5 to TRL 6;
- New market opportunities for novel products, exclusively or partly derived from non-traditional proteins;
- Future-proofed protein supply chains based on the principles of diversity, sustainability and resilience;
- Increased trust and consumer acceptability for alternative protein sources and processes.

In the longer run, a sustainable food sector that significantly reduced its footprint in terms of land use, greenhouse gas emissions, energy, water and other relevant indicators.

Impact Challenge

Design an impact strategy for on of the three examples! Let's go!

Example #1 – How did the winning proposal do it?

Expected impact table – linked to Tasks and WPs

Impacts	Means for achieving the impact	Indicators, target values and term
More open, transparent and democratic R&I system	<p>I. Increased involvement of stakeholders with R&I systems (open) Starting with the mapping of the territorial healthcare system (WP2), a set of societal stakeholders will be involved in a reflection on the potential innovation related to RRI (Task 2.3). Their early involvement in the project will ensure ownership of the experiments and policy recommendation. The selection committee for needs (Task 4.1) and solutions (Task 4.2) will include citizens irrespective of their age, gender, ethnicity and socio-economic background (contributing to SDG5, SDG10). Stakeholders will be actively involved in the co-creation of solution during the implementation of the experiments (Task 4.3.) and in the policy recommendations (Task 5.3.). Indicators for impact I and III are overlapping.</p>	<p>Pilot actions selected with citizen engagement, 3, short term; No. of strategy documents based on citizen engagement, 3; medium term/long tem</p>
	<p>II. Increased access of societal stakeholder to R&I system (transparent) The CHERRIES model is based on participatory processes with healthcare stakeholders (4P) and citizen engagement in priority setting (task 2.3) need articulation (3.3), selection of solutions (4.2) and co-creation of solutions (4.3) to provide evidence for strategy design (5.3). A clear a communication incl. publishing of results and decisions is instrumental for organising these processes while managing expectations. This will increase dialogue and facilitate transparent relation with the territorial actors.</p>	<p>Territorial chapters in CD strategy, 3, short term; Needs reported, 60, short term</p>
	<p>III. Increased responsibility of citizens toward R&I (democratic) As stated above, there are multiple points where stakeholders and citizens in general will have a decisive influence in the projects outcome – incl. priority setting, need identification, selection of solution, co-creation, and providing input to strategies. Actors in each of the territories will be supported and trained in RRI based activities to ensure the appropriate development and implementation of participatory processes. Indicators for impact I and III are overlapping.</p>	<p>Participatory priority setting, 3, short term; Co-created innovation pilots, 3, medium term</p>

MoRRI Impact table

MoRRI indicators	Means for achieving the impact
Gender (GE3, GE5)	<p>The main entry points for questions of gender within the CHERRIES project are stakeholder engagement, the call for solutions as well as the co-creation process. Gender balance in engagement processes will be secured by a proactive invitation policy aiming at parity in the various formats. The main instrument for securing RRI dimensions incl. gender in course of the project is the call for solutions. The funding contracts will bind solution providers and stakeholders in the co-creation to respect a set of rules that include gender aspects. Thereby, CHERRIES will serve a example for funding and public bodies involved in the experiments as well as in the (research performing) organisations submitting potential solutions.</p>
Science literacy and science education (SLSE2, SLSE3)	<p>The CHERRIES project builds on a broad societal engagement process and thereby confronts non-traditional actors (e.g. patients, health practitioners, CSOs etc.) in policy formulation, need articulation and co-creation processes. The broad territorial discussion process will be beneficial for the science communication culture and the understanding of underlying processes. In order to successfully conduct the experiments key-stakeholders and multipliers will be trained in RRI methods. Whereby, the aim is to actively engage the territorial stakeholders system in RRI-based approaches during the development of solutions and later in the project's sustainability phase</p>
Public engagement (PE1, PE2, PE3, PE5)	<p>The process of stakeholder engagement is one of three strands of the CHERRIES project and with its focus of the SGC of health, demographic change and wellbeing every citizen is a stakeholder. Stakeholders are actively participating in science and technology decision-making in the form of priority setting, need articulation, formulation of strategies but also in selecting needs and solution providers. The central policy experiment is building on a public need articulation process for delivering a policy rationale and thereby the project provides a model of public involvement in science and technology decision-making. The co-creation criterion in the solution development secures a public engagement mechanism at the level of research-performing organisations (in case RPO is the solution provider). Moreover, the overall project design with scientific partners coordinating and supporting territorial ecosystems in RRI policy experiments and advancing the innovation policy mix, implies a strong policy-oriented engagement with science.</p>

Example #2 – How did the winning proposal do it?

Expected Impact table – linked to Taks, WPs and objectives (OB)

Expected Impact belonging to RUR – 09 call	
<p>This action contributes to the modernisation and sustainable growth of rural economies.</p>	<p>This is connected with OB3 and OB4. WPs involved: WP2, WP3, WP4, WP5, WP6, WP7. - 13 Rural Living Lab field trials extended to full user experiences with active stakeholder involvement from very early stage - Experimentation with new way of collaboration by the 4 main components of LIVERUR methodology - Evaluation of 13 new RLLs (Rural Living labs) as innovation environment and impact on regional/ rural development - Functioning of the new Regional Circular LL business models through an open innovation decision making and collaboration system via RAIN Platform as One-stop-shop and Platform as a Service new business model. - Full demonstration of RLLs capabilities - RLL as service provision to stakeholders LIVERUR will contribute to the development of rural areas by strengthening the business growth, the job creation and the knowledge transfer, by focusing on the opportunities offered by the circular economy model (WP4), the living lab approach(WP3), by the digital technologies (WP6) and by identifying innovative rural business models and value chains in each pilot region (WP2 and WP5). Through the implementation and the dissemination of innovative rural business models best practices (WP6), LIVERUR will contribute to upscale and replicate best practices in other areas throughout EU (WP7).</p>
<p>In the longer term, the results will:</p>	
<p>Increase the potential for rural economic diversification, added value and job creation in a variety of rural areas thanks to the dissemination of promising business cases;</p>	<p>This is related to OB3 and OB4. This is transversally related to all the WPs. Innovative and technology-based business models are attractive and sustain economic value of rural areas in the context of globalisation. The involved SMAEs will become even more multifunctional, offering: 1) new services, related to green infrastructures services; 2) new products and services related to the “agriculture - environment – tourism as well as environment- culture – tourism” value chains; 3) co-operation with the educational system; 4) cooperation to the regional rural development authorities. The SMAEs will reduce the water, the energy and the CO2 footprints of the (LCA/LCC) products and services as well as they will improve its environmental management system. The dissemination of such business model (WP6 and WP7) will allow the creation of at</p>
<p>Cross cutting priorities:</p>	
<p>Socio-economic science and humanities Gender</p>	<p>This is related to all the objectives. This is transversally related to all the WPs. The Regional Circular Living lab business model concept is inclusive and gender independent. LIVERUR will specifically look at potential barriers that may arise linked to socio economical and gender status creating a specific section in the benchmarking criteria formation. 2 case studies (Italy piloting areas) will be implemented in social farming context, targeting specifically immigrants, elderly and disabled people involvement.</p>

Non-expected impact table!

Expected impact not mentioned in RUR – 09 call	
In the short run	
Primary energy saving triggered	<p>Energy consumption by agriculture decreased by 17 % between 1994-2014²². LIVERUR will intervene in different frameworks that possess different status – quo when it comes to deal with energy efficiency measures. However, the impact of LIVERUR RAIN business model concept is limited but positive since it encompasses Circular Economy principle. Calculating energy consumption in the rural sector is a complex tasks, given the variety of energy inputs and requirements. To make an estimation we use the FAO average consumption of energy per arable land²³: 312kgoe/ha.</p> <p>Retrofitting soft activities (which are suggested by circular economy procedures) trigger saving for an average of 30%, so it is possible a reduction of the previously written energy consumption level to 218,4 Kgoe/ha with a saving amount 93,6 Kgoe/ha. If LIVERUR will address approximately 13 piloting areas, we are going to save 93,6 Koe/ha in every territory.</p>
GHG emission reduction	<p>Agriculture accounted for 10.1 % of the total GHGE in the EU-28, which corresponds to 464.3 million tCO₂e. Between 1990 and 2011, non-CO₂ emissions from agriculture decreased by 23.1 %. <i>Per se</i>, the direct production of GHG in the rural sector is quite limited, while the indirect channels are the main contributors to the phenomena. In this perspective, LIVERUR will follow the mitigating policy suggested in the new Common Agricultural Policy Agreement, actuating the measures when possible²⁴. In any case assuming the framework of the resource efficiency management, all SMAES²⁵ will be</p>

Example #3 – How did the winning proposal do it?

Detailed impact calculations linked to overall objectives

Far-reaching progress in providing, processing and production of high quality proteins for food and/or feed from terrestrial and/or aquatic origin, moving available solutions from TRL 5 to TRL 6

World-wide production of dry mass microalgae is projected to grow in value by 7.4% per year (from 0.5 billion € to 0.9 billion €) and in volume by 5.3% per year reaching 27.6Kt dry weight in 2024. At present, microalgae are largely targeted for their EPA/DHA content and are sold as health foods, as cosmetics or as animal feed⁷³. Approximately 30% of global algal production is sold for animal feed⁷⁴ with potential for further increases as dried, defatted algae could compete with soybean in pig and chicken feed, potentially replacing up to one third of soybean meal in their diets⁷⁵. However, on the basis of application, food and feed industry will continue to spearhead the global market for microalgae, in terms of revenues⁷⁶.

Production scale and price still remain a challenge for microalgae cultivation technology, however, there are clear options to reduce price of production considerably since cost-effective and more efficient technologies are being developed in the market by leading market players, in a bid to reduce operational and investment costs related to microalgae production.



the main objectives of the project is to obtain **affordable and sustainable microalgae biomass** by reducing production costs and increasing efficiency. ProFuture includes a dedicated WP (**WP2**) to adapt, test and implement innovative technologies and processes, moving from TRL 5 to TRL6/7 (and occasionally TRL8), that will significantly **reduce the microalgae production costs >50%** using a multi-dimension approach: *i*) selecting the most efficient microalgae strains, *ii*) obtaining low cost CO₂ (from air), nutrients (by-products) and water (sea water), *iii*) optimizing a mixotrophic cultivation of microalgae and **reducing energy consumption also >50%**, in this case by *i*) using a low cost foil photobioreactor, *ii*) a solar panel photobioreactor and *iii*) combining harvesting and medium recycling using a LiquoFlux system. These approaches allow us to estimate the following production efficiency and cost for the coming years:

	2019 ⁷⁷	2023*	2028**
Biomass production cost (€/kg dry matter)	5.0	3.5	2.0
Biomass productivity (ton/ha/year)	70.0	100.0	150.0
Energy consumption (KWh/kg dry matter)	40	20	8

*End of the project / ** Five years after the end of the project

Food and feed applications demand for a high quality proteins and microalgae show a promising potential as an alternative source of **high quality proteins**:

- Amino acid profile: The quality of proteins can vary dramatically, depending on digestibility and the availability of essential amino acids⁷⁸. Animal sources of protein are generally considered as complete proteins, as they are a rich source of essential amino acids (EAAs) which the human body is unable to biosynthesise. Alternatively, plant proteins are often considered an incomplete protein source as they commonly lack one or more of the essential amino acids, including histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and

Impact Evaluation

How do the evaluators rate the different impact strategies?

Example #1 – How was the impact strategy rated?

Score 5/5

- Strong contribution to expected impacts, clear adherence to requirements
- Outcome of the project fully aligned with the objectives
- Strong commitment by regional stakeholders
- Good planning and expertise of partners
- Impacts clearly spelled out and in a measurable way (short, medium long-term)
- Clear connection to overarching policy framework (SDG, MoRRI indicators)
- High quality of dissemination and exploitation plan

Example #2 – How was the impact strategy rated?

Score 5/5

- *The database of business cases will emerge from the in-depth analysis prior to creating a living lab in a region and the cumulative knowledge /understanding of many and varied business models from across the regions. This will provide a rich data set that can contribute to business model creation and help identify appropriate governance models for the regions.*
- *The impact of the introduction of business Canvas, Platform Canvas and other methodological tools for use by all stakeholders will enable a broader understanding and deeper dissemination and penetration of the business model and case study results in the regions during and after the project.*
- *The impact of the proposed outputs will contribute to sustainability and resilience by introducing a new mechanism for stakeholder. The proposal will generate other positive impacts on the European circular economy, such as a reduced carbon footprint and new partnerships between actors in the Bio-economy and Blue Growth sectors. The proposal has a high potential to positively impact employment.*
- *The dissemination plan contains adequate instruments addressed to different target groups utilizing different and appropriate communication*
- *The use of the Living Lab approach and governance processes helps reducing the potential for discrimination of various types (gender , age , occupation, race ...). It also allows the analysis of factors and influences that may act as barriers to entry or participation by youth, elderly, immigrants, disable persons, low income individuals, lone-parent families.*

Example #3 – How was the impact strategy rated?

Score 5/5

- Defined impacts contribute significantly to the short and long-term impacts defined in the work programme
- Innovative solutions and products and their impact are clearly articulated
- Non-direct impacts on other areas (Circular Economy, Carbon footprint) are documented
- Different and diverse approaches to secure exploitation of results