

Final report

for the CORE Organic Cofund funded project

“Code of Practice for organic food processing - ProOrg”

Period covered: 2 May 2018 – 1 November 2021

ERA-NET CORE ORGANIC COFUND (N. 727565) ID1970, “Code of Practice for organic food processing”, acronym: ProOrg



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1. General information

1.1 Project information

Project information			
Project acronym	ProOrg	Project ID	1978
Project title	Code of Practice for organic food processing		
Project website	www.proorgproject.com		
Details of the project coordinator			
From 2 May 2018 to 31 July 2021			
Name	Paoletti	First name	Flavio
From 1 August 2021 to 1 November 2021			
Name	Sinesio	First name	Fiorella
Telephone		E-mail address	fiorella.sinesio@crea.gov.it
Institution	Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA	Country	Italy
Start of project	2 May 2018	End date of project	30 April 2021
Duration in months	42	New end date in case of a project extension due to COVID-19	1 November 2021

1.2 Consortium

Partner no.	Country	Institution/organisation name	Type of institution/organisation ¹⁾	Functions ²⁾	Involved in WPs	Contact person ³⁾
1	Italy	Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria	Public research centre	PC, WPL, P	WP1, WP2, WP3, WP4, WP5, WP6, WP7	Fiorella Sinesio fiorella.sinesio@crea.gov.it
2	Italy	Università Politecnica delle Marche	University	P	WP2, WP6, WP7	Raffaele Zanolini zanolini@agrecon.univpm.it
3	Italy	Associazione Nazionale delle Imprese di Trasformazione e Distribuzione di	Other	P	WP2, WP7	Roberto Pinton r.pinton@organic-consulting.net

		prodotti Biologici e naturali				
4	Denmark	University of Copenhagen	University	P	WP2, WP3, WP4, WP7	Lilia Ahrné lilia@food.ku.dk
5	The Netherland	Wageningen University, Department Agrotechnology and Food Sciences	University	WPL, P	WP2, WP3, WP4, WP7	ruud.verkerk@wur.nl
6	Germany	Thuenen Institut	Public research centre	WPL, P	WP2, WP6, WP7	Katrin Zander katrin.zander@theunen.de
7	Germany	FH Münster University of Applied Sciences	University	P	WP2, WP4, WP5, WP6, WP7	Carola Strassner strassner@fh-muenster.de
8	Germany	Assoziation Ökologischer Lebensmittelhersteller	Other	WPL, P	WP2, WP3, WP4, WP6, WP7	Alex Beck alex.beck@aol.org
9	Poland	Warsaw University of Life Sciences	University	P	WP2, WP3, WP4, WP5, WP7	Ewa Rembalkowska ewa_rembalkowska@sggw.pl
10	Switzerland	Forschungsinstitut für biologischen Landbau	Public research centre	WPL, P	WP2, WP4, WP5, WP6, WP7	Toralf Richter toralf.richter@fibl.org
11	France	The French Network of Food Technology Institutes	Other	WPL	WP2, WP7	Christophe Cotillon C.COTILLON@actia-asso.eu
12	France	Institut National de recherche pour l'agriculture, l'alimentation et l'environnement	Public research centre	P	WP2, WP3, WP7	Carine Le-Bourvellec carine.le-bourvellec@inrae.fr
13	France	Institut Technique de l'Agriculture Biologique	Public research centre	P	WP2, WP3, WP4, WP7	Rodolphe Vidal rodolphe.vidal@itab.asso.fr
14	Hungary	Hungarian Research Institute of Organic Agriculture	Public research centre	P	WP2, WP4, WP7	Judit Feher judit.feher@biokutatas.hu
15	Germany	University of Kassel ⁴⁾	University	P	WP2, WP3, WP4, WP7	Joahannes Kahl kahl@uni-kassel.de Katrin Zander k.zander@uni-kassel.de

¹⁾ University, Public research centre, Private research centre, Company, Other

²⁾ PC = Project coordinator, WPL = Work package leader, WPCL = Work package co-leader, P = Participant

³⁾ inclusive e-mail address

- 4) University of Kassel participated in the preparation of the project proposal and signed the Consortium Agreement but was not formally a partner of the project until Prof. Katrin Zander moved from Thuenen Institut to Kassel University in April 2020.

Dr Matthias Samuel Meier (matthiassamuel.meier@bfh.ch) was part of the Research Institute of Organic Agriculture (FiBL) team from the beginning of the project until May 2019, when he moved to the Bern University of Applied Sciences – School of Agricultural, Forest and Food Sciences HAFL. After he moved, Dr/Prof Meier continued to provide his contribution to the development of the project and, in particular, to the WP2, WP3, WP4, and WP7.

2. Summary

2.1 Final project summary suitable for web publication for a wider audience

The project “Code of Practice for organic food processing – ProOrg” is based on the fact that the EU organic regulations only set a legal frame with mainly general principles for technologies used in organic food processing. With the exclusion of a positive list of additives and processing aids, mandatory standards for the processing technologies used for organic food are lacking in the European Regulation 2018/848. Indications that can guide the processors in the selection of appropriate technologies and innovations in line with the organic principles are very limited.

The aim of the ProOrg project was to contribute to fill this gap by developing a Code of Practice (CoP) for organic food processors (<https://www.proorgproject.com/codeofpractice>). Specifically, the objective of ProOrg was to develop a Code of Practice addressed to organic food processors as well as labeling organizations, with the aim to provide a set of strategies and tools that can help them for making the best choice for careful processing technologies, methods, and formulations free of additives, while addressing the organic principles, high food quality, low environmental impact, and high degree of consumer acceptance.

The ProOrg Consortium was composed of 15 partners from 8 European countries, with a balanced geographical distribution.

The project was based on a participatory approach with a direct involvement of organic food processors and other stakeholders that contributed to the development of the CoP and participated throughout the duration of the project.

The Code of Practice for organic food processors is composed of three parts: the “Management Guideline for organic food processors”, the “Assessment Framework for the evaluation of the organic food processing”, and the “Guidelines for consumer communication”.

The “Management Guideline” (MG) (<https://www.proorgproject.com/codeofpractice>) aims to give organic food processing companies a guideline for the implementation of the regulatory requirements of the organic food sector applicable for the daily practice. It came just in time for the implementation of new organic regulation from 1st of January 2022 on. It also addresses other aspects that exist in the industry but are not legally anchored and provides existing documents, tools, and information. For the MG, an Excel format was chosen which can easily be integrated into existing internal documentations and systems. The user can find an overview of the legal requirements in several spreadsheets, divided into the different areas in a company, as well as a checklist with the relevant information.

The “Assessment Framework” (AF) (https://www.proorgproject.com/files/ugd/88a346_72d47789193346a1ba42b030b46f39e7.pdf) is a guidance that enables companies or labelling organisations to compare potential processing technologies under the organic principles and to decide on the gentlest possible variant. The AF is generic, flexible, adaptable to all conditions and situations. Aspects and criteria for the evaluation of processing technologies have been defined based on existing concepts from the literature, of the legal requirements and the IFOAM organic principles. The AF is presented as a step-by-step guide and a calculation method is provided to get a score for each alternative to be compared to make the choice. An Internet-based version of the AF is under development to facilitate the daily usability of this tool.

The “Guidelines for consumer communication” (https://www.proorgproject.com/files/ugd/88a346_cf27fc4976c845f78655d084f565d049.pdf) aim to give organic food processors an idea of how to deal with consumers’ expectations on food processing. In particular, the aims are: i) to improve processors’ understanding of consumers’ perception of processing technologies; ii) to support processors in the selection of processing technologies which are acceptable for/accepted by consumers; iii) to support processors in successfully communicating with consumers.

The development of the Code of Practice followed an iterative process. A first draft of the Code was tested for its understandability and practicability in the so-called “case studies”, mainly performed at level of companies. The feedbacks from the case studies were used for adjusting and finalizing the Code of Practice.

The Code of Practice and the scientific results of the project have been presented in scientific and non-scientific conferences, webinars, workshops. Articles have also been published also in technical journals, magazines. The Code of Practice, the outcomes of the project, scientific publications and other documents, and further information can be found on the project website www.proorgproject.com.

Most of the documents have been also uploaded to the Organic E-prints platform.

Bachelor and Master theses were produced through the project.

2.2 Process update of the whole project

The project achieved all its objectives. The progress of the project was hindered by the restrictions imposed because of Covid-19 pandemic. Starting from the first half of 2020, a revision of the methodologies based on physical meetings was needed and their substitution with online procedures which in turn needed a validation before to be applied. This caused some delay in the achievement of the objectives but did not affect their scientific validity.

3. Outcomes of the project

3.1. Main results, discussion, conclusions and fulfilment of objectives

WP1	<i>Coordination and management activities</i>
WP leader: P1 (Fiorella Sinesio/Flavio Paoletti, CREA)	
Responsible partners: P1 (Fiorella Sinesio/Flavio Paoletti, CREA)	
Overall summary of main results, discussion and conclusions of WP1	
<p>The objective of WP1 was to ensure the development of the project according to the work-plan and to control the quality of outputs and dissemination of the results.</p> <p>A Consortium Agreement was finalized and signed. An Advisory Board was set up.</p> <p>A kick-off meeting and three project meetings were organized and held. The project meetings aimed to share the outcomes from the WPs activity, responding to upcoming challenges, making adjustments in the project planning, and discussing and making decisions on issues of common interests such as dissemination activities.</p> <p>Working meetings with partners were organized to discuss issues of specific nature.</p> <p>The mid-term report to CO Cofund and the annual reports on the project progress were prepared</p> <p>Regular communication among the partners and regular contacts with CO Cofund have been established.</p> <p>The restrictions imposed due to the Covid-19 pandemic caused some delay in the project activities and forced the Consortium to substitute physical meetings with online meetings. However, the progress of the project was not significantly affected, and the objectives were fully achieved.</p>	
Report on the results obtained (A), and fulfilment of objectives (B) comparing to the original project proposal	
A- results obtained and structured in relation to the user groups they are relevant for:	
<p>The coordination and management activities are reported as it follows:</p> <ul style="list-style-type: none"> - Organization of the kick-off meeting with the participation of ProOrg partners and Dr. Jaakko Nuutila, as tutor assigned to the project by CORE Organic Cofund (Dr. Jaakko Nuutila was tutor of 	

ProOrg until the end of year 2018. Thereafter, Dr. Sari Iivonen took the role of tutor). The kick-off meeting was held in Rome on 29 May 2018 (D1.1).

- A leaflet was prepared to describe the aims, the main activities, and the expected results of the ProOrg project. The leaflet was translated into different languages and uploaded to the CORE Organic Cofund website (https://projects.au.dk/fileadmin/projects/coreorganiccofund/proorg_leaflet_web.pdf) and ProOrg website (<https://www.proorgproject.com>).
- A Consortium Agreement was developed, agreed, and finalized. The Consortium Agreement was signed in November 2018 (D1.2).
- An Advisory Board (AB) of the project was set up and the “Terms of Reference” agreed and finalized. The AB was composed of five members representing the following stakeholders: a retail company, two organic food companies, an organic farming association, a certification body. The AB was regularly informed and updated on the progress of the project. The AB Chairperson was invited and participated in the three project meetings. Contributions in terms of suggestions and comments to documents have been requested to the AB members (D1.3).
- Participation in the Seminar organized by CORE Organic Cofund and held in Bari (Italy) at CIHEAM on 28-29 January 2019. The coordinators of the projects funded in the CORE Organic Cofund call were invited. Aim of the Seminar was to facilitate contacts and collaborations among the projects. Moreover, the Seminar was aimed at illustrating to the coordinators the dissemination and communication activities requested and expected by CORE Organic Cofund from the funded projects.
- With the collaboration of the WP leaders and all the partners, preparation, and finalization of the annual reports (D1.4 https://14cec8e9-56db-4df2-a786-008b536adeba.filesusr.com/ugd/88a346_c9104fa3ac0f499b9463f17bc3bd29d2.pdf, D1.8 <https://www.proorgproject.com/news>).
- In collaboration with the leader of the WP7 “Dissemination and communication”, Dr. Christophe Cotillon (ACTIA - The French Network for Food Technology Institutes) and with the contribution of the partners, a “Dissemination and Communication Plan” was developed, agreed, and finalized. The “Dissemination and Communication Plan” was approved by CORE Organic Cofund in 2019 and subsequently adjusted and updated for the deviations caused by the restrictions imposed by the Covid-19 pandemic (https://www.proorgproject.com/files/ugd/88a346_aaeef7b632f44a380568703631b60c1.pdf).
- Organization and preparation of the three project meetings planned in the project proposal. The first project meeting was held in Warsaw, at the Warsaw University of Life Sciences, on 11 and 12 September 2019 and organized with the collaboration of Prof. Ewa Rembialska and her team. Due to the restrictions imposed by the Covid-19 pandemic, the second and the third project meetings were organized and held online with the collaboration of Dr. Christophe Cotillon and his team. The second project meeting was held on 4 June 2020 and the third on 15 June 2021. The meetings were aimed at verifying the progress of the project, showing the results achieved in the WPs, highlighting the critical points in achieving the objectives, proposing solutions, and planning future activities. Dr. Sari Iivonen, tutor of the project, was invited to participate and to have a presentation in all the project meetings. (D1.5, D1.7, D1.10)
- In collaboration with the Work Package leaders, with the contribution of all the partners and the support of the project tutor, Dr. Sari Iivonen, the mid-term report of the project to CORE Organic Cofund was prepared. The report was discussed with the project evaluation group composed of representatives of the national funding bodies of the countries of the project partners. The discussion was held online on 5 February 2020. The mid-term report was approved by the project evaluation group with minor recommendations. (D1.6 https://www.proorgproject.com/files/ugd/88a346_028a7a8c66764badb2690b804f7d9d8e.pdf)

- Presentation of the ProOrg project in different contexts (target groups: organic food processors, other actors in the food chain, retailers, organic labelling organizations, consumers, policy makers, research institutes, academia):
 - Meeting of the Expert Group on Organic Production – Sub-Group on Techniques for Processing Organic Food and Feed, held in Brussels on 25 October 2018, as member of the Italian delegation composed of officers of the Italian Ministry of Agriculture. The Meeting aimed to discuss the articles of the Regulation EU 2018/848 on the processing of organic food. ProOrg project was presented to the participants.
 - Session at Biofach Congress 2019 “Organic Processing – Quo vadis?”, Nurnberg (Germany), 14 February 2019.
 - General Assembly of the Associazione nazionale delle imprese di trasformazione e distribuzione dei prodotti biologici e naturali – AssoBio, Bologna (Italy) 13 June 2019.
 - Conference “Rivoluzione Bio – Il biologico tra presente e futuro”, Session “Dove c’è bio, c’è innovazione”, Bologna (Italy), 5 September 2019.
 - “TPOrganics Science Day: Innovating for organic food processing”, held at Biofach 2021 on 19 February 2021 (<https://tporganics.eu/tp-organics-science-day-2021/>) (https://14cec8e9-56db-4df2-a786-008b536adeba.filesusr.com/ugd/88a346_117049fd867448bcb644231265f34dc6.pdf)
- Collaboration established with the CORE Organic Cofund project GREENRESILIENT (coordinated by Dr. Fabio Tittarelli from Consiglio per la ricerca in agricoltura e l’analisi dell’economia agraria – CREA, Italy). Organization of a joint event titled “I mangiafoglie. I consumatori in azienda” (https://www.crea.gov.it/documents/71515/0/Evento+Greenresilient_ProOrg_1+dic+2019.pdf/2820b332-9cba-6d3a-911b-ba8d44af291f?t=1575037127201) held in Capua, Italy, on 1 December 2019. Target group: consumers.
- Collaboration established with the CORE Organic Cofund project SUSORGPLUS (coordinated by Prof. Barbara Sturm, University of Kassel, Germany). Meetings were held to discuss the possibility of using some results from SUSORGPLUS project for the development of the Code of Practice in ProOrg. A mutual exchange of invitations also occurred for participation in the events organized by the two projects (<https://biofach.fibl.org/en/biofach-all/biofach-2020-en>) (<https://projects.au.dk/coreorganiccofund/news-and-events/show/artikel/smart-and-sustainable-food-processing-of-organic-fresh-produce-whats-promising-whats-new/>). Target groups: organic food processors, other actors of the food chain, retailers, organic labelling organizations, consumers, policy makers, research institutes, academia.
- meetings with WP leaders or project partners were held for the discussion of specific issues throughout the project.
- Regular contacts with the CORE Organic Cofund Coordinator, Dr. Ivana Trkulja, to provide information on the progress of the project and discuss specific issues related to the development of the project.
- Regular contacts with CORE Organic Cofund Editor/communications officer & Assistant Director, Dr. Karin Ullvén, for providing contributions to CORE Organic Newsletter.
- In collaboration with Dr. Roberto Pinton, AssoBio, organization of the workshop “ProOrg project: a contribution to the innovation of organic food processing”, held on 11 September 2021 at SANA - 34° Salone internazionale del biologico e del naturale, held in Bologna (Italy) for the presentation of the project, of the Code of Practice and results of scientific studies performed in the ProOrg project. Target groups: organic food processors, other actors of the food chain, retailers, organic labelling organizations, consumers, policy makers, research institutes, academia. (<https://www.proorgproject.com/news>)

B- fulfilment of objectives:

Deviation from the original plan was due to the difficulties in finalizing the Consortium Agreement, due to the need to meet the requirements of the Administrations of the various institutions and organizations involved in the project and to find an agreed solution.

Further deviations were a consequence of the restrictions imposed by the Covid-19 pandemic. For this reason, the project deadline has been extended from 30 April 2021 to 1 November 2021.

Objectives were achieved.

WP2 | *Development of a Code of Practice (CoP)*

WP leader: P8 (Alex Beck, AöL)

Responsible partners: all the partners

Overall summary of main results, discussion and conclusions of WP1

The objective of the WP2 was to develop a Code of Practice (CoP) for organic food processors and labelling organizations.

Main results: The development of the planned CoP was successfully completed. This consists of three parts: The Assessment Framework, the Management Guideline, and the Communication Guideline. The Drafts of the Assessment Framework and the Management Guideline were tested in the context of two master thesis and could thus be finalised successfully and in a practical way.

Discussion: Accessibility of the CoP in all national languages of the project partners could not yet be ensured but in the near future it will be translated into the main languages. It was found that the assessment framework works as a guideline and provides a very accurate assessment but is very complex and time-consuming to use.

Conclusions: Over the course of the project, the topic of gentle processing methods became increasingly important, so that further work orders in relation to the CoP were to be formulated as part of a German follow-up project. It is also necessary to further develop the assessment framework in a continuation project to improve accessibility.

Report on the results obtained (A), and fulfilment of objectives (B) comparing to the original project proposal

A- results obtained and structured in relation to the user groups they are relevant for:

The Code of Practice (CoP) is composed of three parts: Management Guideline for organic food processors (MG), Assessment Framework for the evaluation of organic food processing (AF), Guidelines for consumer communication (CG).

The MG was fully developed and finalized in the WP2. WP2 significantly contributes to the development and finalization of the AF (WP4) and CG (WP6).

Development of the Management Guideline

The Management Guideline (MG) (<https://www.proorgproject.com/codeofpractice>; <https://orgprints.org/id/eprint/40062/>) provides a good overview of the legal requirements for organic food processors for companies that are new to organic, as well as for those that have been in the business for some time. It also addresses other aspects that exist in the industry but are not legally anchored and provides existing documents, tools, and information.

For ease of use, an Excel format was chosen. The file provides an overview of the respective legal requirements in several spreadsheets, divided into the different areas in a company, as well as a checklist with the relevant information. The management guideline is available for download free of charge, so that the checklist can be edited individually by each company, comments added, responsible persons named, and internal documents linked.

"Management Guideline for organic food processors"

Alexander Beck¹, Johanna Stumpner¹, Lisa Borghoff², Caroline Ebner²
Ursula Kretzschmar³

¹AöL, ²Hochschule Münster, ³FibL

The Management Guideline is part of the Code of Practice for organic food processing, developed in the European project ProOrg.

ProOrg has been funded in the scope of the 2017 Core Organic Cofund call.

CORE Organic is the acronym for "Coordination of European Transnational Research in Organic Food and Farming Systems". As an ERA-NET action, it intends to increase cooperation between national research activities. CORE Organic Cofund is the continuation of the ERA-Nets CORE Organic I, II and Plus. The Cofund ERA-Net will benefit from an additional top-up funding by the European Commission. The CORE Organic Cofund consortium consists of 25 partners from 19 countries.

PROORG



Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages



► **Title** Table of Content Foreword Introduction 1. Organisational requirements 1. Checklist 2. Quality Mana

The management guideline was subjected to several practical tests after it had been drafted. The guideline was tested for practical suitability with several companies in Germany as part of a Master thesis (<https://orgprints.org/id/eprint/38127/>) at Münster University of Applied Sciences and discussed with the project's monitoring committee, consisting of several company representatives. The thesis includes an analytical evaluation of the practical applicability of the MG. The MG was evaluated using the qualitative method of expert interview. Responsible persons of micro- and medium- sized ecologically oriented processing companies in Germany were interviewed. The experts associated a concrete benefit/added value with the use of the MG, which was considered an important tool whose application is assumed to take place on an annual basis as well as during training of new employees. Important suggestions were also gathered for the optimization of content and structure of the MG.

Contribution to the development of the Assessment Framework

The Assessment Framework (AF) (https://www.proorgproject.com/files/ugd/88a346_72d47789193346a1ba42b030b46f39e7.pdf)

provides a tool that enables companies to compare potential processing technologies under the organic principles and to decide on the gentlest possible variant. The WP4 was in charge to develop and finalize the AF, but the WP2 leader was centrally involved in its development. First, aspects for the evaluation of processing technologies had to be defined. This was done on the basis of existing concepts from the literature, as well as deriving criteria from the legal requirements and the organic principles of the International Federation of Organic Agricultural Movements (IFOAM). Furthermore, the tool should be individually adaptable to the needs and priorities of the enterprises. For this purpose, a pool of criteria (https://www.proorgproject.com/files/ugd/88a346_383cf63303a8494d974b3f8bee130536.pdf) for each aspect and possible indicators was determined with the help of extensive literature research and internal evaluation tests. The companies can use this pool to do justice to the individuality of the processing technologies in the evaluation.

The evaluation system was subjected to a practical test as part of a Master thesis (https://www.proorgproject.com/files/ugd/88a346_b8e775029a0046f9b6f367c536d17fe4.pdf).

The objective of the thesis was to apply and evaluate a prototype of the AF at level of a bakery company and to formulate recommendations for further development of the prototype. The results showed that

the prototype of the AF already made it possible to analyze and compare processing methods regarding their conformity with the EU organic Regulation principles. However, it resulted also that more precise instructions for the application were needed. It was also found that the application is very complex and time-consuming. Thus, the idea arose to develop a version of the Assessment Framework that promotes daily usability by reducing complexity. For this purpose, in close collaboration with the WP4, the entire assessment tool is to be transferred into an internet-based solution in which a step-by-step guide is to lead the user through the assessment system. In addition, small changes to the system and the availability of a documentation template are to improve usability. These improvements are to be made in the context of an upgrade.

Contribution to the development of the Communication Guideline

The Guidelines for consumer communication (CG) (https://www.proorgproject.com/files/ugd/88a346_cf27fc4976c845f78655d084f565d049.pdf) were developed in the WP6 under the leadership of the participants from the University of Kassel and accompanied by the WP2 leader and tested for practical suitability.

The above-mentioned results were presented to the relevant user groups on various congresses and webinars, as well as published in newsletters. There has been a slight delay in the time plan due to the Covid-19-pandemic, which did not influence the achievement of the objectives in the end.

B- fulfilment of objectives:

Deviation from the original plan was due to the restrictions imposed by Covid-19 pandemic. The objectives were fulfilled.

WP3 *Case studies in practice*

WP leader: P5 (Ruud Verkerk, WUR)

Responsible partners: P1 (Fiorella Sinesio/Flavio Paoletti, CREA), P4 (Lilia Ahrné, KU), P8 (Alex Beck, AöL), P9 (Ewa Rembialkowska, WULS), P12 (Carine Le-Bourvellec, INRAE), P13 (Rodolphe Vidal, ITAB)

Overall summary of main results, discussion and conclusions of WP1

The objective of WP3 was to contribute to the development of a CoP for organic food processing by using an iterative process of case studies 'in situ' at SMEs.

First, visits were carried out to organic food fairs in Zwolle (Biobeurs, January 2019) and in Nurnberg (Biofach, February 2019), for expanding our network with processors and other stakeholders.

Based on an existing Assessment Framework for the Evaluation of Organic Food Processing (WP4), WP3 has compiled a protocol

(https://www.proorgproject.com/files/ugd/88a346_9d2af0175f4a452c83a24f0169ee46f0.pdf) for the assessment of quality of processed organic food products which has been applied for various Case Studies (Case Study design,

https://www.proorgproject.com/files/ugd/88a346_e52a6d978c5346f1b17a159fd1d8127d.pdf).

Subsequently, the comprehensibility and usability of the methodological approach of the assessment framework was assessed and evaluated for some selected organic food processes in real life cases as well as literature-based cases

(https://www.proorgproject.com/files/ugd/88a346_5b2635f1f2a2471f9659ef82c664c559.pdf;

https://www.proorgproject.com/files/ugd/88a346_4cbff882802a410b8b8676371a8c4376.pdf;

https://www.proorgproject.com/files/ugd/88a346_164d01772fb8466baf16c2dc975c57cf.pdf).

Also, it was aimed to learn more about the potential Drivers & Barriers (https://www.proorgproject.com/files/ugd/88a346_05c8218a9d5448318538f40f9196ecd2.pdf) seen as

perceived by organic stakeholders for guidelines on Organic Food Processing (Code of Practice). The goal was to obtain insights in possible measures to benefit from drivers and overcome possible barriers. Moreover, WP3 has participated in a thematic Working Group (WG1) among WP2, WP3 and WP4 with the aim to work closely together for the development of strategies for 1.) a jointly comprehension, communication, and evaluation of 'organic processing', and 2.) the assessment framework for operators and labeling organizations. The focus of this Working Group was on processing technologies but also included packaging where relevant. Moreover, WG1 jointly established facilitating the tasks of T2.1 ("Development of a draft of the CoP") and T4.1 ("Identification of assessment criteria and measures"), T4.2 ("Development of draft of Assessment Framework") and T4.3 ("Development of final Assessment Framework"). WG1 meetings were held in Germany (Frankfurt, September 2018), France (Paris, December 2018;), and The Netherlands (Wageningen, March 2019).

Report on the results obtained (A), and fulfilment of objectives (B) comparing to the original project proposal

A- results obtained and structured in relation to the user groups they are relevant for:

Multiple workshops on 'potential Drivers & Barriers for Organic Processing' were organized during the first year of the project in France (Paris, December 2018), Germany (Bad Brückenau, May 2019), The Netherlands (Uddel, June 2019), and Poland (Warsaw, June 2019) (<https://www.proorgproject.com/activities>). An elaborated documentation of the outcome of these workshops has been delivered in spring 2020 (https://www.proorgproject.com/files/ugd/88a346_05c8218a9d5448318538f40f9196ecd2.pdf).

As part of task 3.3 ("Perform experiments and scenario analyses for specific knowledge gaps"), the research group has studied and evaluated processing on real products, namely the effect of processing conditions on viscosity, color, phenolic and volatile compounds on apple purées in order to choose the best and softest conditions, to limit the additives but at the same time to maintain the nutritional and organoleptic qualities of the organic fresh fruits. Practice Abstracts were developed based on the results of these studies (<https://organic-farmknowledge.org/tool/39892>; <https://organic-farmknowledge.org/tool/39889>)

B- fulfilment of objectives:

Based on the Case Study design

(https://www.proorgproject.com/files/ugd/88a346_e52a6d978c5346f1b17a159fd1d8127d.pdf), organic companies were selected and approached for carrying out product case studies in three countries in collaboration with the stakeholder associations Bionext (NL), Organic Denmark (DK), and Synabio (F). In real life Case Studies were performed in Denmark and France (https://www.proorgproject.com/files/ugd/88a346_5b2635f1f2a2471f9659ef82c664c559.pdf; https://www.proorgproject.com/files/ugd/88a346_4cbff882802a410b8b8676371a8c4376.pdf; https://www.proorgproject.com/files/ugd/88a346_164d01772fb8466baf16c2dc975c57cf.pdf).

However, due to the COVID pandemic we were forced to switching to online activities. This caused a deviation from the original plan. Multiple users applied a stepwise assessment approach of the cases followed by an evaluation and discussion of the methodological useability by 1) performing an assessment of fictitious products based on literature review and 2) involving organic food stakeholders to assess an existing or future organic food products.

The assessment of quality of processed organic food products consists of three main phases: 1) establishing the context, 2) assessment and 3) overall evaluation. While the main aim was to benchmark an existing processing method, an alternative processing method and raw materials.

Moreover, experimental studies were carried out on the (organic) quality of processed apple juice and puree (by P9). More laboratory and pilot-plant studies were carried out on the 'Impact of processing conditions on apple puree qualities' (by P12). Hereby the focus was on understanding how F&V, with their variability and heterogeneity, interact with unit operations to build the quality of processed F&V products.

WP4	<i>Assessment framework</i>
<p>WP leader: P10 (Ursula Kretzschmar, FiBL) Responsible partners: P1 (Fiorella Sinesio/Flavio Paoletti, CREA), P4 (Lilia Ahrné, KU), P5 (Ruud Verkerk, WUR), P8 (Alex Beck, AöL), P13 (Rodolphe Vidal, ITAB), P14 (Dora Drexler, ÖMKi)</p>	
<p>Overall summary of main results, discussion and conclusions of WP1 The objective of this WP was to develop a multi-dimensional Assessment Framework for organic food processing providing guidance on how to assess organic food quality as affected by contentious substances and processing technologies as well as by alternatives to them. First, it was important to get a common understanding on the terms, definitions and aims of the Assessment Framework. Therefore, the technical working group (WG1) together with WP2 and WP3 was constituted. A draft of the Assessment Framework was established. The draft assessment framework was the basis for the use in the case studies (WP3). Based on the experiences of the case studies the Assessment Framework was improved and published in December 2021 (https://www.proorgproject.com/files/ugd/88a346_72d47789193346a1ba42b030b46f39e7.pdf). In addition, an internet-based tool for a practical and guided application of the assessment framework was developed and supported by an instruction video. The internet-based tool will be available for free until spring 2022.</p>	
<p>Report on the results obtained (A), and fulfilment of objectives (B) comparing to the original project proposal</p> <p>A- results obtained and structured in relation to the user groups they are relevant for:</p> <ol style="list-style-type: none"> 1. Establishing the technical working group (WG1), cooperating with WP2 and 3 with the goal to get a common understanding of the situation and background in organic processing. Having meetings in Frankfurt (Sep 2018), Paris (Dec. 2018) and Wageningen (March 2019). 2. Presentation and discussion of the draft “Assessment Framework” at the meetings of the technical working group in Paris (Dec. 2018) and Wageningen (March 2019). Discussions about terms and definitions and understanding of the first draft of the assessment framework 3. Continuous development of the “Assessment Framework” for organic processing in close cooperation with WP2 (spring 2019). 4. Since the framework describes complex relationships, it was described using an example. Furthermore, a simplified version was created, and the process was condensed into a simplified version on slides. 5. Parallel to the work on the Assessment Framework continuous feedback to the “Management Guideline” (https://www.proorgproject.com/codeofpractice) for organic processing elaborated by WP2 for organic processing (2018) was provided. 6. Feedback to WP2 for the development of a Discussion Paper on “Assessment criteria for processing technologies based on EU Regulation 2018/848” (https://www.proorgproject.com/_files/ugd/88a346_383cf63303a8494d974b3f8bee130536.pdf) 7. Draft Assessment Framework for the use in the case studies (2019) 8. Improvement of the Assessment Framework based on the results of the case studies (2020-2021) (https://www.proorgproject.com/files/ugd/88a346_5b2635f1f2a2471f9659ef82c664c559.pdf; https://www.proorgproject.com/files/ugd/88a346_4cbff882802a410b8b8676371a8c4376.pdf; https://www.proorgproject.com/files/ugd/88a346_164d01772fb8466baf16c2dc975c57cf.pdf). 9. Publication of the final Assessment Framework in 2021 https://www.proorgproject.com/files/ugd/88a346_72d47789193346a1ba42b030b46f39e7.pdf 	

10. In addition to the project goals and as a follow-up of the project: development of an internet-based tool for a practical and guided application of the assessment framework supported by an instruction video. This will be published in Spring 2022
11. Publication of the Assessment Framework by different dissemination activities (2021-2022) (see Section 4 of the report)

B- fulfilment of objectives:

Deviation from the original plan was due to the restrictions imposed by Covid-19 pandemic.

The Assessment Framework was successfully developed and published. It gives a good guidance for the holistic evaluation and comparison of processing technologies. In addition to the project goals an internet-based tool for a practical and guided application of the Assessment Framework was developed and supported by an instruction video. The internet-based tool will be available for free from spring 2022.

WP5	<i>B2B market survey</i>
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WP leader: P10 (Toralf Richter, FiBL)

Responsible partners: P1 (Fiorella Sinesio/Flavio Paoletti, CREA), P3 (Roberto Pinton, Assobio), P7 (Carola Strassner, FH-MU), P9 (Ewa Rembialkowska, WULS)

Overall summary of main results, discussion and conclusions of WP1

The objective of WP5 was to gather market information on the general trends of organic food market (https://www.proorgproject.com/files/ugd/88a346_e6a0f70dee39428c8dd1ba39f5f86fb3.pdf) and the role of different processing technologies and processed food quality categories for the future organic market development. The findings of the market surveys contributed to the development of appropriate processing categories / criteria - of processors and to the consideration of market actors about potential benefits and harms of each type of food processing.

The literature review (<https://orgprints.org/id/eprint/43434/>) revealed, that organic foods in the market cover all categories including very highly processed foods categories. Given the growing attention paid to food processing, the organic sector needs to address the integration of organic specifications into existing food classification systems or to develop a new classification, building on the organic principles and perspective as a guiding framework.

The Organic Market and Stakeholder Survey (https://www.proorgproject.com/files/ugd/88a346_544aa78fea504be7a56f7a3ef08a08cd.pdf)

revealed that two thirds of all respondents would welcome a Code of Practice for organic food processors. Besides, the results suggest that preserving relevant quality properties is very important as selection criterion for evaluating a food processing method but varies according to food categories. In particular, the results suggest that the maintenance of a high nutritional value is more important, while the influence on the sensory quality seems to be slightly less important for the choice of a processing technology. Preserving quality attributes such as vitamin content, mineral substances, or sensory properties is more important for staple food, which are regularly consumed, compared to luxury and convenience food.

The most accepted technologies for organic food processing to enhance the shelf-life of products are in the order of acceptance: drying, pasteurization, deep freezing, freeze-drying, microfiltration, high temperature pasteurization, sterilization, bacto-fugation, reverse osmosis, Ultra-High Temperature (UHT), and High-Pressure Processing (HPP). Cold plasma treatment and irradiation are the least accepted.

Report on the results obtained (A), and fulfilment of objectives (B) comparing to the original project proposal

A- results obtained and structured in relation to the user groups they are relevant for:

Market data analysis (https://www.proorgproject.com/files/ugd/88a346_e6a0f70dee39428c8dd1ba39f5f86fb3.pdf) has failed to differentiate between processed foods effectively or at all, but overall, it underlines the growth in processed organic foods entering the market year on year. Trends in the data suggest an increase in very highly processed organic foods. This development needs to be referred to the overall guiding principles for organic food and farming and addressed by the sector. Communication of processing-related aspects of organic products as studied in producer websites, company video material and product packaging show little differentiation from that of non-organic products. Herein may lie a chance for better promotion of organic foods if unique organic processing attributes can be distinguished.

An Organic Market and Stakeholder Survey (OMSS) was conducted between February and April 2021 (https://www.proorgproject.com/files/ugd/88a346_544aa78fea504be7a56f7a3ef08a08cd.pdf). Market actors and stakeholders were surveyed based on a standardized questionnaire and targeted to reach 1,000 business email addresses of organic stakeholders all over Europe with an expected response rate of at least 25%. The questionnaire consisted of 20 questions and covered, among others, the importance of quality aspects in the selection of processing technologies, the acceptance of quality changes in organic food processing, and the acceptance and rejection of potential technologies for organic processing. A total of 310 stakeholders took part in the online OMSS. Descriptive statistical methods have been used, such as frequency measurement and mean measurement. To compare means or frequencies between the whole sample and the participating group of processors, cross tabulation has been applied. A central question was whether a Code of Practice (CoP) is welcomed among organic stakeholders including representatives of the organic food processing industry. According to the results of the survey two thirds of all respondents would welcome a CoP for organic food processors.

The method of food processing can affect 1) the taste and 2) the nutritional content of the food. It also can have an impact on 3) the environment (e.g., water and energy consumption, CO₂ emissions, etc.). Hence, the authors of the study wanted to gain insights on how important the three aspects are in the decision-making process whether a given method can be considered suitable for organic food processing or not.

The results indicate that the relative importance of all aspects of quality is high but varies between food categories. In general, maintaining a high nutritional value is more important, while the influence on the sensory quality seems to be slightly less important for the choice of a processing technology. The relative importance varied between the food categories tested (food in general, staple foods, convenience foods, luxury foods), with the queried quality aspects being more important for staple foods for daily consumption than for luxury and convenience foods.

Further, respondents were asked to decide whether food can still be considered as "organically processed" if sensory quality, mineral content, nutritional value, and environmental impact have influenced due to the application of a certain method of food processing. In general, respondents do not accept a large variation in mineral content. In contrast, a variation in vitamin content following the processing steps seems to be rather accepted by the respondents. By comparing the different product groups, respondents accept a lower degree of change in quality characteristics for staple foods than for luxury foods and convenience foods. In contrast, the kind of product doesn't matter with regard to ecological consequences through the choice of a processing method. To avoid negative ecological impacts of organic food processing seems to be of high importance in the choice of the suitable technology.

Besides, survey respondents were asked to indicate how suitable the different technologies are with the aim of (a) extending the shelf life of food and (b) improving the product use or preserving the product quality. Regarding (a), the most accepted technologies in the order of acceptance are drying, pasteurization, deep freezing, freeze drying, microfiltration, high temperature pasteurization, sterilization, bactofugation, reverse osmosis, Ultra-High Temperature (UHT), and High Pressure Processing (HPP). Cold plasma treatment and irradiation are the least accepted. Regarding (b), the order of acceptance was as follows: cutting, peeling, washing (fruits, vegetables), pressing (fruits, vegetables), fermentation to maintain product quality, and milling to process grains. Moreover, puffing for processing cereals, the homogenization of milk, the HPP treatment for milk or fruit juices or the extruding processes are rather

accepted, although less than the previously listed methods. The technology that was by far the least accepted is the use of microwave irradiation, e.g., for thawing meat and fish. It can be concluded that the type of technology used is important for organic market players and stakeholders. A CoP is highly welcomed by the stakeholders, and the technologies, which have only a minor impact on the quality parameters of food and the environment are clearly preferred by stakeholders in the organic sector, particularly in the processing of staple food.

B- fulfilment of objectives:

Deviations from the original plan were due to the delayed start of the Market and Stakeholder Survey and the restrictions imposed by Covid-19 pandemic. The objectives were fulfilled.

WP6	<i>Consumer acceptance, preferences and communication</i>
WP leader: P6, P15 (Katrin Zander, Thuenen Institut/Uni-Kassel)	
Responsible partners: P1 (Fiorella Sinesio/Flavio Paoletti, CREA), P2 (Raffaele Zanolli, UNIVPM), P7 (Carola Strassner, FH-MU), P10 (Toralf Richter, FiBL)	
Overall summary of main results, discussion and conclusions of WP6	
<p>In this work package, consumer acceptance, preferences, and communication regarding processed organic food and careful processing have been looked at from different perspectives. Consumers have different preferences and understandings concerning processed organic food and know little about (organic) food processing. They demand transparent information and want to know the benefits of a (new) technology but not the details of processing. However, processing indirectly plays an important role in consumers' behaviour in that it affects the product attributes taste, freshness, and shelf-life, which are important to consumers. Information about the benefits of a new (milk) processing technologies in terms of shelf-life, taste, and nutritional value can lead to a significant shift in preferences in favour of the new method. Looking at specific product attributes, the type of product and its processing level, information on processing influences consumers' perception of "organic food" and their purchase intention. Products with medium to low processing levels and positive information on processing expressed clearly in a few words or via an understandable logo are stronger associated with organic food than high processing levels, neutral or no written information.</p> <p>Regarding "careful processing", the understanding of consumers is closely related to organic processing and has many meanings, e.g., respectfulness, eco-friendliness, naturalness, and a higher content in nutrients. In communication with consumers, the expression "carefully processed" often induces high and sometimes unrealistic expectations. Accordingly, communication should rather focus on tangible benefits for consumers like the preservation of a food's natural taste and nutritional content. For processors, defining and complying to "careful processing" can help to develop a more holistic approach to organic processing.</p> <p>Raising the level of consumer awareness and knowledge of organic processing might be a way to introduce less processed and more natural food products successfully in the food market. As transparency plays an important role for organic consumers, not only food processors but also the organic sector in general should take a leading position in transparent consumer communication and communicate the benefits of processing technologies for consumers as part of a sustainable value chain. This could lead to a further positive differentiation and positioning of organic processed food compared to conventional food and thus, to an increase the in demand for organic food in the long run.</p> <p>Guidelines for consumer communication were developed based on the results of the activities in this work package, on scientific literature and the support of WP2 (https://www.proorgproject.com/files/ugd/88a346_cf27fc4976c845f78655d084f565d049.pdf)</p>	

Report on the results obtained (A), and fulfilment of objectives (B) comparing to the original project proposal

A- results obtained and structured in relation to the user groups they are relevant for:

WP 6.1 Focus Group Discussions

Eight focus groups with 9 to 11 participants were held in person in Hamburg and Berlin (Germany) and in Bern (Switzerland). Processed foods were associated with concepts like additives, artificial flavours, preservatives, E-codes, and chemicals, often negatively connotated. Participants mentioned a general uncertainty concerning processed foods and aspects related to it: origin of ingredients, packaging, or CO₂ footprint. Processing technologies were only mentioned at the side. Advantages were processed products being time saving, convenient, easy to portion, and enable consumption of a non-seasonal variety of goods. These positive aspects also held true for most participants for processed *organic* products. They expected organically produced ingredients, no additives, artificial flavours or preservatives, and as little ingredients and processing steps as possible.

Two groups of consumers emerged from the discussion: the “organic traditionalists” and the “organic pragmatics”. Concluding, consumers want to know the benefits of a (new) technology but not the details of processing. Organic food processors should hence follow a holistic approach to organic processing, taking consumers’ values into account in order to prevent disappointment of consumers’ expectations of organic processing. Not only food processors, but also the organic sector in general could benefit from taking a leading position in transparent consumer communication.

<https://www.mdpi.com/2304-8158/10/6/1212>

WP 6.2. Assess consumer acceptance and preferences in a quantitative research step

An online survey, combined with a choice experiment, was chosen as a quantitative survey method to collect primary data from a defined study population. The underlying population of the study (1287 consumers, balanced quotas for gender and age categories) was defined as follows: participants of 18 to 75 yrs., not working in food production, processing, or trade, market research, or marketing, and living in Germany or German-speaking Switzerland.

The survey was aimed (1) to investigate organic consumers’ acceptance of processing methods for organic food and (2) to examine if careful processing may be – from the perspective of organic consumers – a suitable concept to assess the adequacy of processing methods for organic food. Milk was chosen as sample product in this study.

Processing indirectly plays an important role in consumers’ milk choice behaviour in that it affects the product attributes taste, freshness, and shelf-life, which are important to consumers. The more consumers buy organic food, the more they pay attention to processing and the less they place emphasis on long shelf-life. Information about the benefits of a new milk processing technology in terms of shelf-life, taste, and nutritional value can lead to a significant shift in preferences in favour of the new method.

Carefully processed food is perceived as having a higher content in nutrients and as being more natural. Frequent organic consumers have higher expectations towards careful processing and consider it as more important than less frequent organic consumers. The concepts of careful processing and organic processing seem to match very well. For both concepts the maintenance of nutrients, of naturalness and low product stress are important aspects. In communication with consumers, the expression “carefully processed” might give rise to overly high expectations. Accordingly, communication should rather focus on tangible benefits for consumers like the preservation of a food’s natural taste and nutritional content.

https://www.proorgproject.com/files/ugd/88a346_fb91cbe28f5d42db8317cf49d2a75795.pdf

WP 6.3. Analysis of the role of cognition and emotions in decision making for careful processed organic food.

Results first part

Four hundred-thirty-nine Italian consumers of processed organic foods responsible or cooperating in food purchases were involved in a on-line quantitative survey (1) to Investigate their views on criteria to be

claimed for organic processed foods and information that should be communicated on the packaging, (2) to explore the relative importance (utilities) of a set of products characteristics on consumer perception (personal concept of organic food and intention to purchase) by a Conjoint analysis model. Selections criteria for participation were to be within the family and being users of the products or not rejecting the products. There were quotas for gender (50% F, M), age (50% 25-49 yrs. and 50-75 yrs.) and geographic distribution (North, Central, South Italy and Islands).

For all respondents, the most important criteria that processed organic products should entail were no use of chemicals and respect for the environment. For most respondents, information on processing should be communicated via a written information label on the packaging and via a symbol or logo. "Careful processing" of organic products was mostly associated with the terms respectful, eco-friendly, and natural. A conjoint analysis study including examples of a ultra-processed, multi-ingredient organic product (vegetable burger), processed product (peas in glass jar), minimally processed product (bagged salad) revealed that peas in glass jar was the product that best conveyed the idea of "organic product" to consumers. The vegetable burger had a negative influence on consumers' association with an organic product. For "packaging" and "processing" a positive synthetic message had a positive impact, compared to a negative impact of a neutral informative message and the absence of a message. A simple and honest descriptive message that informs about the environmentally friendly materials used for packaging or about some process steps having a low impact on the environment had a more positive impact on the perception of organic.

https://www.proorgproject.com/files/ugd/88a346_dca326d04e9648bda9ca76fbf80d5d6e.pdf

Proposing a working definition of "careful processing" for organic products

Results second part

The main objective of this activity was to propose a working definition of "careful processing" for organic products and test its consistency through an experiment, while being used to rate different processing methods by consumers.

A working definition for "careful processing" was developed with the help of ProOrg partners, based on previous research and with the principles of organic production (EU Reg. 2018/848):

"Careful processing refers to methods that aim to:

- (a) preserve the nutritional and sensory quality of raw materials from organic farming by limiting the use of additives,
- (b) minimize the risks for consumer and worker health while promoting fair supply-chains, and
- (c) limit the impact on the environment by (i) reducing the use of water and energy, (ii) optimizing waste management, and (iii) promoting recyclable / reusable packaging.

The classification task of processing methods (thermal: pasteurization, Ultra-High Temperature - UHT, microwave; non-thermal: modified atmosphere, pulsed electric fields, high-pressure preservation - HPP, edible coating, active packaging) measured with two communication schemes for "careful processing" (monochromatic bar scale vs. colour bar scale) showed that regardless of which communication scheme was used, the carefulness score for each technology was not significantly different. Comparing the carefulness scores of the different processing technologies and taking pasteurization as a reference technology, microwave processing and pulsed electric fields were perceived significantly less careful than pasteurization. HPP and UHT did not show statistically significant different careful levels compared to pasteurization. These results suggest that the working definition of "careful processing" allowed the consumer to consistently rate the studied alternative processing technologies.

<https://www.mdpi.com/2072-6643/13/9/2922>

WP 6.4. Understanding of food processing quality by experts and consumers

The processors discussed the impact of the EU organic regulations on their work and their perception of organic product and process quality. In general, their understandings of organic processing quality seem to go beyond the EU regulations in terms of sustainability and included modern technology as well as traditional processing and human contact as important factors for high processing quality. Transferring

information about food processing was described as challenging due to the consumers' low food technology literacy and does in some cases limit the techniques in use.

The consumers expressed difficulties in assessing processing quality. During the discussion about food processing, the participants showed high expectations of organic food products and a general mistrust in the food sector. In general, the participants accepted variances of the raw material and preferred fewer processing steps. The consumers were interested in learning more about food processing, and difficulties in consumer communication might be reduced by raising the level of consumers' food technology literacy. As learning material, some preferred videos, others textual information, some spoke in favour of visits at production and processing places. Greater knowledge of food processing could enable consumers to make purchasing decisions which are more in line with their needs. Processors would have the chance to establish a greater variance of differently processed food products on the market. Processors can be engaged in this educational process, for example with guided tours through their facilities.

Overall, these results are particularly relevant for processors of organic food, but also for processors who are in the process of converting from conventional to organic or who want to process organic food in the future. Also, organic associations and standard setting institutions can benefit from the results.

B- fulfilment of objectives:

Due to shortage in staff, there was a delay in W6.1 and WP6.2.

Delays in other activities in this WP were due to the restriction imposed by Covid-19 pandemic and the need to shift to online methods.

Objectives were achieved.

Guidelines for consumer communication were developed
https://www.proorgproject.com/files/ugd/88a346_cf27fc4976c845f78655d084f565d049.pdf)

WP7	<i>Dissemination/Implementation</i>
WP leader: P11 (Christophe Cotillon, ACTIA)	
Responsible partners: all the partners	
Overall summary of main results, discussion and conclusions of WP1	
<p>WP7 acted as the main interface between the project and the outside world concerned directly and indirectly by the project and its outcomes. A Dissemination and Communication Plan was developed (https://www.proorgproject.com/files/ugd/88a346_aaeef7b632f44a380568703631b60c1.pdf) in which the target groups and the dissemination tools were identified and described.</p> <p>The WP7 activity consisted mainly in the communication and promotion of the guidelines and tools developed in ProOrg, as well as the scientific results and other outcomes.</p>	
Report on the results obtained (A), and fulfilment of objectives (B) comparing to the original project proposal	
A- results obtained and structured in relation to the user groups they are relevant for:	
As a reminder expected results and target groups identified at the beginning of the project have been synthesized in the table below.	
Expected results to communicate	Target groups for dissemination
Management Guidelines for organic food processors	organic food processors other food chain members labelling organizations retailers

Assessment Framework	organic food processors other food chain members labelling organizations retailers research institutes, university, academia
Communication strategies and tools for organic food technologies	organic food processors other food chain members labelling organizations, retailers consumers, consumer organizations research institutes, university, academia

1) **Dissemination tools**

a) Contribution to the CORE Organic Cofund Newsletter – Six contributions to the CORE Organic Cofund Newsletter have been produced. More information can be found in following section 4.2.

b) Web activities: Project website available and updated (<https://www.proorgproject.com>)

c) Presentations at CO research seminars

Presentation of ProOrg project during a “science bazar” during kick-off CORE Organic Cofund Research Seminar held at CIHEAM-Mediterranean Agronomic Institute of Bari (Italy) on 29 January 2019.

d) Seminars/workshops

In the objective to discuss with organic food processors about drivers and barriers to organic food processing several workshops have been organized in collaboration with the partners (https://www.proorgproject.com/files/ugd/88a346_05c8218a9d5448318538f40f9196ecd2.pdf)

Due to the COVID-19 pandemic, many seminars, and workshops since February 2020, have been organized remotely.

e) Printed material (brochure, leaflets, etc.)

A ProOrg flyer/leaflet translated in all participating Countries languages <https://www.proorgproject.com/> has been set up as well as a PowerPoint presentation has been made to present the project.

f) Social media

<https://www.facebook.com/CORE-Organic-333056647099432>

https://twitter.com/CORE_Organic

g) Other dissemination activities

A Pro Org project page was set up on the platform Organic E-prints (<http://orgprints.org/34104/>) to upload publications, posters, abstracts on the Organic E-prints platform.

2) **Expected results**

The expected results have been mainly communicated and promoted on the ProOrg website through two different channels: “Publications” on one side and “News” in another side.

For the “Publications”, we can consider the peer-reviewed journals, the participation in congresses as well as the participation in workshops and Other.

These publications are listed in the ProOrg website in the rubric “Publications” divided in the 3 categories mentioned above: <https://www.proorgproject.com> **For the “News”**, due to the COVID 19 crisis, the promotion of the tools has been made mainly virtually. The main events where the expected results have been communicated and promoted are listed in the Pro Org website in the rubrics “News”. <https://www.proorgproject.com/news>

This promotion will continue after the end of the project through publications produced by the ProOrg partners and events (virtual and physical). The ProOrg internet website will be continuing to be updated after the end of the project (minimum 1 year).

A special effort will be done towards retailers that were not easy to contact and mobilize during the project lifetime.

Major part of these “Publications” and “News” have been introduced in Organic e-prints.

B- fulfilment of objectives:

We can consider that all the objectives mentioned in the initial Description of Work have been reached and accomplished without any special delay. Due to the COVID 19 crisis many physical events have been substituted by virtual events.

3.2 Deliverables and milestones status

Deliverable No.	Deliverable name	Link to the document ²⁾	Planned delivery month ¹⁾	Actual delivery month ¹⁾	Reasons for changes/delay and explanation of consequences in case of delay, if any
D1.1	Kick-off meeting minutes		1	1	
D1.2	Consortium agreement		1	7	The delay was due to the need to meet the requirements of the Administration Office of the different institutions/organizations involved in the project and find agreed solutions. The delay did not have any consequence on the project whose activities started regularly.
D1.3	Terms of Reference for the Advisory Board		2	2	
D7.1	Communication material		6	6	
D3.1	Report on case study design & selection SMEs	https://www.proorgproject.com/files/ugd/88a346_e52a6d978c5346f1b17a159fd1d8127d.pdf	11	11	
D6.1	Report on the outcome	https://14cec8e9-56db-4df2-a786-	12	15	Shortage in staff. Consequences on D6.2

	of the Focus Group Discussions	008b536adeba.filesusr.com/ugd/88a346_5ae6c6afa621479bb71a906abf5e277e.pdf			
D6.2	Scientific paper prepared on outcomes of FG discussion	https://www.mdpi.com/2304-8158/10/6/1212	12	34	The delay in M6.1 and D6.1. caused a delay also in the preparation of the scientific paper
D7.2	List of workshops/ Demo days	https://www.proorproject.com/activities	12	12	
D1.4	Annual report	https://14cec8e9-56db-4df2-a786-008b536adeba.filesusr.com/ugd/88a346_c9104fa3ac0f499b9463f17bc3bd29d2.pdf	12	12	
D4.1	Draft assessment framework	https://orgprints.org/id/eprint/43396/	15	20	The delay was due to the need of more discussions than planned to get a common understanding within the group. The delay had consequences on D4.2
D5.1	Report on literature review of market research	https://orgprints.org/id/eprint/43434/	16	32	The delay was due to a longer reflection within the project team about scope of the review and interpretation of the results
D1.5	First project meeting		16	17	
D2.1	Draft of the Code of Practice		16	16	
D1.6	Mid-term report	https://www.proorproject.com/files/ugd/88a346_028a7a8c66764badb2690b804f7d9d8e.pdf	18	18	
D5.2	Report on results of the market survey	https://orgprints.org/id/eprint/43537/	20	36	The delay was due to the delayed start of the Market and Stakeholder Survey

D5.3	Recommendations from market perspective for the development of the CoP	https://orgprints.org/id/eprint/43607	22	38	The delay was due to the delayed start of the Market and Stakeholder Survey
D5.4	Scientific paper/s prepared	Scientific papers will be published in 2022. See Section 4.5 of this report	23	42	The delay was due to the delayed start of the Market and Stakeholder Survey
D3.2	Report Case Study	https://www.proorgproject.com/files/ugd/88a346_5b2635f1f2a2471f9659ef82c664c559.pdf	24	24	
D4.2	Summary report of feedback on assessment framework from stakeholders taking part in the case studies		24	35	The delay was due to the delayed start of the case studies in WP3
D6.3	Report on quantitative research step including Choice Experiments	https://www.proorgproject.com/files/ugd/88a346_0539f97275bd40c19c695590cd2647c3.pdf	24	34	The delay was due to the restrictions imposed by Covid-19 pandemic. This affected D6.4
D6.4	Scientific paper/s prepared on result of the quantitative research	Scientific paper will be published in 2022	24	42	See D6.3
D7.3	Report on communication and dissemination activities		24	30	Communication and dissemination activities were strongly affected by the restrictions imposed by Covid-19 pandemic
D1.7	Second project meeting		24	25	
D1.8	Annual report	https://www.proorgproject.com/news	24	25	

D1.9	Technical papers prepared in different languages for consumers/processors/retailers	https://14cec8e9-56db-4df2-a786-008b536adeba.files.usr.com/ugd/88a346_383cf63303a8494d974b3f8bee130536.pdf https://www.proorgproject.com/files/ugd/88a346_606107f9bad3445c867a0156ae2dc2c7.pdf https://www.proorgproject.com/files/ugd/88a346_4d55393110f84a87bf9919eb326cedb4.pdf https://www.proorgproject.com/files/ugd/88a346_75ac262ac9844f42bbd0d12d5ac225b7.pdf	26	34	See D4.1 and D4.2
D3.3	Summary report on experiments in case studies	https://www.proorgproject.com/files/ugd/88a346_5b2635f1f2a2471f9659ef82c664c559.pdf https://organic-farmknowledge.org/tool/39892 ; https://organic-farmknowledge.org/tool/39889	30	33	The delay was due to the restrictions imposed by Covid-19 pandemic. This affected D3.5, D4.3 and D4.4
D3.4	Scientific paper/s prepared on experiment & scenario analyses	https://doi.org/10.1111/ijfs.14858 https://www.proorgproject.com/files/ugd/88a346_32e1a1bb4a16496a879c4c694984dc40.pdf See Section 4.5 of the report	32	37	The delay was due to the restrictions imposed by Covid-19 pandemic
D6.5	Report on the role of	https://www.proorgproject.com/files	32	38	The delay was due to the restrictions

	cognition and emotions	/ugd/88a346_dca326d04e9648bda9ca76fbf80d5d6e.pdf			imposed by Covid-19 pandemic. This affected D6.6
D6.6	Scientific paper/s prepared on the role of cognition and emotions	https://doi.org/10.3390/nu13092922	32	40	See D6.5
D4.3	Final assessment framework	https://www.proorgproject.com/_files/ugd/88a346_72d47789193346a1ba42b030b46f39e7.pdf	33	39	See D4.2 and D3.3
D4.4	Scientific paper/s prepared	Scientific paper will be published in 2022	33	42	See D3.3
D6.7	Draft of scientific paper on Focus Group discussions	Draft will be published in 2022	33	40	The delay was due to the restrictions imposed by Covid-19 pandemic
D6.8	Scientific papers prepared on quality understanding of processors and consumers	Scientific papers will be published in 2022	33	42	The delay was due to the restrictions imposed by Covid-19 pandemic
D3.5	Report recommendations for final version of CoP	https://www.proorgproject.com/copie-de-participation-in-congress-	33	37	See D3.3
D6.9	Summarising report on acceptance of different technologies and recommendations for communication strategies	https://www.proorgproject.com/_files/ugd/88a346_0539f97275bd40c19c695590cd2647c3.pdf	33	42	The delay was due to the restrictions imposed by Covid-19 pandemic that caused a delay in most of the activities in WP6

D2.2	Code of Practice	https://www.proorgproject.com/codeofpractice	34	42	The delay was due to the restrictions imposed by Covid-19 pandemic
D1.10	Third project meeting		35	37	
D7.4	Final report on communication and dissemination activities		36	42	The delay was due to the restrictions imposed by Covid-19 pandemic
D1.11	Final report		36	42	The delay was due to the restrictions imposed by Covid-19 pandemic. The end date of ProOrg project was postponed of 6 months from 30 April 2021 to 1 November 2021

- 1) Measured in months from the project start date (month 1)
- 2) E.g. documents as orgprints.org/33121 or other types of deliverable (e.g. APPs or devices)

Milestone No.	Milestone name	Planned delivery month ³⁾	Actual delivery month ³⁾	Reasons for changes/delay and explanation of consequences, if any.
M1.1	Kick-off meeting	1	1	
M1.2	Consortium agreement signed	2	7	The delay was due to the need to meet the requirements of the Administration Office of the different institutions/organizations involved in the project and to find agreed solutions. The delay did not have any consequence on the project whose activities started regularly.
M4.1	Compilation of product- and process-oriented aspects of organic food quality to be integrated in the assessment framework	5	5	
M3.1	Selection of SMEs/technologies/products	10	10	

M4.2	Compilation of indicators, parameters, methods and thresholds	10	10	
M6.1	Focus group conducted	9	11	Shortage in staff caused a delay in M6.1 with consequences on M6.2
M2.1	Draft of the Code of Practice	16	16	
M1.3	Mid-term report	18	18	
M4.3	Draft assessment framework	15	20	The delay was due to the need of more discussions than planned to get a common understanding within the group.
M6.2	Choice experiments conducted	20	24	See M6.1
M3.2	Compilation case studies 'in situ' with SMEs	24	24	
M5.1	Literature overview available about market information on processed organic food	16	31	The delay was due to a longer reflection within the project team about scope of the review and interpretation of the results
M5.2	Overview about the market actor's acceptance and preferences on processing technologies in organic food production available	20	33	The delay was due to the delayed start of the Market and Stakeholder Survey
M4.4	Compiled summary of feedback on assessment framework from stakeholders taking part in the case studies	24	35	The delay was due to the restrictions imposed by Covid-19 pandemic with consequences on M4.5
M6.3	Expert interviews	29	36	The delay was due to the restrictions imposed by Covid-19 pandemic
M6.4	Consumer cognitive consonance produced by additional information	30	36	The delay was due to the restrictions imposed by Covid-19 pandemic
M6.5	Role of emotions in moderating this cognitive consonance	30	36	The delay was due to the restrictions imposed by Covid-19 pandemic
M3.3	Working doc Experiment & Scenario Analyses	30	37	The delay was due to the restrictions imposed by Covid-19 pandemic

M3.4	Report recommendations for next version of CoP	33	38	The delay was due to the restrictions imposed by Covid-19 pandemic
M4.5	Final assessment framework	33	39	See M4.4
M6.6	Focus group discussions	33	41	The delay was due to the restrictions imposed by Covid-19 pandemic
M2.2	Final Guidelines	34	42	The delay was due to the restrictions imposed by Covid-19 pandemic
M1.4	Final report	36	42	The delay was due to the restrictions imposed by Covid-19 pandemic. The end date of the project was postponed of 6 months from 30 April 2021 to 1 November 2021

3) Measured in months from the project start date (month 1)

4. Publications and dissemination activities

4.1 List extracted from Organic Eprints

List extracted on 1 February 2022

{Project} Pro Org: *Code of Practice for organic food processing*. Runs 2018 - 2021. Project Leader(s): Paoletti, Dr Flavio, CREA.

{Project} Pro Org: *Code of Practice for organic food processing*. Runs 2018 - 2021. Project Leader(s): Paoletti, Dr Flavio, CREA.

Nordlund Othén, Janne and Ullvén, Karin (Eds.) (2015) Swedish Research on Organic Food and Farming 2008–2018 – Updated version november 2018. SLU, EPOK – Centre for Organic Food and Farming, Uppsala, Sweden.

Ministerstvo zemědělství ČR (Ed.) (2019) Ročenka ekologické zemědělství v České republice 2018. [Yearbook Organic Farming in the Czech Republic 2018.] Ministerstvo zemědělství ČR, Praha, CZ.

Borghoff, Lisa and Strassner, Carola (2019) How do food producers communicate producing methods to consumers? Results of field research in different German supermarkets and analysis of online communication of various producers. Poster at: 33rd EFOST International Conference Sustainable Food Systems - Performing by Connecting, Rotterdam, The Netherlands, 12-14 November 2019.

Piccione, Gaetano (2019) Incontro fra ricercatori e consumatori per aumentare la consapevolezza alimentare. FreshPlaza . Online at <https://www.freshplaza.it/article/9170648/incontro-fra-ricercatori-e-consumatori-per-aumentare-la-consapevolezza-alimentare/>, accessed on: 5 October 2021.

Borghoff, Lisa and Strassner, Carola (2019) Klassifikationssysteme für verarbeitete Lebensmittel: Ein Vergleich. [A Comparison of Classification systems for processed food.] In: Mühlrath, Daniel; Albrecht, Joana; Finckh, Maria R.; Hamm, Ulrich; Heß, Jürgen; Knierim, Ute and Möller, Detlev (Eds.) *Innovatives Denken für eine nachhaltige Land- und Ernährungswirtschaft. Beiträge zur 15. Wissenschaftstagung Ökologischer Landbau, Kassel, 5. bis 8. März 2019*, Verlag Dr. Köster, Berlin.

Hüppe, Ronja and Zander, Katrin (2019) Consumers' perceptions of organic food processing – first insights in milk and juice processing. In: *Perspektiven wertebasierter Wertschöpfungsketten*, pp. 45-46.

Hüppe, Ronja and Zander, Katrin (2019) Organic food processing: Discussing technologies with occasional organic consumers. Core Organic Cofund.

Borghoff, Lisa; Misztal, Karolina; Elsner, Friederike; Wójtowicz, Marta and Kowalski, Hubert (2019) Information about product quality on milk packages in Germany and Poland - A ProOrg Research Project. Poster at: 1st WeValueFood conference: Increasing engagement with next generation consumers, Warsaw, 3-4th December 2019.

Ministerstvo zemědělství ČR (Ed.) (2020) Ročenka ekologické zemědělství v České republice 2019. [Yearbook Organic Farming in the Czech Republic 2019.] Ministerstvo zemědělství ČR, Praha, CZ.

Ministerstvo zemědělství ČR (Ed.) (2020) Ročenka ekologické zemědělství v České republice 2019. [Yearbook Organic Farming in the Czech Republic 2019.] Ministerstvo zemědělství ČR, Praha.

{Tool} Processing apple purees under vacuum to limit the loss of health-promoting compounds (ProOrg Practice Abstract). Creator(s): Bureau, Sylvie and Le Bourvellec, Carine. Issuing Organisation(s): INRAE - National Research Institute for Agriculture, Food and the Environment. CORE Organic Practice Abstracts. (2020)

Grando, Stefano; Ollivier, Guillaume; Capolino, Elena; Trkulja, Ivana and Bellon, Stéphane (2020) CORE ORGANIC - 15 YEARS OF JOINT RESEARCH FOR ORGANIC FOOD AND FARMING SYSTEMS. CORE Organic 15-year activity report (2004-2019). CORE Organic Coordination of European Transnational Research in Organic Food and Farming Systems.

Kretschmar, Ursula and Bickel, Regula (2020) Welche Verfahren sind "biotauglich"? *alimenta*, 2020 (05), pp. 20-21.

Raffo, Antonio; Senatore, Massimo; Moneta, Elisabetta; Paoletti, Flavio; Peparai, Marina and Saggia Civitelli, Eleonora (2020) Impact of different temperature abuse scenarios on sensory quality and off-odour formation in ready-to-eat salad leaves. *International Journal of Food Science and Technology*, 2020, pp. 1-12.

{Tool} Evaluation of the processing method on the bioactive compounds level in the apple juice (ProOrg Practice Abstract). Creator(s): REMBIAŁKOWSKA, EWA; Hallman, E.; Kazimierczak, Renata; Srednicka-Tober, Dominika; Baranski, Marcin; Kaniewska-Skoczylas, A. and Misztal, Karolina. Issuing Organisation(s): Warsaw University of Life Sciences. CORE Organic Practice Abstracts. (2020)

Tittarelli, Fabio (2020) Food Citizenship in Capua – a joint event by Greenresilient and ProOrg projects. *Core Organic Cofund Newsletter*, February 2020, pp. 1-2.

Ebner, Caroline (2020) Handlungsempfehlungen zur Optimierung der "Management Guideline for Organic Food Processors" mittels Experteninterviews mit Verantwortlichen ökologisch orientierter

Lebensmittelverarbeitungsunternehmen aus Deutschland. Masters thesis, Fachhochschule Münster , Studiengang: Nachhaltige Dienstleistungs- und Ernährungswirtschaft. . [Completed]

Bickel, Regula and Meier, Matthias (2020) Careful, Gentle, Minimal: What are the principles of organic processing? Keynote presentation at: Biofach 2020, Nuremberg, Germany, 13/02/2020. [Completed]

Zander, Katrin; Hüppe, Ronja; Koch, Karlotta; Meier, Claudia; Stolz, Hanna and Borghoff, Lisa (2020) Careful, Gentle, Minimal - What are the principles of organic processing? Consumer perspectives. Keynote presentation at: BioFach 2020, Nuremberg, Germany, 13 February, 2020. [Completed]

Shirani Faradonbeh, Mohaddaseh (Sharon) (2020) Novel organic food processing regulations through interaction of SDGs and recommended healthy and sustainable dietary approaches for healthy and sustainable food systems. Masters thesis, University of Kassel, Department of Food and Agricultural Marketing, D-Witzenhausen . . [Submitted]

Tönnies, Leona (2020) Einfluss der ökologischen Rohproduktion von Tomaten auf ihre industrielle Weiterverarbeitung. [Influence of the organic raw production of tomatoes on their industrial processing.] Masters thesis, Fachhochschule Münster, Oecotrophologie - Facility Management. . [Submitted]

Uthe, Pia (2020) Anwendung und Evaluation eines Bewertungssystem-Prototyps zur Vergleichbarkeit technologischer Verarbeitungsverfahren von Bio-Lebensmittelverarbeitungsunternehmen anhand zweier Getreidevermahlungsverfahren eines Bio-Bäckereibetriebs. Masters thesis, ProOrg . . [Completed]

IFOAM, Organics International (Ed.) (2021) Book of Abstracts: Organic World Congress 2021. . Proceedings of Organic World Congress 2021, Rennes, France, September 8-10, 2020. [Completed]

Beck, Alexander; Kretzschmar, Ursula; Paoletti, Flavio and Vidal, Rodolphe (2021) Assessment Criteria for Processing Technologies Based on EU Regulation 2018/848. AöL e. V., CREA, FiBL, ITAB .

Beck, Alexander; Kretzschmar, Ursula; Paoletti, Flavio and Vidal, Rodolphe (2021) Beoordelingscriteria voor verwerkingstechnologieën op basis van de EU-verordening 2018/848. AöL e. V., CREA, FiBL, ITAB .

Beck, Alexander; Kretzschmar, Ursula; Paoletti, Flavio and Vidal, Rodolphe (2021) Bewertungskriterien für die Verarbeitungstechnologien auf Basis der EU-Verordnung 2018/848. AöL e. V., CREA, FiBL, ITAB .

Beck, Alexander; Kretzschmar, Ursula; Paoletti, Flavio and Vidal, Rodolphe (2021) Critères d'évaluation des procédés de transformation basés sur le règlement 2018/848 de l'UE. AöL e. V., CREA, FiBL, ITAB .

Beck, Alexander; Kretzschmar, Ursula; Paoletti, Flavio and Vidal, Rodolphe (2021) Criteri di valutazione dei processi di trasformazione basati sul Regolamento UE 848/2018. AöL e. V., CREA, FiBL, ITAB .

Beck, Alexander; Stumpner, Johanna; Borghoff, Lisa; Ebner, Caroline and Kretzschmar, Ursula (2021) Management guideline for organic food processors. Working paper, Assoziation ökologischer Lebensmittelhersteller (AöL) e.V.; Hochschule Münster, FiBL .

Borghoff, Lisa; Strassner, Carola and Richter, Toralf (2021) Organic Processed Food in Europe. ProOrg-Report. FH Münster, University of Applied Sciences, Food - Nutrition - Facilities, D-Münster .

Borghoff, Lisa M.; Elsner, Friederike; Horva, Andrijana; Misztal, Karolina; Saba, Anna and Saggia-Civitelli, Eleonora (2021) Information On Organic Milk Packaging In Countries With Different Level Of Organic Market Maturity – A Comparison Between Germany, The Netherlands, Italy And Poland. Paper at: Organic World

Congress 2021, Science Forum: 6th ISOFAR Conference co-organised with INRA, FiBL, Agroecology Europe, TP Organics and ITAB, Rennes, France, 8 - 10 September, 2021. [Completed]

Hansel, Eva; Borghoff, Lisa and Strassner, Carola (2021) Differences And Similarities In The Processing Of Organically And Non-Organically Produced (Semi)-Hard Cheese- Analysis Based On Expert Interviews With Artisanal Cheese Dairy Staff In The Münsterland Region In Germany. Paper at: Organic World Congress 2021, Science Forum: 6th ISOFAR Conference co-organised with INRA, FiBL, Agroecology Europe, TP Organics and ITAB, Rennes, France, 8 - 10 September, 2021. [Completed]

Hueppe, Ronja and Zander, Katrin (2021) Consumers' Perceptions Of Organic Food Processing – First Insights Into Milk And Juice Processing. Paper at: Organic World Congress 2021, Science Forum: 6th ISOFAR Conference co-organised with INRA, FiBL, Agroecology Europe, TP Organics and ITAB, Rennes, France, 8 - 10 September, 2021. [Completed]

Hüppe, Ronja and Zander, Katrin (2021) Erarbeitung eines Code of Practice (CoP) für die ökologische Lebensmittelverarbeitung (ProOrg). [Developing a Code of Practice (CoP) for organic food processing (ProOrg).] Universität Kassel, D-Kassel , Fachbereich 11 Ökologische Agrarwissenschaften - Fachgebiet Agrar- und Lebensmittelmarketing.

Kretschmar, Ursula (2021) Organic food processing, actual principles, new challenges and possible ways to go. Workshop at: Webinar SusOrgPlus, online, 15 April 2021. [Submitted]

CREA, Italy (Ed.) (2021) Oral presentations of ProOrg. . Proceedings of SANA 2021 - 33rd international exhibition of organic and natural products, Bologna, Italy, 09-12 September 2021. [Completed]

Kretschmar, Ursula; Uthe, Pia; Beck, Alexander; Meier, Matthias; Stumpner, Johanna and Bickel, Regula (2021) WP4. Asseement framework. Workshop at: SANA 2021 - 33rd international exhibition of organic and natural products, Bologna, Italy, 09-12 September 2021. [Completed]

Kummer, Susanne; Klingbacher, Elisabeth; Petrasek, Richard; Bartel-Kratochvil, Ruth; Eichinger, Anja; Lindenthal, Thomas; Kranzler, Andreas; Niggli, Urs; Stickler, Yvonne; Gahleitner, Gerhard; Spöck, Katharina and Drapela, Thomas (2021) Stärkung der biologischen Landwirtschaft in Österreich bis 2030. Projektbericht. Forschungsinstitut für biologischen Landbau FiBL, AT-Wien .

Richter, Toralf (2021) Results Of A European Market And Stakeholder Survey About Organic Processing Technologies. Paper at: Organic World Congress 2021, Science Forum: 6th ISOFAR Conference co-organised with INRA, FiBL, Agroecology Europe, TP Organics and ITAB, Rennes, France, 8 - 10 September, 2021. [Completed]

Richter, Toralf (2021) Results of a Market and Stakeholder Survey about Organic Processing Methods. Paper at: SANA 2021 - 33rd international exhibition of organic and natural products, Bologna, Italy, 09-12 September 2021. [Completed]

Zander, Katrin and Hüppe, Ronja (2021) Code of Practice for organic food processing - ProOrg Guidelines for Consumer Communication. .

Gawron, Paulina; Zanolì, Raffaele; Meier, Claudia and Beck, Alexander (2021) Code of Practice for organic processors – findings from the European project Pro Org. Workshop at: BioFach 2021, Nurnberg (done remotely), 18/02/2021.

Paoletti, Flavio (2021) CORE Organic Cofund Project: Code of Practice for organic food processing - ProOrg. Workshop at: BioFach 2021, Nurnberg (done remotely), 18/02/2021.

Kilic, Busra; Cubero Dudinskaya, Emilia; Proi, Migena and Naspetti, Simona (2021) Are They Careful Enough? Testing Consumers' Perception of Alternative Processing Technologies on the Quality of Organic Food. *Nutrients*, 13 (2922), pp. 1-11.

Rahmann, Gerold; Rey, Frédéric; Ardakani, M. Reza; AZIM, Khalid; CHABLE, Véronique; Heckendorn, Felix; Migliorini, Paola; Moeskops, Bram; Neuhoff, Daniel; Rembalkowska, Ewa; Shade, Jessica and Tchamitchian, Marc (Eds.) (2021) From its roots, organic inspires science, and vice versa. Book of Abstracts of the Science Forum at the Organic World Congress 2021. Johann Heinrich von Thünen-Institut, Braunschweig, Thünen Report, no. 88, pp. 1-236. Proceedings of Organic World Congress 2021, Rennes, France, September 8-10.

Borghoff, Lisa; Elsner, Friederike; Horvat, Andrijana; Misztal, Karolina; Saba, Anna and Saggia-Civitelli, Eleonora (2021) INFORMATION ON ORGANIC MILK PACKAGING IN COUNTRIES WITH DIFFERENT LEVELS OF ORGANIC MARKET MATURITY – A COMPARISON BETWEEN GERMANY, THE NETHERLANDS, ITALY AND POLAND. In: *From its roots, organic inspires science, and vice versa. Book of Abstracts of the Science Forum at the Organic World Congress 2021, September 8-10, 2021.*, Braunschweig, Thünen-Report, no. 88, p. 73.

Hüppe, Ronja and Zander, Katrin (2021) Erarbeitung eines Code of Practice (CoP) für die ökologische Lebensmittelverarbeitung (ProOrg). Abschlussbericht. Universität Kassel - Agrar- und Lebensmittelmarketing Steinstr. 19 - 37213 Witzenhausen , Witzenhausen.

Meier, Matthias; Bickel, Regula; Beck, Alexander and Stumpner, Johanna (2021) Assessment Framework for the Evaluation of Organic Food Processing. BFH-HAFL, CH-Zollikofen; FiBL, CH-Frick; AöL, D-Bad Brückenau .

Paoletti, Flavio and Raffo, Antonio (2022) Fresh-Cut Vegetables Processing: Environmental Sustainability and Food Safety Issues in a Comprehensive Perspective. *Front. Sustain. Food Syst.*, 14 January 2022, 5, pp. 1-16.

4.2 Stakeholders oriented articles in the CORE Organic newsletter

User groups: consumers, research institutes/universities/academia

<https://projects.au.dk/coreorganiccofund/news-and-events/show/artikel/consumer-preferences-for-milk-are-very-heterogeneous/>

User groups: processors of organic foods, consumers, research institutes/universities/academia

<https://projects.au.dk/coreorganiccofund/news-and-events/show/artikel/what-do-food-producers-tell-about-food-processing/>

<https://projects.au.dk/coreorganiccofund/news-and-events/show/artikel/careful-gentle-minimal-what-are-the-principles-of-organic-processing/>

<https://projects.au.dk/coreorganiccofund/news-and-events/show/artikel/organic-food-processing-discussing-technologies-with-occasional-organic-consumers/>

<https://www.orgprints.org/id/eprint/36566/1/index.html>

User groups: consumers

<https://projects.au.dk/coreorganiccofund/news-and-events/show/artikel/food-citizenship-in-capua-a-joint-event-by-greenresilient-and-proorg-projects/>

User groups: processors of organic foods, other food chain actors, retailers, organic labelling organizations, consumers, policy makers, research institutes/universities/academia

<https://projects.au.dk/coreorganiccofund/news-and-events/show/artikel/proorg-developing-a-code-of-practice-for-organic-food-processing/>

4.3. Practice abstracts

<https://organic-farmknowledge.org/tool/39892>

<https://organic-farmknowledge.org/tool/39889>

4.4 Other dissemination activities and material

A ProOrg flyer/leaflet translated in many languages has been compiled and used to present the project, its goals, and the consortium. The project flyer reflected the ideas and planned activities of the project for the first time and might be updated with information about significant outcomes and results in a second step. (www.proorgproject.com).

A project logo has been designed by a professional designer and has been agreed upon the partners. The logo has been designed to be easily recognizable and to be meaningful to technical people as well as the industry and general public.

A set of graphical templates (PowerPoint, Word) has been designed to ensure a professional level of quality in terms of design and presentation in all the project documents and communications.

Workshops organized aiming to discuss with organic food processors about drivers and barriers to organic food processing:

1. Paris (France), 13.12.2018 - *Responsible partner*: ITAB (Rodolphe Vidal), Wageningen Food & Biobased Research (Martijntje Vollebregt). Participants: 70 persons.
2. Fulda (Germany), 08.05.2019 - *Responsible partner*: AöL (Alex Beck), Wageningen Food & Biobased Research (Martijntje Vollebregt). Participants: 15 persons.
3. Uddel (Netherlands), 06.2019 - *Responsible partner*: Wageningen Food & Biobased Research (Martijntje Vollebregt). Participants: 17 persons.
4. Rogow (Poland), 25.06.2019 - *Responsible partner*: WULS (Ewa Rembalkowska), Wageningen Food & Biobased Research (Martijntje Vollebregt)

ProOrg Sessions organized at Biofach, Nurnberg, Germany:

- “Organic processing. Quo vadis”, on 14 February 2019 - *Responsible partner*: FiBL (Toralf Richter). Participants: AöL (Alex Beck), CREA (Flavio Paoletti), Università Politecnica delle Marche (Raffaele Zanolli)

- “Careful, gentle, minimal: What are the principles of organic processing?”, on 13 February 2020. Participants: AöL (Johanna Stumpner), Wageningen Food & Biobased Research (Martijntje Vollebregt), Thuenen Institut (Katrin Zander, Ronja Hüppe), FiBL (Regula Bickel, Matthias Meier, Hanna Stolz, Claudia Meier), Muenster University (Lisa Borghoff)
- “Code of Practice for organic food processors – findings from the European project ProOrg”, on 18 February 2021. Participants: AöL (Alex Beck), Warsaw University of Life Science (Paulina Gawron), Università Politecnica delle Marche (Raffaele Zanolì), FiBL (Claudia Meier).

Workshop organized at SANA 2021:

Workshop “ProOrg project: a contribution to the innovation of organic food processing”, on 11 September 2021. Participants: Assobio (Roberto Pinton), FiBL (Toralf Richter, Ursula Kretzschmar), Kassel University (Katrin Zander), UNIVPM (Raffaele Zanolì), CREA (Fiorella Sinesio, Flavio Paoletti)

Presentations at conferences etc. (not narrow scientific conferences)

- Participation in the session “European research meets organic food processing at eye level” at Biofach, Nurnberg (Germany), 15 February 2018 - *Responsible partner*: Assobio (Roberto Pinton)
- Publication on Assobio website <https://www.assobio.it/2021/01/27/proorg/>
- General Assembly of Assobio Members, Bologna, 13 June 2019 - *Responsible partner*: ASSO BIO (Roberto Pinton) and CREA (Flavio Paoletti)
- Event “Rivoluzione Bio”, Bologna 5-6 September 2019 – *Responsible Partner*: CREA (Flavio Paoletti) “Code of Practice for organic food processing – ProOrg”. TPOrganics Science Day: Innovating for organic food processing. 19 February 2021. *Responsible partner*: CREA (Flavio Paoletti)
- DISH high level summit “New issues and emerging trends in food safety”, Bologna (Italy), 15 May 2019. *Responsible partner*: ACTIA (Christophe Cotillon)
- Report synthesis on the case studies carried out by ITAB published on ITAB website: http://itab.asso.fr/downloads/qualite/proorg_-_1_yoghourt_synthesis.pdf, and http://itab.asso.fr/downloads/3_biscuit_synthesis.pdf
- Presentation on ProOrg for Natexpo International Trade Show for Organic Products 26 October 2021: https://natexpo.com/sh_animations/cadre-devaluation-multicriteres-de-procedes-de-transformation-bio-cas-detudes-proorg/. *Responsible partner*: ITAB (Rodolphe Vidal)
- 1st Congress of the Polish Chamber of Organic Food (PIŻE)- Strategy for promoting organic food in Poland, 22 March 2019, Warsaw (Poland). *Responsible partner*: WULS (Ewa Rembiałkowska)
- The meeting of the Mieczysław Górny Forum of Organic Farming members. 26 June 2019 - *Responsible partner*: WULS (Ewa Rembiałkowska)

Publication/link on website

Publication on ITAB website <http://itab.asso.fr/programmes/proorg.php>

Publication on AöL website <https://www.aoel.org/themen/projekte/>

Publication on Wageningen University and Research website: <https://www.wur.nl/en/project/EU-ProOrg.htm>, and <https://www.wur.nl/en/research-results/research-funded-by-the-ministry-of-liv/expertisegebieden/kennisonline/proorg-code-of-practice-for-organic-food-processing.htm>

Publication on FiBL website: <https://www.fibl.org/en/themes/projectdatabase/projectitem/project/1588>

Link on Organic Food System Programme website: <https://organicfoodsystem.net/working-groups-and-projects/>

Bachelor and Master Thesis (in addition to those uploaded to Organic E-prints)

- “Identifying and aligning of organic principles with the processing of vegetables”. Bachelor thesis. 2018. *Responsible partner*: Wageningen University Jeroen Post, Ruud Verkerk).
- “Application of organic processing: the case of fruit”. Master thesis. 2019. *Responsible partner*: Wageningen University (Ying Guo, Ruud Verkerk)
- “Indagine qualitativa sulla comunicazione al consumatore delle caratteristiche sensoriali nelle etichette degli alimenti trasformati”. Bachelor thesis, Univeristà degli Studi Roma Tre, Dipartimento di Scienze, Corso di Laura in Scienze e Culture Enogastronomiche. (2020) https://www.proorgproject.com/files/ugd/88a346_6d1c8fea9bd946c1bc06a47c7514aa9c.pdf
Responsible partner: CREA (Laura de Felice, Elisabetta Moneta, Flavio Paoletti)

Further dissemination activities

- Borghoff, Lisa and Strassner, Carola (2019) Klassifikationssysteme für verarbeitete Lebensmittel: Ein Vergleich. [A Comparison of Classification systems for processed food.] In: Mühlrath, Daniel; Albrecht, Joana; Finckh, Maria R.; Hamm, Ulrich; Heß, Jürgen; Knierim, Ute and Möller, Detlev (Eds.) Innovatives Denken für eine nachhaltige Land- und Ernährungswirtschaft. Beiträge zur 15. Wissenschaftstagung Ökologischer Landbau, Kassel, 5. bis 8. März 2019, Verlag Dr. Köster, Berlin. Presentation at Wissenschaftstagung Ökologischer Landbau see also <http://orgprints.org/36139/>
- Poster presentation at 33rd EFFoST International Conference 2019, 12-14 November 2019, Rotterdam, The Netherlands: Borghoff & Strassner: How do food producers communicate producing methods to consumers? - Results of field research in different German supermarkets and analysis of online communication of various producers
- ÖGA, Austrian Association of Agricultural Economics. 19-20 September 2019: Consumers’ perceptions of organic food processing – first insights into milk and juice processing. *Responsible Partner*: Thuenen Institut (Ronja Hüppe, Katrin Zander)
- Congress of Agriculture and Organic Food ‘ECO FOOD 360’ at Warsaw (Poland). 11 June 2019. *Responsible partner*: WULS (Ewa Rembiałkowska) <http://www.ecofood360.pl/>
https://serwiskorporacyjny.carrefour.pl/en/news/Food_Transition/Eco_Food_360_First_Congress_On_Agriculture_And_Organic_Food_Organized_By_Carrefour_Poland

- The 6th International Conference on Organic Agriculture Sciences (ICOAS). 7-8 November 2018 at Eisenstadt (Austria) - *Responsible partner*: WULS (Ewa Rembiałkowska)
- “Organic fruit and vegetables processing: development and innovation in compliance with the organic principles”. 3rd Fruit and Vegetables Processing Symposium, 24-25 November 2020. *Responsible partner*: CREA (Antonio Raffo, Flavio Paoletti)

Articles on specialized journal/magazine and other non-scientific information and communication media

Specialized journal/magazine

“Trasformazione dei prodotti bio. Le buone pratiche da conoscere. Contribution to Terra&Vita magazine. Published in April 2021. https://www.proorgproject.com/files/ugd/88a346_51652d48af1b441ea6b48f441ea80339.pdf
Responsible partner: CREA (Flavio Paoletti)

“Das ProOrg-Projekt Teil 2” Contribution to the Biopress magazine, Germany. Published in January 2022. *Responsible partner*: University of Kassel (Ronja Hueppe and Katrin Zander)
<https://www.biopress.de/de/inhalte/details/8472/perspektiven-der-verbraucher-auf-die-oekologische-lebensmittelverarbeitung.html>

Das Pro-Org projekt - Code of practice für optimierte Bio-Lebensmittelqualität in der Verarbeitung, Biopress Nr. 109 *Responsible partners*: AÖL (Alexander Beck, Johanna Stumpner), Berner Fachhochschule (Matthias Meier), FiBL (Caroline Ebner), BLQ GmbH (Pia Uthe)

Publication of partial project results in an article about organic milk processing at the official German information website <https://oekolandbau.de/>. *Responsible partner*: University of Kassel (Ronja Hueppe and Katrin Zander) (<https://www.oekolandbau.de/verarbeitung/produktion/grundlagen/oekologische-milchverarbeitung-kann-denn-h-milch-bio-sein/>)

Social media

<https://www.facebook.com/CORE-Organic-333056647099432>
https://twitter.com/CORE_Organic

4.5 Future dissemination actions

- List publication/deliverables/activities arising from your project that you are planning for the future.

Scientific papers submitted or in preparation

Jourdren S., Bureau S., Le Bourvellec C., Vidal R. 2022. Impact of an additional grinding step before apple cooking on environmental, nutritional and sensory qualities of puree: a case study for organic apple. Applied Food Research. In press.

Tentative title “How consumers perceive processing information of processed organic foods”. Journal: Food Quality and Preference, to be confirmed. *Responsible partner*: CREA (Fiorella Sinesio)

Tentative title: What does the on-packaging information tell about the organic quality? - examples of voluntary labeling information on organic milk from German, Dutch, Italian and Polish markets. Journal: Organic Agriculture. Planned submission date: April 2022. *Responsible partner*: WULS (Maria Ewa Rembiałkowska)

Tentative title: Evaluation of the content of bioactive compounds in apples of 3 varieties from organic and conventionally grown orchards. Journal: to be individuated. *Responsible partner*: WULS (Maria Ewa Rembiałkowska)

Tentative title: Careful processing - influence on the antioxidant content of organic apple juice from 3 varieties. Journal: to be individuated. *Responsible partner*: WULS (Maria Ewa Rembiałkowska)

Tentative title: Influence of the processing method on the content of bioactive substances in apple puree from ecologically and conventionally grown apples. Journal: to be individuated. *Responsible partner*: WULS (Maria Ewa Rembiałkowska) and ITAB (Rodolphe Vidal)

Tentative title: Usability testing of a framework to assess quality of processed organic food products. Journal: Trends in Food Science and Technology. *Responsible partner*: WUR (Andrijana Horvat)

Tentative title: The way forward of organic food processing – Results of a market and stakeholder survey. Journal: Organic Agriculture or Foods. *Responsible partner*: FiBL (Toralf Richter) and Muenster University (Carola Strassner).

Website

The project website (<https://www.proorgproject.com>) will be kept active after the end of the project for one year at least. Documents produced after the end of the project will be regularly updated to the project website, as well as to Organic E-prints platform.

AöL - German follow-up project

The extension project has three objectives. One objective is to transfer the Assessment Framework, the Management Guideline and the Communication Guideline of the Code of Practice developed in the ProOrg project into new modern internet-based formats for application in order to improve knowledge transfer and accessibility to the project results. Another goal is to further develop the Assessment Framework through pilot studies. For the Communication Guideline, examples will also be identified of how consumer communication has been carried out in the bio-company so far, either to show best practice examples or to point out improvements in communication. In addition, a presentation template is to be developed for communication to the companies but also for internal use within the company. The third objective is to promote the dissemination and communication of this new internet-based form of processing the Code of Practice. Here, too, the partners are asked to translate the results into their respective languages.

- List publications/deliverables arising from your project that more specifically Funding Bodies could disseminate in the respective national contexts.

The Code of Practice (Management Guideline for organic food processors, Assessment Framework for the evaluation of the organic food processing, and Guidelines for consumer communication) is a tool that can help organic food processors to comply with the organic production rules. The final aim of the Code of Practice is the optimization of the organic food processes in relation to their nutritional and sensory quality and sustainability of organic processed foods. The Code of Practice can contribute to the sustainable development and innovation of the organic sector. For these reasons, the Code of Practice should be disseminated in different national contexts.

The dissemination activity should include the Discussion Paper “Assessment criteria for processing technologies based on the EU Regulation 2018/848”. The Discussion Paper presents the criteria that were developed for the evaluation of food processing technologies for organic products. The criteria reflect the aims, principles, and requirements of the European organic Regulation.

- Indicate publications/deliverables that could be useful to translate (Please indicate targeted language and user groups).

The three parts composing the Code of Practice should be translated in as many languages as possible to allow the dissemination of the CoP in the different European countries.

For the Management Guideline and the Communication Guidelines the English, German and Italian versions are already available. More versions are needed, in particular for the Assessment Framework.

As reported above, an application has been developed to promote the knowledge and facilitate the use of the Code of Practice. However, the tools in the application are only in German and it would be important to have them also in other languages.

The English, German, French and Italian versions of the Discussion Paper are available. Again, the translation in more languages, at least one from East Europe country, would be needed.

4.6 Specific questions regarding dissemination and publications

- Is your CORE Organic Cofund project website up-to-date (Please contact the webmaster);
- List the categories of end users relevant to the research results and how they have been addressed or will be addressed by dissemination activities (Please order them according to the user groups).

Food processors producing organic foods

Other food chain actors (suppliers of specific materials, services, etc.)

Organic labelling organizations

Retailers

Consumers and consumer associations

Policy makers

Research institutes, universities, academia

5. Project impact

In ProOrg scientific and practical knowledge are combined for the development of the organic sector as a whole and organic food processing industry in particular. European organic processors are the main target group of the project, but the Code of Practice also concerns labelling organisations, certification bodies, retailers, consumers. Two associations of organic food processors (AÖL and Assobio) and representatives of stakeholders were members of the Advisory Board of the project: REMA 1000 (Norway and Denmark) and SaltåKvarn(Sweden), Ulrich Walter/Lebensbaum(Germany), PIŻE (Poland), Töpfer(Germany), CCPB (Italy).

ProOrg project was presented in trade shows, assemblies, meetings, conferences organized by organic associations, and organic food processors associations in different European countries.

Stakeholders were involved shortly after the beginning of the project with the organization of workshops in different countries aimed to discuss about drivers and barriers to organic food processing. The workshops were held in Paris (France) (70 participants), Fulda (Germany) (15 participants), Uddel (Netherlands) (17 participants), and Rogow (Poland).

The sessions organized at Biofach (in 2019 for the presentation of the project, and in 2020 and 2021 for the presentation of the progress and results of the project) saw great participation.

The final Code of Practice was presented to the relevant user groups on various congresses and webinars, always arousing considerable interest and published in technical journals for organic food sector.

The dialog with the stakeholders, in particular organic food processing companies was the cornerstone for the development of the Code of Practice. Through exchanges of view, and the pilot tests, it was possible to make improvements and integrations to the Code of Practice and new ideas arose to make easier the usability of some tools of the Code.

ProOrg Consortium has also experienced the great interest to the project from EU Commission, IFOAM OE, OPTA Europe and TP Organics.

In the ProOrg project criteria to evaluate whether existing and new technologies are in line with the organic principles have been individuated and summarized in a Discussion Paper “Assessment criteria for processing technologies based on EU Regulation 2018/848” (https://14cec8e9-56db-4df2-a786-008b536adeba.filesusr.com/ugd/88a346_383cf63303a8494d974b3f8bee130536.pdf)

Possibly, the Discussion Paper can be an inspiration for future revisions of the EU Regulation, where the aspects related to processing technologies should have more relevance due to the expected growth of the share of processed organic food in the European organic food market.

6. Added value of the transnational cooperation in relation to the subject

The Consortium that carried out the project included scientists and stakeholders from eight European countries from different European areas. The participating countries had different levels of development of the organic sector and the organic food market, thus bringing in different perspectives, needs and experience.

In some of the participating countries organic food processing is at an initial stage of development and organic processed foods are mainly imported. However, in those countries there is a strong interest in developing an internal organic food processing industry. Therefore, the CoP represents a fundamental tool for a proper implementation of organic practices and for promoting and boosting the growth of the organic food processing sector in those countries.

The involvement of European stakeholder associations and networks allowed for an effective communication, dissemination, and implementation of the results in different European contexts.

7. Suggestions for future research

Future research is needed on how to make consumers more knowledgeable about (organic) food processing and on how to best communicate with them on processing technologies.

The term “natural/naturalness” is used and misused in the food sector (and not only). Since there is not a shared definition of natural/naturalness, research is needed to investigate the meaning/s the food system

actors give to this term. This is particularly relevant for the organic sector since consumers often consider “organic” and “natural” as synonyms.

The role of the “ultra-processed food” in the organic sector should be studied. With the growth of the organic food market, an increasing number of organic versions of “ultra-processed food” can be found on the supermarket shelves. Are these products compatible with the organic principles and the concept of “natural” commonly associated to organic food?