



TRansition paths to sUustainable  
legume-based systems in Europe

# Project Review, Impact & Legacy Plan - Report I Update

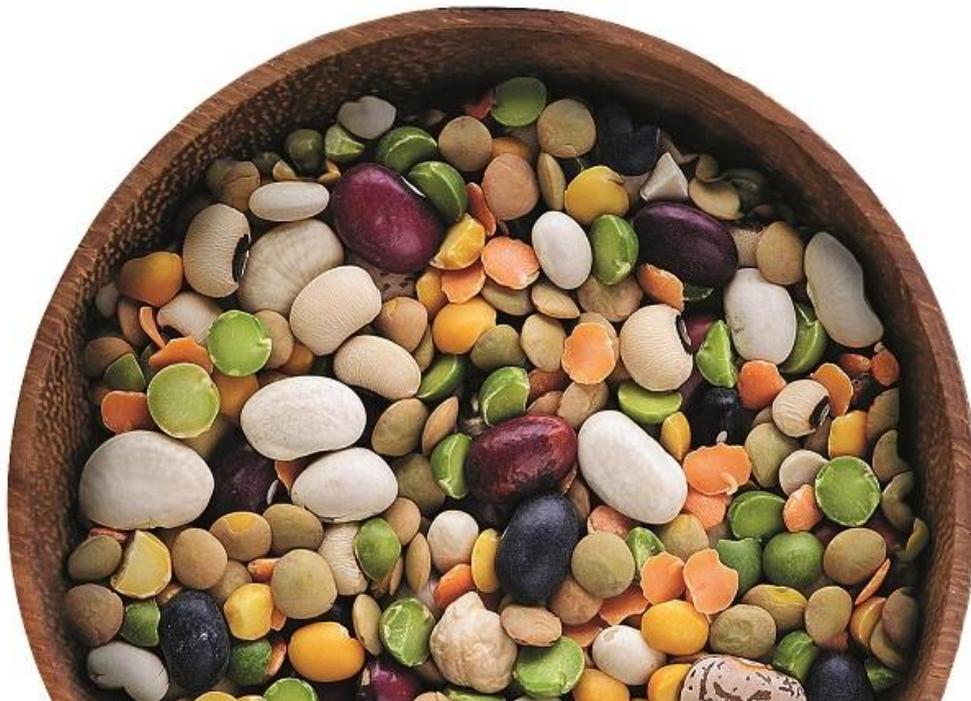
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**Work Package:** 9

**Deliverable (D):** 9.10 (D58)

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James Hutton Institute

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## Deliverable Description & Contributors

- Due date: 30<sup>th</sup> September 2021
- Actual submission date: 30<sup>th</sup> September 2021
- Project start date: 1<sup>st</sup> April 2017
- Duration: 54 months
- Work Package (WP): Coordination (WP9)
- WP Leader: Pietro P.M. Iannetta (JHI)
- Deliverable Title: Project review, impact, and legacy plan - Report I update
- Nature of Deliverable: Report
- Dissemination level: PU, Public
  
- **Deliverable description:** Project Legacy Plan (update II) will establish the final draft formally detailing how the various products developed from TRUEs activities will be managed and co-ordinated to ensure project impact legacy beyond the funded project term. This will be informed by the Impact Plan (D9.11). The specific focus of this report is towards scoping the role of TRUEs insights and products in future initiatives, such as EIP (European Innovation Partnerships) and FOCUS-groups. As well as other applications to help support European Commissions policy agenda for research and sustainable development.
  
- **Update Co-authors**
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- **Keywords**  
Legume; Transition; Value network; Food System; Transdisciplinarity; Sustainability.





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## Introduction: pathways to impact

This report should be assimilated in parallel with the '[Activity Plan – Year IV](#)' for the final year of the TRUE project, and it should also be noted that this report supersedes some of the information given in Deliverable 9.9 (Project Review, Impact and Legacy Plan – Report I) due to changes in the delivery plan, and delays associated with the impacts of COVID-19. Also, as the TRUE project draws to completion on Sept. 30<sup>th</sup> 2021, and effort progresses into a phase which is not specifically funded, it is important that effort is focused upon those key activities which has the potential to establish improved legume-based futures for all those who will become involved.

## Project publications

The TRUE project can already boast a significant impact as summarised in the WP1 (Knowledge Exchange and Communication) '[scientific, practice and policy publications](#)' deliverables (years 1-4). [Project publications](#) are collated on the TRUE website, which is kept regularly updated. Here readers can find all: peer-reviewed scientific articles, policy briefs, publicly available Deliverables including the '[TRUE Toolbox for Transdisciplinary Research](#)', LIN workshop reports, and a selection of presentations (as pdfs) made at various events.

Thus, and towards avoiding a siloed approach within discreet stakeholder groups, the TRUE project has fully embodied the **Open Science** approach, and this includes ensuring that all **public Deliverables** (even prior to Research Executive Agency, REA, approval), are released immediately after submission (with full reference and DOI) to the EC-REA via a range of platforms including: a **TRUE project 'Community'** on [Zenodo](#), [ResearchGate](#) and [TRUE-website Blog](#) where [Case Study \(CS\) narratives](#) also commonly feature. While the formal project term is about to be completed, and in-line with the Grant Agreement, the [Project publications](#) information on the TRUE website and Zenodo repository will continue to be updated as information emerges. The former by the WP1 Lead (UHOH), and the latter by lead author TRUE partners. In time, the website will be transferred and hosted by JHI. A reminder of Open Access commitment will be communicated to partners after the project term and for a period of up to 2 years after the TRUE project end-date (*i.e.*, the end of Sept. 2023).





## Case study summary narratives

The TRUE project embodies a suite of 24 Case Studies (CSs) which are formally acknowledged in the Grant Agreement, though there are also several other ‘case studies’ which are also embodied with WP activities too. Capitalising on the insights and innovations with **the CSs are an integral component of TRUE and its impact and legacy plan.**

Summary reports synthesising insights from across the CSs have been initiated and are developed into the first iteration of short reports in TRUEs second (confidential) Periodic (36 month) Technical Report to the EU. This is the first step toward an easily understood **plain English ‘map’ of the CS transition paths**, the foundation which drives the interest in legumes, the opportunities realised, the barriers which have been overcome and which remain. These CS narratives have also captured how indicators of their success relate to specific sustainable development goals (SDGs). It is also expected that the **CS narratives should also elucidate the development of commercialisation ‘blueprints’** (in partnership with all other WPs). This process of **summarising the CS narratives have culminated to three key project Deliverables (D):** the **Best Practice Guide** (WP3, D21), the **Innovation Catalogue** (WP3, D22), and finally the **TRUE-Ebook** (WP2, D17).





## Legume Innovation Network (LIN) workshops

**LIN workshops have now all been delivered and were critical and highly successful elements of TRUE, as they act as hubs around which the multiactor approach is delivered. And mostly in a face-to-face and transdisciplinary format** – though the impact of COVID-19 meant the final year meetings were delivered in a remote on-line format. These were held in every year of the project in three different pedoclimatic regions (Atlantic/Boreal, Continental, and Mediterranean), such that a total of nine region-specific workshops have been delivered. **Each of the LIN workshops were designed strategically, to have a different focus.** For example, spanning various grain- and forage-legume types, plus value network sectors. In addition, the workshop content, and outputs (e.g. PowerPoint® and poster presentations, data collected during break-out group discussions etc), of each LIN are formalised in separate extensive reports which are [freely available on-line](#). These reports include delegates information (where data sharing permissions were approved). In addition to the nine regional workshops, a final **Combined-LIN** and Legacy-LIN workshop was held [as detailed below](#)).

## The TRUE-SAB and -ISAB

The TRUE project partners comprise an equal balance of academic and non-academic partners, the latter extending beyond commercial (for profit) entities to include non-governmental organisations (NGOs), farm networks (e.g. FdM and AK), consumer groups (e.g. SF) and registered charities (e.g. JHI, though not included in the SAB to help ensure independence from project coordination). In addition, a similar breadth of linked stakeholders has been achieved via individuals who have engaged with the project through the LIN workshops. As such, the Impact and Legacy Plan described here builds upon feedback received from the Stakeholders Advisory Board (SAB) ([Deliverable 9.8 \(D56\) – Impact Plan Recommendations](#)), reports of the Legume Innovation Network (LIN) workshops, reports from the TRUE-ISAB (Intercontinental Scientific Advisory Board), plus other beneficiaries, and LIN delegates. It is not possible for the TRUE project to act upon all the recommendations made but some have been identified as strategic priorities, and some examples are shown below.

- The request for a **Transdisciplinary Reflection Workshop** referred to the Impact and Legacy Plan was delivered (April, 13<sup>th</sup> 2021). This workshop served as an opportunity by which partners





could reflect collectively on project outputs, including those from multi-actor engagements (e.g., LINs, conferences *etc.*) to capitalise on opportunities in arenas beyond science-to-science dissemination – *i.e.*, focusing on 'science-to-business' (S2B), 'science-to-society' (S2S) and science-to-policy (S2P) disharmony.

- Continue to ensure that all scientific results are communicated in a manner which is specifically tailored for recipient groups of potential end-users (beyond academic stakeholders). This is being addressed through newsletters and Blog posts, though [plain-language summaries](#), and press releases for peer-reviewed articles and WP outputs are also being encouraged.
- The **TRUE Ebook** (WP2, D17) serves as means to improved translation of scientific approaches and findings in plain-English for a wider audience.
- A strategy has been implemented with existing stakeholder networks to help circulate TRUE project outputs more effectively, including meetings with other [linked-projects and project networks](#), and the launch of the [legacy LIN \(LIN\)](#).



## ‘Plain-language’ (English) summaries and ‘common-format’ reporting

**Practice Abstracts** serve as one ‘[common format](#)’ component of an initiative aimed to improve the communication of project methodologies and results. The TRUE’s practice abstracts are available from the [EIP-AGRI website](#), and the [project website](#). As well as being uploaded to the TRUE data repository for later upload to other longer-term publicly accessible data-repositories too. Going forward, it appears that making the EC’s Practice Abstract database fully searchable remains a challenge and resolving this would also help EU-project impact.

## Making the best use of social media

TRUE is also very active on social media, effort here is being intensified at the end of the project term, and all Deliverables and evidence base (peer-reviewed papers) are provided. Towards that end, WP9 (Coordination) has devised a social media campaign – delivered in the last months of the project, by hiring the services of an external specialist provider ([www.synyo.com](http://www.synyo.com)). This activity includes notifications *via* Twitter ([@TrueLegumes](#)) and Facebook ([@transition paths to sustainable legume-based systems in Europe](#)). This strategy will also deliver a 12-page **project brochure** highlighting many pathways/transition paths from across the value chain to realise more legume-cropping, and legume-based feed- and food chains. **Two infographics** summarising the main results of the project have also been commissioned targeting on one hand the wider public in general and on the other more specifically children.

It remains critical that partners continue to engage in highlighting project insights and outputs on social media, and greater effort could be made by all partners to use social media for dissemination, and to target specific agencies, such as: [@CORDIS\\_EU](#); [@EU\\_Commission](#); [@EUScienceInnov](#); [@EU\\_Env](#); [@EU\\_Health](#); [@EU\\_ClimateAction](#); [@ipbes](#), [@FAOKnowledge](#), [@COPACOGECA](#), [@via\\_campesina](#). The TRUE project (WP1) has produced a guide (available internally) conveying recommended protocols and avenues for project communications.

Future EU projects should consider having a clear social media dissemination strategy for all the expected project outputs, and this strategy should embody mechanisms by which all project partners can engage in its delivery, legacy activities, and capacities.





## IP and innovation impact

A range of innovations that can trigger positive changes in current demand, patterns, and production of legume-based systems are showcased in the TRUE [Innovation Catalogue](#). These range from innovations related to:

- i) products for human consumption (e.g., the Nàdar Gin and Vodka, PlantCakes, and FavaJava drink);
- ii) products for animal nutrition (e.g., for monogastric animals, and aquaculture);
- iii) farming techniques and practices, and crop breeding (e.g., the identification of new elite rhizobial strains, or the development of novel machinery-based solutions);
- iv) method and marketing to raise awareness and empower end-users (e.g., Choose Bean initiative and recipe books).

In addition, TRUE has developed a web-based decision support system (DSS) for legume agri-food chains called **PathFinder** (<http://pathfinder.ijs.si/>) to help producers, farm advisors, policy-makers, researchers, students, stakeholders and other end-users to assess and manage the sustainability of legume-based farming systems. It assesses the sustainability according to the ‘three pillars of sustainability’: **environmental**, **economic**, and **social**, as well as their intersections: **equitability**, **bearability** and **viability**. The system provides partial sustainability assessments for individual links in the agri-food chain (production, processing, transport and distribution, market and retailers, and consumers) and individual sustainability pillars, as well as an overall sustainability assessment and management of the whole chain. The tool was launched online on September 30<sup>th</sup> 2021. A recording of the launch can be found [TRUE website](#).

## TRUE data repository

WP2 (CSs) is coordinating the collation and storage of data and methodologies from across all TRUE project WP and CS activities. The information is being gathered in a secure (available online) data-repository, based in a secure encrypted data-server based at JHI. The data comprises a library of Standard Operating Procedures (SOPs) (i.e., material and methods) covering techniques such as: agronomy and agronomic approaches; assessment of yield and yield qualities; measuring BNF; rhizobial culture and characterisation; soil and plant nutritional status; Green House Gas (GHG) emissions; plus legume breeding (and grafting), approaches for example. In addition, data gathered



using the SOPs are also captured alongside the associated descriptive information (*i.e.* metadata). The metadata describes experiments which gave rise to the datasets, as well as the data itself. The information is checked before storage to ensure information is captured in a routine and systematic manner, and that the information complies with the ‘FAIR’ (findable, accessible, interoperable, and reusable) principles. Towards that end, datasets are fully documented using standardised metadata repository templates (called Metadata Entry Forms, or ‘MEFs’). There are standardised SOP forms too. In line with participation in the Open Research Data Pilot (ORDP; [OpenAIRE](#)), all SOPs have been uploaded to Zenodo and linked to the [TRUE Project Standard Operation Procedures](#). Similarly, data and associated MEF submitted to the TRUE data repository have been uploaded to [Zenodo](#), if they have been fully exploited and not been made open access elsewhere. The Table 1 below list numbers of SOPs and MEF currently gathered.

**Table 1.** Summary of beneficiaries’ contributions to the TRUE database during the project

No	1	2	3	4	5	6	7	8	9	15	17	18	20	21	23	24	25
Partner	JHI	CU	STC	SRUC	KEFRI	UCP	UHOH	AUA	IFAU	IGV	AK	AWI	ADL	TEAG	EUR	SOL	PIRED
MEFs	-	-	6	1	1	8	1	9	3	2	1	3	2	1	1	1	2
SOPs	4	2	19	1	2	2	1	28	2	3	1	1	3	1	1	1	1
Total	<b>4</b>	<b>2</b>	<b>25</b>	<b>2</b>	<b>3</b>	<b>10</b>	<b>2</b>	<b>37</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>

It is hoped that this information will also contribute significantly to TRUE’s legacy, and it may be that collaboration with the [EUREKA](#) project may help impact in this regard. Since the aim of EUREKA aims to connect all multi-actor projects, their findings, and data in a common modular data system or ‘knowledge repository’, termed ‘FarmBook’. In addition, the impact of the TRUE data may also be improved via interaction with other facilitative projects such as [Project Booster](#).

### Collaboration with other relevant (EU funded) projects

**Collaboration** with coordinators of existing and relevant H2020 research projects has been initiated, and this includes the five projects LEGVALUE, DIVERFarming, DIVERSify, Remix and DIVERImpacts, with DIVERImpacts (Coordinator Antoine Messéan, INRA), coordinating this





collective as the ‘**Crop Diversification Cluster**’ (**CDC**). The CDC’s aim is to establish complementary information flows and joint activities. Several meetings have been held and formal Minutes documented. In this period, this interaction has included a face-to-face planning meeting in Budapest ahead of the [European Conference on Crop Diversification](#) (September 18<sup>th</sup> – 21<sup>st</sup> 2019).

This CDC meeting itself led to the formation of several working groups including on topics such as ‘monitoring tools’, ‘policy’ and ‘communications.’ Several joint KE proposal were tabled including one to the EC for IT support (the ‘**Dissemination Booster**’). TRUE is now also in contact with **META Group** as the coordinator of a newly funded project called **IMPACT BOOSTER**, this includes commissions routed to them via the ‘Dissemination Booster’ initiative. A second CDC bid to the **American Association for the Advancement of Science (AAAS)**, was successful and the CDC will be represented in a parallel session at the [next \(2021\) annual meeting of the AAAS](#).

**The first ‘European Conference on Crop Diversification’** co-organised by the founder-projects gathered over 200 delegates and a summary report can be found [here](#). TRUE was highly represented taking a co-lead role in the organising committee and editing abstracts for the book of proceedings. Numerous representations were made by TRUE through poster and oral presentations and some TRUE WP Leaders chairing some sessions. Challenges remain for the cluster including strengthening co-development of the cluster with industry stakeholders from across the value network. Nevertheless, a positioning peer-reviewed publication from project Coordinators and research leaders of all six projects, has been published on-line in July ’21 (TRUE project authors appear in bold):

*Antoine Messéan, A., Viguier, L., Paresys, L., Aubertot, J.-L., Canali, S., **Iannetta, P.**, Justes, E., **Karley, A.**, Keillor, B., Kemper, L., Muel, F., Pacino, B., Stilmant, D., Watson, C., Willer, H., Zornoza, R. (2021). *Enabling crop diversification to support transitions towards more sustainable European agrifood systems. Frontiers of Agricultural Science and Engineering.* <https://doi.org/10.15302/J-FASE-2021406>.*

TRUE WP Leaders have also interacted actively with other EU projects such as [Legumes Translated](#) (workshops) and [LIAISON](#), a ‘research and innovation’ project which aims to help unlock the potential of “working in partnership for innovation” in agriculture, forestry, and rural business. TRUE partners engaged with personal face-to-face interviews, completion of on-line questionnaires and





(non-beneficiary) stakeholder interviews linked to TRUE activities and workshops. We also had dialogue with the [Bridge2Food](#) project and recently established contact to collaborate with the [EUREKA](#) project, facilitate and support thematic networks.

In addition, a Policy-Dialogue Workshop, also took place as part of the [EU Brussels Green Week 2021](#), events. This was, ‘*Legumes’ role post-COVID-19: reorienting the focus of policy on legume-based food and feed system*’. The resource which emerged from that event can be found [here](#).

Project partners are aware of the breath of projects which have a strong legume-component, whether funded by the EU or national funding agencies. For example, [Protein2Food](#), [TomRes](#), [FoodProFuture](#), and projects supported via the first call from [SusCrop-ERA Net \(Co-fund on sustainable crop production\), including ProFaba and LegumeGap](#) or [Leg4Life](#). While the existence of such projects is highlighted on the TRUE project webpages ([here](#)), drawing together the vast array of outputs from across the demand a dedicated project focus which includes the development of a legume-specific DIH (Digital Innovation Hub). It may be that such a development could be scoped as an extension of the Legacy E-LIN provision, though it is anticipated that would demand a multi-actor transnational approach and dedicated funding.

### Development of new legume-based projects

New projects have also emerged from new partnerships developed among beneficiaries with projects submitted to the EC, and nationally. These include project proposals focusing on: sustainable food systems (in Africa; Sustainable Food Systems) (**EC H2020 SFS (Sustainable Food Systems)**); optimising a role for cover crops in the circular bioeconomy (**Marie Curie - Initial Training Network**); and realising dynamic value networks and smart-marketing for underutilised crop species more generally; dissemination of practical measures from long-term experimental platforms for implementation of legume-based cropping-systems and value networks (**ERA-Net**). **Nationally, project proposals which have also emerged** from the TRUE project include those focusing upon: development of business blueprints for more effective marketing of legume-based low carbon foods; the nature of legumes and their potential role in improving soil- and gut-health (a joint PhD between UCP and JHI is now funded by Portuguese authorities, and support in-kind from the JHI); establishing and linking digital platforms for optimised pulse production and food-





processing and -retailing; and . While these proposals were presented to national funding agencies: some of these proposals have also included TRUE beneficiaries from other countries as associate partners. In addition, TRUE beneficiaries have been external advisors to other projects led by scientists and stakeholders external to the project: for example highly commercial projects such as the development of high-premium pulse based feeds to reduce antibiotic dependency; also, the EU-H2020 project, Realising Dynamic Value Chains for Underutilised Crops (RADIANT), has been funded and involved several TRUE Project partners, ESSRG, JSI, TCD, AUA, FdM, and UCP Coordinating (Grant Agreement number 101000622); and, initiatives to realise more sustainable (intercropped-based) production of common beans in North Macedonia (funded by the **World Food System Centre**).

A strategic approach has been taken to scope other EC-based opportunities, including: **Operational Groups** (e.g. for the brewing and or distilling of pulses and biorefining of co-products for food-, feed-, -industrial chemicals and bioactives and/or -energy; **Focus Groups** (e.g. implementing intercropping; value network focused approaches); **Innovation Partnerships** (e.g. to realise implementation of legume-based value networks to aid delivery of good-food policies); **Thematic Networks** (e.g. have still to be established via ‘smart’ DoT (digitisation of things) approach for legume-based.

## **LEGVALUE & TRUE Joint Virtual Conference**

The LEGVALUE- and TRUE projects collaborated closely to jointly deliver a Virtual Conference, comprising a series of 8 webinars delivered over the period April 14<sup>th</sup> to May 11<sup>th</sup> 2021. The content delivered can be found [here](#). This link also serves to highlight the fact that the LEGVALUE project (which has now ended) morphed its website to form a resource-base for the legacy LIN.

### *The legacy LIN and its implementation*

The legacy LIN is expected to be the main on-line vehicle to perpetuate post-TRUE project innovation and impact. This will of course demand largely unfunded, or volunteer supported for some time. Nevertheless, real opportunities exist to build the development of the LIN into future (EU) applications for research and development funding. This option is being actively pursued in proposals being formulated for new Horizon Europe opportunities, and jointly with LEGVALUE





partners, and other partners from the legume-based stakeholder community more broadly.

Despite the potential benefits of European grown legumes to benefit the environment, health and the economy, **the world of legume research, innovation and trade remains small compared to many other crop types.** This is with special reference to grain legume crops, which remain dwarfed by interests in cereals and oilseeds. The significantly smaller grain legume-cropped area reflecting relatively low current commercial values and investments. Nevertheless, the TRUE- and LEGVALUE-projects were jointly empowered by the EC-REA to identify routes (or ‘transition paths’) by which legume-supported food and feed value networks could be enabled across Europe. **TRUE and LEGVALUE have now drawn upon their complementary research and innovation programmes<sup>1</sup> which incorporate industry stakeholders to realise jointly a legacy LIN.** The LIN was launched at the LEGVALUE-TRUE joint Virtual Conference, and the LEGVALUE website has become the LIN website. It will continue to be hosted and developed by PGRO until at least the end of May 2023 (two years from the end of the LEGVALUE project). This LINs main aim is to form legume-based business and innovation networks - linking researchers and research bodies, industry with industry, industry with researchers and everyone with policy makers, brokers, and consultants, throughout Europe and wider afield.

Therefore, **the legacy E-LIN is a valuable joint opportunity to connect networks of legume-focused businesses and promote awareness of new insights and enable innovation.** Also offering services that help realise commercially competitive production and consumption of legumes and legume-based products. In this way, it is hoped that the challenges facing legumes should be overcome more-easily, with potential partners finding capacities and resources for mutual benefit, helping one another in an industry that is currently at a low level.

While the E-LIN will initially be formed by those who formed the concept (LEGVALUE and TRUE partners), it will have to be formally organised, and these stakeholders will be elected/identified in meetings scheduled to take place after the LEGVALUE-TRUE Virtual Conference, and after the formal

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<sup>1</sup> The TRUE project is largely focussed on innovations with legumes beyond the farm gate, whereas the LEGVALUE project has more-concentrated efforts on studies at production level, and values along the supply chain.



project periods have ended (from early October '21). Thereafter, it is expected that the legacy LIN will evolve to meet the needs of those who form the network. **The LIN should retain an enduring focus on innovation and issues spanning the legume value networks and should be guided, by a founding constitution that ensures a wide membership base** that embraces all aspects of:

- input and production, commodity processing and food technologies;
- trading markets, retailing plus new and emerging markets;
- cultural aspect including 'sustainable consumption' (Mason and Lang, 2017);
- and environmental impacts; and
- socioeconomics, governance, and policy-development.

**An established Digital Innovation Hub (DIH) for Agriculture and food production (<https://itc-cluster.com/dih-agrifood/>), is used to host registered E-LIN members.** Membership will be free, and the LIN is not exclusive, as partners of all forms will be welcomed by their common interest – to help realise sustainable legume-supported agri-food systems. E-LIN partners should register as members using this link - <https://mapping.dih-agrifood.com/>, and **registering members should ensure they use the specific terms “Legume” and “Legume-innovation-network” is the Key Words section of the registration process.**

**DIHs are encouraged by the EC as one-stop shops that help companies become more competitive in their business and production processes, products, or services** – and ultimately using digital technologies. It is predicted, if countries which comprise the European Union are to remain competitive internationally, the value networks, and legume-based value networks among them, are encouraged to exploit DIHs. The selected approach builds on the network of European Digital Innovation Hubs and will ensure that the ELIN can link to other relevant DIH-based networks. It is envisaged that ELIN events will be organised and developed (perhaps bi-annually) to take place in different EU countries to ensure continued Europe-wide networking, and to accommodate special foci on the specific opportunities and barriers to legume uptake within each host country, and/or region.





It is important that the LIN also looks towards connecting with other legume-focused groups, such as the [LegumeHub](#), a resource which emerged from the [Legume Translated](#) Thematic Network, and which is very strongly focused on developing soybean production and use across Europe.

Though **we emphasise that conversations are being initiated to explore the possibility that the legacy European LIN established by TRUE and LEGVALUE be achieved in partnership with the International Legume Society**. As part of this association there is volume of [Legume Perspectives](#) which will summarise each of the LEGVALUE-TRUE Virtual Conference (detailed above). In addition, the LIN secretariate (once formally identified, will work with ILS Committee in their organisation of the next ILS-Conference IVC, which will take place in [Granada \(Spain\), from the 18<sup>th</sup> – 21<sup>st</sup> October 2022](#), specifically with respect to accommodating greater representation for legume-focused businesses at the event.





## Annex I: Background to the TRUE project

### Executive Summary

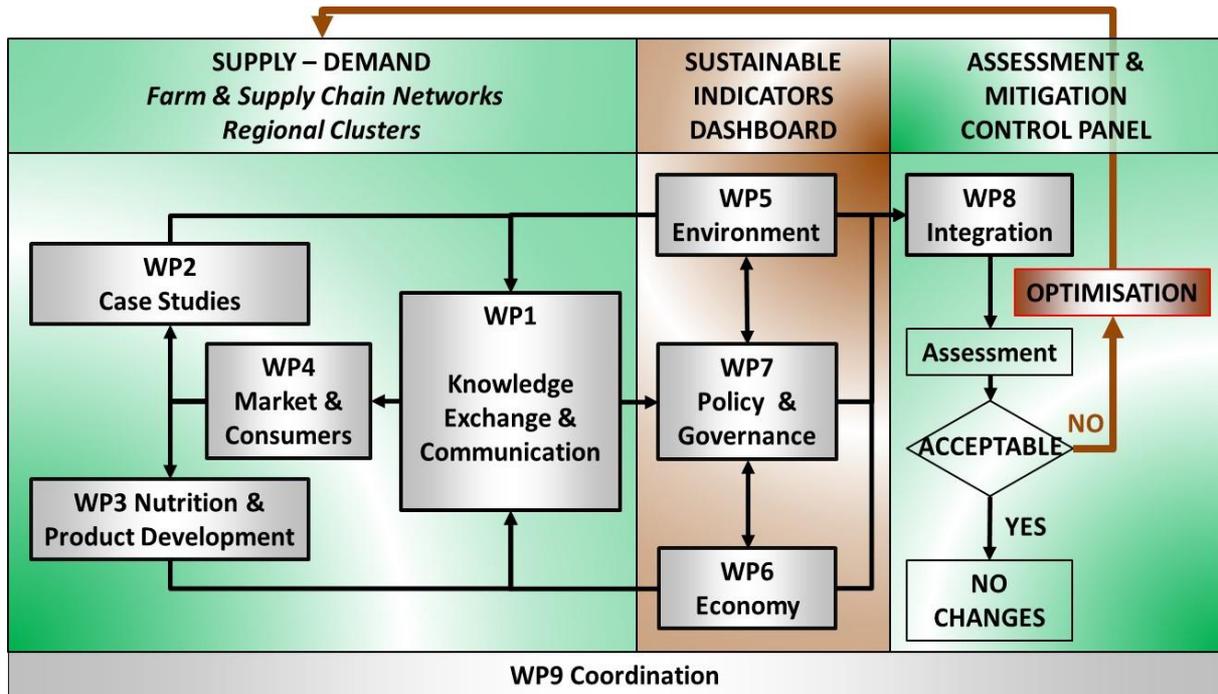
TRUE's perspective is that the scientific knowledge, capacities, and societal desire for legume supported systems exist, but that practical co-innovation to realise transition paths have yet to be achieved. TRUE presents 9 Work Packages (WPs), supported by a *Intercontinental Scientific Advisory Board*. Collectively, these elements present a strategic and gender balanced work-plan through which the role of legumes in determining 'three pillars of sustainability' – '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*', University of 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 University of 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

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).





## Project Partners

N°	Participant organisation name (and acronym)	Country	Organisation Type
<b>1 (C*)</b>	The James Hutton Institute (JHI)	UK	RTO
<b>2</b>	Coventry University (CU)	UK	University
<b>3</b>	Stockbridge Technology Centre (STC)	UK	SME
<b>4</b>	Scotland's Rural College (SRUC)	UK	HEI
<b>5</b>	Kenya Forestry Research Institute (KEFRI)	Kenya	RTO
<b>6</b>	Universidade Catolica Portuguesa (UCP)	Portugal	University
<b>7</b>	Universitaet Hohenheim (UHOH)	Germany	University
<b>8</b>	Agricultural University of Athens (AUA)	Greece	University
<b>9</b>	IFAU APS (IFAU)	Denmark	SME
<b>10</b>	Regionalna Razvojna Agencija Medimurje (REDEA)	Croatia	Development Agency
<b>11</b>	Bangor University (BU)	UK	University
<b>12</b>	Trinity College Dublin (TCD)	Ireland	University
<b>13</b>	Processors and Growers Research Organisation (PGRO)	UK	SME
<b>14</b>	Institut Jozef Stefan (JSI)	Slovenia	HEI
<b>15</b>	IGV Institut Fur Getreideverarbeitung GmbH (IGV)	Germany	Commercial SME
<b>16</b>	ESSRG Kft (ESSRG)	Hungary	SME
<b>17</b>	Agri Kulti Kft (AK)	Hungary	SME
<b>18</b>	Alfred-Wegener-Institut (AWI)	Germany	RTO
<b>19</b>	Slow Food Deutschland e.V. (SF)	Germany	Social Enterprise
<b>20</b>	Arbikie Distilling Ltd (ADL)	UK	SME
<b>21</b>	Agriculture And Food Development Authority (TEAG)	Ireland	RTO
<b>22</b>	Sociedade Agrícola do Freixo do Meio, Lda (FdM)	Portugal	SME
<b>23</b>	Eurest - Sociedade Europeia De Restaurantes Lda (EUR)	Portugal	Commercial Enterprise
<b>24</b>	Solintagro SL (SOL)	Spain	SME
<b>25</b>	Public Institution Development of the Medimurje County (PIRED)	Croatia	Development Agency

\*Coordinating institution





## Objectives

### **Objective 1: Facilitate knowledge exchange (UHOH, WP1)**

- *Develop a blueprint 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)**

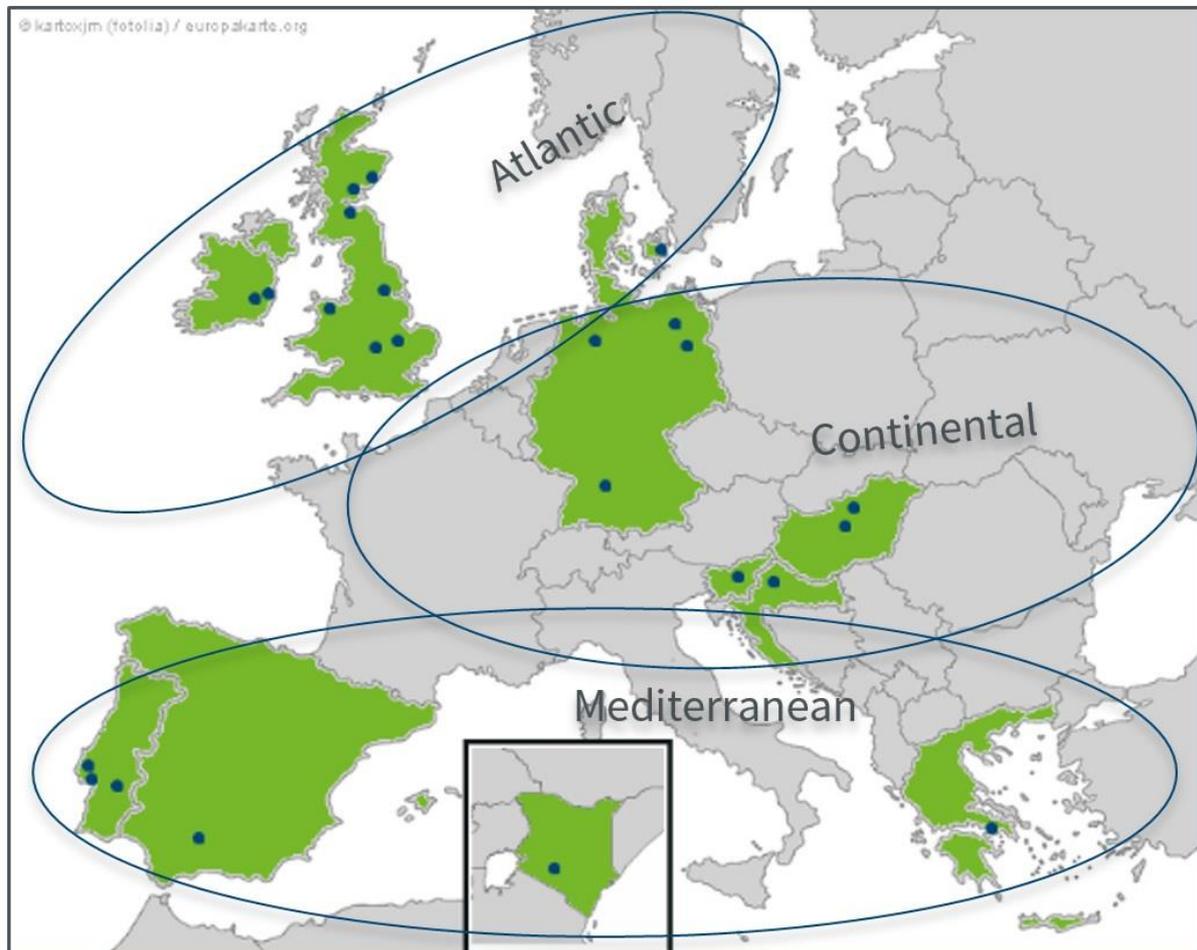
- *EU-policy linkages (on nutrition) to inform product development/uptake*

### **Objective 8: Develop decision support tools: growers to policy makers (JSI, WP8)**

- *User friendly decision support tools to harmonise sustainability pillars*



## Legume Innovation Networks



Knowledge Exchange and Communication (WP1) events include three TRUE European Legume Innovation Networks (ELINs) and these engage multi-stakeholders in a series of focused workshops. The ELINs span three major pedoclimatic regions of Europe, illustrated above within the ellipsoids for Continental, Mediterranean and Atlantic zones.





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