TRUE

TRansition paths to sUstainable
legume-based systems in Europe

TRUE Deliverable 9.3 (D51)

Annual Activity Plan, Year 1 (Report, Public)

Last updated: Tuesday 23rd May 2017
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Deliverable Description & Contributors

- **Due date:**   30th April 2017
- **Actual submission date:**   Tuesday 23rd May 2017
- **Project start date:**   1st April 2017
- **Duration:**   48 months
- **Work package:**   Coordination (WP9)
- **Work package leader:**   Pietro P.M. Iannetta (JHI)
- **Deliverable Title:**   TRUE Annual Activity Plan – Year 1
- **Nature of deliverable:**   Report
- **Dissemination level:**   PU: Public

- **Deliverable description:** This plan will formalise specific operations (meetings and agendas), at WP and sub-WP level for the following 12 months. The output will be formalised *via* the project workspace (SharePoint) and associated project management software. The plan will identify and facilitate the necessary co-ordination to help ensure the timely delivery and success of linked project activities and meetings or workshops. This plan will also help inform the framework of the DMP (D9.2).

- **Contributors:**
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  - Dimitrios Savvas, Georgia Ntatsi (AUA, GR)
  - Karen Hamann (IFAU, DK)
  - Luiza Toma, Shailesh Shrestha (SRUC, UK)
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Executive Summary - Abbreviated

TRUE's perspective is that the scientific knowledge, capacities and societal desire for legume supported systems exist, but that practical co-innovation to realise transition paths have yet to be achieved. TRUE presents 9 Work Packages (WPs), supported by a *Intercontinental Scientific Advisory Board*. Collectively, these elements present a strategic and gender balanced work-plan through which the role of legumes in determining '*three pillars of sustainabilit*y' – '*environment*', '*economics*' and '*society*' - may be best resolved. TRUE realises a genuine multi-actor approach, the basis for which are three *Regional Clusters* managed by WP1 ('*Knowledge Exchange and Communication*', Universitaet Hohenheim, Germany), that span the main pedo-climatic regions of Europe, designated here as: *Continental*, *Mediterranean* and *Atlantic,* and facilitate the alignment of stakeholders' knowledge across a suite of 24 Case Studies. The Case Studies are managed by partners within WPs 2-4 comprising '*Case Studies*' (incorporating the project database and *Data Management Plan*), '*Nutrition and Product Development*', and '*Markets and Consumers*'. These are led by the Agricultural University of Athens (Greece), Universidade Catolica Portuguesa (Portugal) and the Institute for Food Studies & Agro Industrial Development (Denmark), respectively. This combination of reflective dialogue (WP1), and novel legume-based approaches (WP2-4) will supplies hitherto unparalleled datasets for the '*sustainability WPs*', WPs 5-7 for '*Environment*', '*Economics*' and '*Policy and Governance*'. These are led by greenhouse gas specialists at Trinity College Dublin (Ireland; in close partnership with Life Cycle Analysis specialists at Bangor University, UK), Scotland's Rural College (in close partnership with Universitaet Hohenheim), and the Environmental and Social Science Research Group (Hungary), in association with Coventry University, UK), respectively. These *Pillar WPs* use progressive statistical, mathematical and policy modelling approaches to characterise current legume supported systems and identify those management strategies which may achieve sustainable states. *A key feature* is that TRUE will identify key *Sustainable Development Indicators* (SDIs) for legume-supported systems, and thresholds (or goals) to which each SDI should aim. Data from the *foundation WPs* (1-4), to and between the *Pillar WPs* (5-7), will be resolved by WP8, '*Transition Design',* using machine-learning approaches (*e.g. Knowledge Discovery in Databases*), allied with *DEX* (*Decision Expert*) methodology to enable the mapping of existing knowledge and experiences. Co-ordination is managed by a team of highly experienced senior staff and project managers based in The Agroecology Group, a Sub-group of Ecological Sciences within The James Hutton Institute.
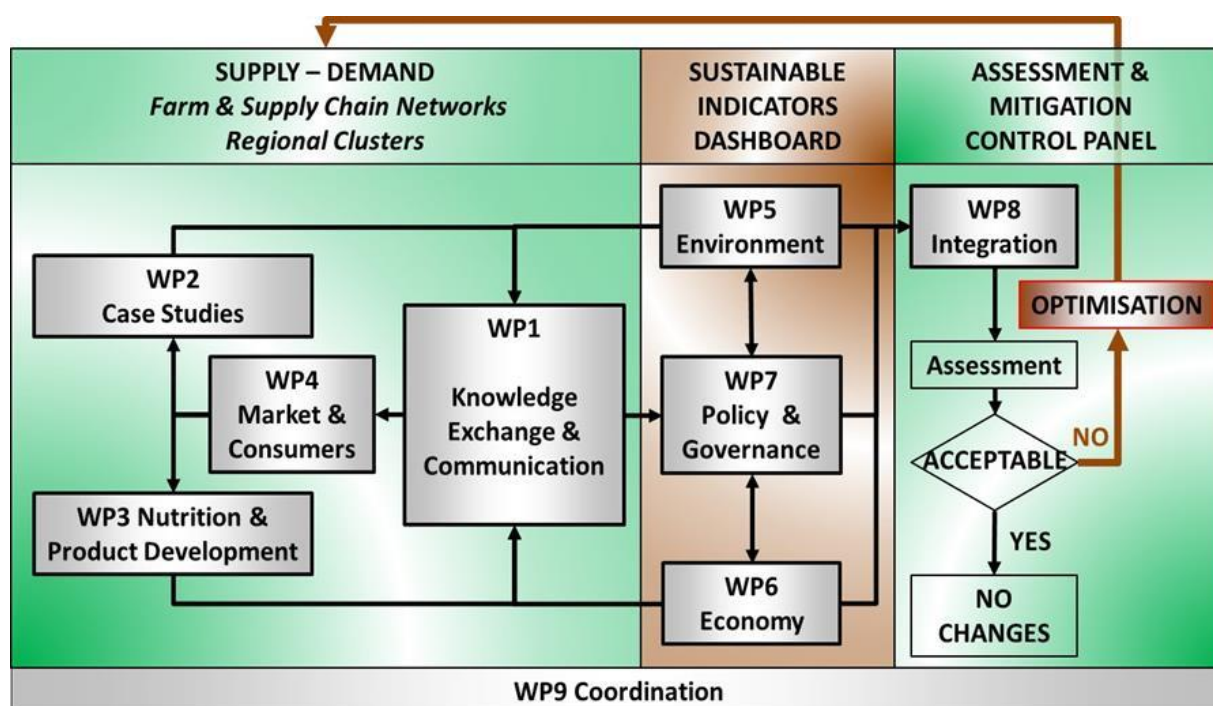
Work Package Structure - Diagram

Flow of information and knowledge in TRUE, from definition of the 24 case studies (left), quantification of sustainability (centre) and synthesis and decision support (right).

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Project Partners - Table

No	Participant organisation name (and acronym)	Country	Organisation Type
1 (C*)	The James Hutton Institute (JHI)	UK	RTO
2	Coventry University (CU)	UK	University
3	Stockbridge Technology Centre (STC)	UK	SME
4	Scotland's Rural College (SRUC)	UK	HEI
5	Kenya Forestry Research Institute (KEFRI)	Kenya	RTO
6	Universidade Catolica Portuguesa (UCP)	Portugal	University
7	Universitaet Hohenheim (UHOH)	Germany	University
8	Agricultural University of Athens (AUA)	Greece	University
9	IFAU APS (IFAU)	Denmark	SME
10	Regionalna Razvojna Agencija Medimurje (REDEA)	Croatia	Development Agency
11	Bangor University (BU)	UK	University
12	Trinity College Dublin (TCD)	Ireland	University
13	Processors and Growers Research Organisation (PGRO)	UK	SME
14	Institut Jozef Stefan (JSI)	Slovenia	HEI
15	IGV Institut Fur Getreideverarbeitung Gmbh (IGV)	Germany	Commercial SME
16	ESSRG Kft (ESSRG)	Hungary	SME
17	Agri Kulti Kft (AK)	Hungary	SME
18	Alfred-Wegener-Institut (AWI)	Germany	RTO
19	Slow Food Deutschland e.V. (SF)	Germany	Social Enterprise
20	Arbikie Distilling Ltd (ADL)	UK	SME
21	Agriculture And Food Development Authority (TEAG)	Ireland	RTO
22	Sociedade Agrícola do Freixo do Meio, Lda (FDM)	Portugal	SME
23	Eurest -Sociedade Europeia De Restaurantes Lda (EUR)	Portugal	Commercial Enterprise
24	Solintagro SL (SOL)	Spain	SME

*Coordinating institution

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Objectives - Abbreviated

Objective 1: Facilitate knowledge exchange (UHOH, WP1)
- *Develop a blue-print for co-production of knowledge*

Objective 2: Identify factors that contribute to successful transitions (AUA, WP2)
- *Relevant and meaningful Sustainable Development Indicators (SDIs)*

Objective 3: Develop novel food and non-food uses (UCP, WP3)
- *Develop appropriate food and feed products for regions/cropping systems*

Objective 4: Investigate international markets and trade (IFAU, WP4)
- *Publish guidelines of legume consumption for employment and economic growth*
- *EU infrastructure-map for processing and trading*

Objective 5: Inventory data on environmental intensity of production (TCD, WP5)
- Life Cycle Analyses (LCA) -novel legumes rotations and diet change

Objective 6: Economic performance - different cropping systems (SRUC & UHOH, WP6)
- *Accounting yield and price risks of legume-based cropping systems*

Objective 7: Enable policies, legislation and regulatory systems (ESSRG, WP7)
- *EU-policy linkages (on nutrition) to inform product development/uptake*

Objective 8: Develop decision support tools: growers to policy makers (JSI, WP8)
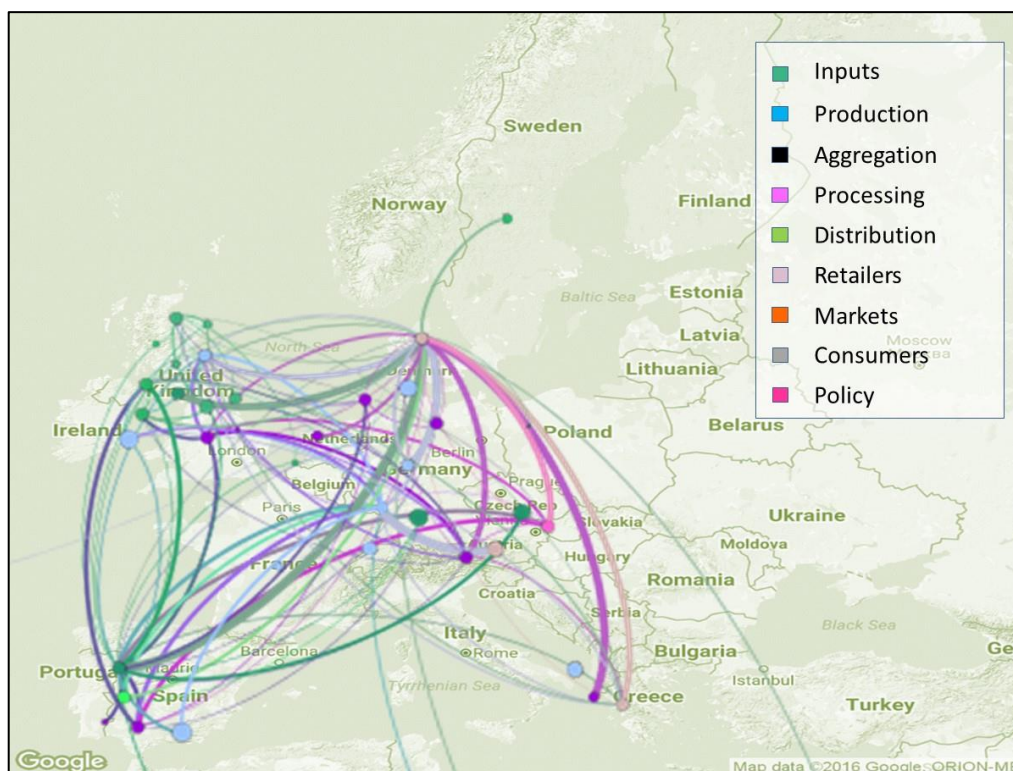- *User friendly decision support tools to harmonise sustainability pillars*

Regional Cluster & Case Studies - Diagrams

TRUE Regional Clusters through which the Knowledge Exchange and Communication (WP1), events and workshops will be carried out with stakeholders. The three Regional Clusters are denoted with full, dashed and dotted lines for Continental, Mediterranean and Atlantic pedo-climatic areas of Europe, respectively.

Network diagram showing diversity of legume species represented across partner countries where point size is related to the number of legume species at each node; colours represent different links in the quality chain; and, thicker lines indicate higher numbers of interactions between partners.

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Year 1 Deliverables - Table

Number	Relative Number in WP	Title	Lead Beneficiary	Type	Dissemination Level	Due Date (months)
D51	D9.3	Annual activity plan - Year I	JHI	R	PU	1
D1	D1.1	Capacity development workshop	UHOH	OTHER	PU	3
D3	D1.3	Project website	UHOH	DEC	PU	3
D49	D9.1	Project Management Tools	JHI	OTHER	CO	3
D60	D10.2	H - POPD - Requirement No. 3	UCP	ETHICS	CO	3
D11	D2.1	Creation of Data Resource Centre	JHI	OTHER	CO	4
D12	D2.2	Submit DMP, database populated annually – for Year I	AUA	R	CO	6
D50	D9.2	Data Management Plan	JHI	R	CO	6
D59	D10.1	POPD - H - Requirement No. 2	UCP	ETHICS	CO	8
D40	D7.1	Report on co-design of policy analysis	ESSRG	R	PU	9
D4	D1.4	Scientific, practice and policy publications - Year I	UHOH	R	PU	12
D29	D5.1	LCA methodology report	BU	R	PU	12

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Year 1 Deliverables - Gantt Chart

Deliverables	Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
D51 Annual Activity Plan (JHI)												
D1 Capacity Development Workshop (UHOH)												
D3 Project Website (UHOH)												
D49 Project Management Tools (JHI)												
D60 Ethics I (UCP)												
D11 Creation of Data Resource Centre (JHI)												
D12 DMP, Populate Database (JHI, AUA)												
D50 Submit Data Management Plan (JHI)												
D59 Ethics II (UCP)												
D40 Report on Co-design of Policy Analysis (ESSRG)												
D4 Scientific, Practice and policy Publications (UHOH)												
D29 LCA Methodology Report (BU)												

1. Capacity Development Workshop, (D1/D1.1, UHOH)

Deliverable: 1

Number in WP: D1.1

Lead Beneficiary: UHOH

Deliverable Description: A training workshop on transdisciplinary research and methods for all partners will demonstrate basic concepts and how to use and develop the Transdisciplinary Toolbox since it will be exploited at subsequent multi-stakeholder workshops in the establishment of individual Regional Clusters, their interaction and outreach more broadly.

Primary Contact(s):   alicia.kolmans@uni-hohenheim.de
Maria Gerster-Bentaya, m.gerster-bentaya@uni-hohenheim.de

Type: OTHER

Dissemination Level: PU: Public

Due Date (month): 3

Intended Action(s)/Activities: A one-day training workshop on transdisciplinary research and methods was carried out during the Kick-Off Meeting in Edinburgh (Scotland, UK) on Thursday April 20th 2017. All participants learned about the basic concepts of transdisciplinary research, and were introduced to a set of methods for stakeholder engagement. Breakout groups for each Regional Cluster identified relevant stakeholders and most suitable ways of facilitating knowledge exchange with them.

Expected Result(s) and Output(s): The presentations and workshop outputs will be collated on the TRUE SharePoint as a resource by which partners may revise the methodologies discussed, and so continue to increase the capacity of all project partners for co-production of knowledge, and to promote innovation. The report will inform the structure and development of the TRUE communication style and media platforms, including the Regional Cluster meetings and exploitations strategies.

2. Project Website (D3/D1.3, UHOH)

Deliverable: 3

Number in WP: D1.3

Lead Beneficiary: UHOH

Deliverable Description: A public project website will be created to share TRUE's project updates. It will embed a range of social media (*e.g.* Facebook, Twitter, LinkedIn) to maximise the reach and dissemination of information. The website will showcase innovative practice and business models in production, processing and marketing of legumes, and promote networking and to deliver project outputs such as the Decision support tools to be developed by WP8, and practice-oriented briefing notes. Social media impact data will be collated to develop new strategies to increase impact. The website will be transferred to a founding member of Pulse Europe on project completion.

Primary Contact(s): alicia.kolmans@uni-hohenheim.de

Type: DEC

Dissemination Level: PU: Public

Due Date (month): 3

Intended Action(s)/Activities: A project website will be set-up that provides basic information about the TRUE project, updates on its results and promotes dialogue with the public. Several social media channels (*e.g.* Facebook, Research Gate *etc.*), reaching different target groups, will be opened and populated with frequent updates from the project. In order to guide the communication to the public (*e.g.* use of social media and blog on website), a formal communication strategy will be developed and shared with the project consortium. The impact of the website will be measured with google analytics and social media statistics on user interactions.

Expected Result(s) and Output(s): The public will be informed about the TRUE's activities and outputs, and have an opportunity to interact *via* a variety of different social media types.

3. Project Management Tools (D49/D9.1, JHI)

Deliverable: 49

Number in WP: D9.1

Lead Beneficiary: JHI

Deliverable Description: A live on-line Project Workspace will be established in a "SharePoint" site. This will serve as the projects main communication tool, and means by which team activities and progress milestones, deliverables and reporting may be monitored and managed.

Primary Contact(s):
chantel.davies@hutton.ac.uk and pete.iannetta@hutton.ac.uk - for all general enquiries
andrew.thorburn@hutton.ac.uk - for SharePoint

Type: OTHER

Dissemination Level: CO: Confidential, only for members of the consortium (including the Commission Services)

Due Date (month): 3

Intended Action(s)/Activities: The project SharePoint site has been established by the JHI, and all partners have been granted access. The site has been populated with presentations and outputs of the Kick-off Meeting. A confidential workspace has also been established for the Executive Committee (ECOM), where minutes may be drafted before release to the consortium more broadly. The SharePoint is therefore now being populated with resources, and the SharePoint diary with dates for the forthcoming meetings such as ECOMs, and Deliverable deadlines.

Expected Result(s) and Output(s): With SharePoint established, all members with password access are able to negotiate the SharePoint site to access, deposit and edit all project specific documents as necessary. This will enable the smooth running of the project and will become the main communications tool as version editing of documents will operate through this platform as much as possible.

4. Ethics I (D60/D10.2, UCP)

Deliverable: 60

Number in WP: D10.2

Lead Beneficiary: UCP

Deliverable Description: Detailed information on food handling and food hygiene procedures should also be obtained.

Primary Contact(s): Marta Vasconcelos, mvasconcelos@porto.ucp.pt

Type: ETHICS

Dissemination Level: CO: Confidential, only for members of the consortium (including the Commission Services)

Due Date (month): 3

Intended Action(s)/Activities: A document will be delivered which shall describe how the raw grain legume material, and other ingredients, will be handled and the type of procedures that will be followed to assure proper food hygiene. The document will include detailed information on a range of procedures, including disinfection of work surfaces, chopping boards and other equipment before and after preparing food. General descriptions will also be provided on dishwashing, hand sanitising, keeping raw and ready-to-eat food apart at all times, procedures and facilities for storing food including the basis for separate working areas, and the use of specific clothing for the handling of the foods to ensure absence of any possible contamination.

Expected Result(s) and Output(s): The Deliverable report will also be developed as a working document to serve as a best practice guide for use throughout the project by relevant partners and to help ensure that proper food-handling and food hygiene procedures are followed.

5. Creation of Data Resource Centre (D11/D2.1, JHI)

Deliverable: 11

Number in WP: D2.1

Lead Beneficiary: JHI

Deliverable Description: A secure online data-server will be established to receive methodologies and data from historical and new experimental work. The database will be accessible for all partners for a period of 6 months after project end, by which time the data will have been transferred to the Open Access Repository Zenodo (www.zenodo.org), providing each upload with its own Digital Object Identifier, or DOI.

Primary Contact(s):   mark.young@hutton.ac.uk
                            geoff.squire@hutton.ac.uk

Type: OTHER

Dissemination Level: CO: Confidential, only for members of the consortium (including the Commission Services)

Due Date (month): 4

Intended Action(s)/Activities: A database will be developed to allow secure access to data supplied *via* the consortium. Sequential development of the database and web front-end will be hosted on a server internal to JHI (not externally accessible). Working iterations of the database will be placed on an outward facing server accessible to all partner organisations. Continuity of service will be maintained between iterations of the database and web front-end. The JHI server will also act as a working backup of the system, between regular formal backups. Secure access to the outward facing server will be established *via* a minimum of user name, password and IP address.

Expected Result(s) and Output(s): A secure database will be established with a web-based access point as the outward facing data-server.

6. **Submit** (to the) **Data Management Plan and Populate Database (D12/D2.2, AUA)**

Deliverable: 12

Number in WP: D2.2

Lead Beneficiary: AUA

Deliverable Description: From month 6, and annually thereafter for years 2 and 3, a Data Management Plan (DMP) will be drafted to ensure the capture of all data set types and in forms that ensure explanatory metadata is captured to ensure long-term utility of the information captured. The data will encompass a library of Standard Operating Procedures (SOPs) for key techniques and includes historical datasets and other databases as appropriate including other projects - Legume Futures, LegSA, Eurolegume, Legato, Protein2Food. Data acquisition extends to provision of published outputs be they meeting abstracts, data highlights and key findings including images and video shorts etc. The year 4 DMP will fully establish the TRUE project 'data-legacy handling' strategy which will extend beyond the life of the project.

Primary Contact(s):   Georgia Ntatsi, ntatsi@aua.gr
                                        Dimitrios Savvas, dsavvas@aua.gr

Type: R: Document, report

Dissemination Level: CO: Confidential, only for members of the consortium (including the Commission Services)

Due Date (month): 6

Intended Action(s)/Activities: AUA's role is to develop those aspects of the overall DMP concerned with data generated or collated by partners in the project. AUA will work in close partnership with JHI to ensure that the Data Resource Centre, data-base and data capture form(s) (D11/D2.1), are designed to complement the needs of those partners generating the data, as well as those receiving the data. AUA will liaise with all Case Study managers and WP leaders to systemically collate information on the flow of data within the project and any necessary timelines associated with those flows. The information will be assimilated by JHI into the overall DMP to be submitted at month 6 (JHI, D50/D9.2). AUA will work to gather datasets and to ensure that all the data QA criteria are fulfilled ahead of upload to the Data Resource Centre. As well as Case Study and WP level data, AUA will also collate historical datasets (*e.g.* from other EU and nationally funded projects in which partners were involved), and summaries of TRUEs Knowledge Exchange and Communication outputs.

Expected Result(s) and Output(s): These are to: 1) inform the design of the first iteration of the Data Management Plan in partnership with by JHI; 2) establish the data flows between Case Studies and WPs; 3) identify the methods/SOP which will be used; and, 4) assess other projects for historic data.

7. Data Management Plan (D50/D9.2, JHI)

Deliverable: 50

Number in WP: D9.2

Lead Beneficiary: JHI

Deliverable Description: The Data Management Plan (DMP) will be submitted to the EC within six months of project commencement in line with voluntary participation in the Open Research Data Pilot (ORDP). This DMP report will establish the necessary data flows and qualities to ensure the efficient integration of all the project's activities. The DMP also will help establish opportunities and exploitation strategies with respect to background and foreground IP rights of the products generated from co-innovation and safeguard the integrity of data which will be kept for the longer term (*via* the ORDP).

Primary Contact(s):   pete.iannetta@hutton.ac.uk
mark.young@hutton.ac.uk

Type: R: Document, report

Dissemination Level: CO: Confidential, only for members of the consortium (including the Commission Services)

Due Date (month): 6

Intended Action(s)/Activities: The first phase in developing the Data Management Plan (DMP) is gathering of a detailed overview of all the specific activities and data to be generated by the formally identified 24 Case Studies and other additional 'case studies' related to other tasks within WPs, Regional Cluster workshops and other knowledge exchange events which also collate important data. Complementary data and synergies will be identified, as well as any dependencies where specific Case Study data is required for WP tasks and deliverables. With such knowledge in place, and with the time-lines for data generation and/or receipt established, the potential risks of any data-dependencies will be highlighted and managed to mitigate possible delays. Activities here will be allied to those of Deliverable 11 (D2.1 – establishment of the 'data server' and 'data form'). AUA will oversee quality assurance procedures.

Expected Result(s) and Output(s): A detailed report will outline to all partners a clear DMP. The DMP will direct partners to resources within TRUE-SharePoint based folders, where they can understand the role their data has in the project, and similarly the roles of data provided by other partners. The DMP report will be augmented with additional explanatory files and templates and guidelines on data-sharing and IP-protection. As well as presentations detailing Case Studies and WP activities is detail. This DMP will also develop important timelines to highlight the potential for synergy and added value, as well as the capacity to identify risks.

8. ETHICS II (D59/D10.1, UCP)

Deliverable: 59

Number in WP: D10.1

Lead Beneficiary: UCP

Deliverable Description: Copies of ethics approvals for the research with humans must be obtained.

Primary Contact(s): mvasconcelos@porto.ucp.pt

Type: ETHICS

Dissemination Level: CO: Confidential, only for members of the consortium (including the Commission Services)

Due Date (month): 8

Intended Action(s)/Activities: An Ethics Approval form will be submitted which presents information regarding how privacy will be respected for data collected from human participants, and including: data collection, location of sensorial analysis testing, enrolment criteria, general procedures, and the number of people involved. This form will be drafted with specific respect to the research that will be conducted with humans for sensory evaluations and the marketing of novel legume based food products developed in TRUE. On approval, the form will be validated and signed by the UCPs Ethics Committee.

Expected Result(s) and Output(s): Copies of Ethics Approval Form will ensure that all sensory and marketing trials will be carried according to the necessary rules and regulations, as determined by the UCP Ethics Committee.

9. Report on Co-design of Policy Analysis (D40/D7.1, ESSRG)

Deliverable: 40

Number in WP: D7.1

Lead beneficiary: ESSRG

Deliverable Description: This report, 'Creating a an effective science-policy interface to support legume supported cropping systems and food and feed supply chains', will be co-developed *via* TRUE partners especially those involved in developing the Innovation Case Studies, Regional Clusters and also the ISAB and other associated partners. The report will advance reflective learning techniques for policy assessment. The main output will be a summary of specific research and information needs, an outline of stakeholders' interests in knowledge exchange, and identification of desired communication tools to advance the project - especially with a view to effective policy impact.

Primary Contact(s):   balazs.balint@essrg.hu
kelemen.eszter@essrg.hu

Type: R: Document, report

Dissemination Level: PU: Public

Due Date (month): 9

Intended Action(s)/Activities: Summarising the policy conclusions from previous EU Legumes projects, this Deliverable involves the following. 1) Preparing a guideline (and template approach) by which TRUE may invite participants to the Regional Cluster meetings with all partners contributing by identifying and inviting their national and regional stakeholders. 2) Developing a framework for transdisciplinary knowledge exchange on local policy solutions that lead to more sustainable, legume-supported, cropped systems and diets. 3) Crowd-Sourcing policy questions from the case studies. 4) Preparing templates for national and regional level interviews (task 7.2). 5) Creating guidelines to streamline policy questions into case studies. 6) Preparing a guideline (and template approach) for leading the policy sessions at the regional cluster meetings to gather data and foster co-innovation. 7) Preparing a call for contributions for the scientific journal *Frontiers in Plant Science* and specifically the special Research Topic on, "*Transitions to Sustainable Food- and Feed-Systems*", available at http://journal.frontiersin.org/researchtopic/6208. 8) Presenting the idea of a framework on a new science-policy interface 'Pulse Europe' at the FAO Technical Workshop on Sustainable diets in the context of sustainable food systems, 12-13 July, 2017, Rome.

Expected Result(s) and Output(s): These include the following: 1) a common understanding on the role of policy in promoting legume supported systems; 2) a common understanding and guidelines on policy sessions at the Regional Cluster meetings; 3) a database of policy questions, actors and solutions from partners and case studies; 4) a list of key policy-interview questions; and, 5) a template for reports from the policy sessions at the Regional Cluster meetings.

10. Scientific, Practice and Policy Publications I (D4/D1.4, UHOH)

Deliverable: 4

Number in WP: D1.4

Lead beneficiary: UHOH

Deliverable Description: Annually, data and key outputs/deliverables will be gathered by WP1 and synthesised into practical briefing media such as notes for stakeholders, to inform members of the public of new insight and products *via* press releases, including trade press. These will be circulated in a range of languages of the Regional Clusters, and will also be aimed to policy-makers at regional, national and EU level.

Primary Contact(s): alicia.kolmans@uni-hohenheim.de

Type: R: Document, report

Dissemination Level: PU: Public

Due Date (month): 12

Intended Action(s)/Activities: Data and key outputs/deliverables will be gathered from all WPs and synthesised into practical briefing media. A press release about the launch of the project, the planned activities and early results is already in preparation and will be shared in different languages through all project partners in June 2017. As soon as the first project results are available, they will be exploited for further scientific, practice and policy publications.

Expected Result(s) and Output(s): The public as well as policy-makers at regional, national and EU level are regularly informed about TRUE's key outputs.

11. Life Cycle Analysis Methodology Report, (D29/D5.1, BU)

Deliverable: 29

Number in WP: D5.1

Lead beneficiary: BU

Deliverable Description: A practical manual on LCA methodology for legume supported food- and feed-chains. This will outline the procedure and data sources for the combined environmental- and nutrient-quality assessments of European diets. With WP6 this approach will describe the methodology of the nutri-economic assessment of diet/food choice.

Primary Contact(s):   David Styles. d.styles@bangor.ac.uk
Michael Williams, willimsm@tcd.ie

Type: R: Document, report

Dissemination Level: PU: Public

Due Date (month): 12

Intended Action(s)/Activities: BU and TCD will liaise closely with TRUE partners to ascertain the type of data that are likely to be made available during the project, and the methodologies being employed for the economic and nutritional modelling that will overlap with LCA modelling. The scope and boundaries to be applied for attributional life cycle assessment (aLCA) of legume value chains will be described, and key methodologies cited. The LCA methodology description will also include a protocol for field and farm LCA that captures key details relating to crop rotations, and ensures consistency with UHOH farm economic modelling and also with SRUC macro-economic modelling, for the consequential LCA of European food/feed substitution scenarios.

Expected Result(s) and Output(s): An LCA methodology manual will be produced by month 12, outlining the methodological approach to be employed throughout this project, anticipating the data that will become available over the project duration. Finer details of the methodology may be adapted and reflected in manual revisions over subsequent months, potentially resulting in a methodological manuscript being submitted.

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Please cite this report as follows:

Iannetta, P.P.M., Davies, C., Squire, G.R., Young, M., Kolmans, A., Gerster-Bentaya, M., Pircher, T., Balazs, B., Kelemen, E., Styles, D., Savvas, D., Ntatsi, G., Hamann, K., Toma, L., Shrestha, S., Vasconcelos. M., Williams, M. (2017). Annual Activity Plant - Year 1. A '*Consortium Only*' Report on Deliverable 9.3 for the EU-H2020 funded project, '*TRansition paths to sUstainable legume-based systems in Europe*' (*TRUE),* under Grant Agreement Number 727973. Available online at: www.true-project.eu.