

Deliverable

Project Acronym: FERTIMANURE

Project full name: Innovative nutrient recovery from secondary sources – Production of high-added value FERTIlisers from animal MANURE

Grant Agreement No. 862849

D1.5. Report on capitalization of relevant projects results

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Author	Anna Lloveras
Contributor	Leitat

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1. Introduction

The work developed in this task is part of the *WP1. FERTIMANURE framework*, in particular of *Task 1.5 Capitalization of relevant projects results* developed by LEITAT, whose aim is to identify on-going and finished projects related with manure in the field of nutrient recycling, manure management, bio-based fertilizers and dissemination.

The task aims to ensure maximisation of synergies between FERTIMANURE tasks and other related project activities and also elimination of all possible cases of overlaps.

For that purpose, the approach is to become permanently aligned with all FERTIMANURE work packages and create an interactive and living tool, in order to make the accumulated experience usable during the project execution, linking with other related project outputs, skills and expertise.

For the first thirteen months of the project, LEITAT created a database to compile all the projects related with FERTIMANURE framework. This database was filled in within partners contributions, European Sustainable Phosphorous Platform (ESPP) database(<https://phosphorusplatform.eu>) and Biorefine Cluster Europe (www.biorefine.eu/) with a total database of 163 projects.

Information about running and finished projects was obtained including: name, acronym, website, summary (relevant information for FERTIMANURE), end date, partner coordinator, contact person, type of funding, current status, type of project (national, European or international). This information will be published at the FERTIMANURE website (www.fertimanure.eu) and can be used by stakeholders and general public.

Each project was categorized by thematic area and the main objectives within the following categories: Organic wastes, Technology, End-products, Dissemination, Crop systems and Management. These categories were used to create a word cloud which includes the relevant information for FERTIMANURE of all the projects categorized.

Moreover, data analysis was developed in order to obtain relevant results about the information compiled like diversity of projects or budget.

Finally, LEITAT together with all FERTIMANURE partners selected the 5 most relevant projects in order to arrange a meeting with the coordinator. These meetings will have the objective of taking advantage of all the previous work done in the field of nutrient recycling and manure management, fertilization using BBFs or dissemination. The objectives of this work is basically to identify:

- which are the challenges that have been identified in order to learn from them and avoid similar problems in FERTIMANURE,
- the most relevant results in order to avoid overlaps and take advantage of the results specially addressed by FERTIMANURE and go beyond
- in the on-going projects, identify potential synergies with FERTIMANURE and to monitor the projects results.



2. Methodology

In the development of methodology, 3 major steps are identified: a. Database design, b. Data collection and c. Database processing.

a. Database design

A database focusing on 12 significant pieces of information has been created:

- 1- Project title
- 2- Acronym
- 3- Website
- 4- Relevant information for FERTIMANURE
- 5- Coordinator
- 6- End year
- 7- Type of funding
- 8- Current status
- 9- Type of project
- 10- Budget
- 11- Project contact name
- 12- Project contact email

b. Data collection

Information has been principally provided from the project partners but also platforms such as CORDIS (<https://cordis.europa.eu/es>), Biorefinery Cluster Europe (<https://www.biorefine.eu/>), ESPP website (<https://phosphorusplatform.eu/home2>) and ESPP's network of companies and other stakeholders.

c. Database processing

Project categorization

Six different thematic areas were identified into which projects were divided in order to facilitate processing and integration. The categories were highly aligned with FERTIMANURE working areas and keywords. Each project was tagged with two of these following six categories:

- Organic wastes
- Management
- Technologies
- End-products
- Dissemination
- Crop systems



Word cloud generation

Once the projects are catalogued in two areas, key word cloud generation was carried out to obtain the graphical representation of the word frequency, using the Wordcloud tool (<https://www.wordclouds.com/>).

Keyword cloud was generated by using words included in the cell “Relevant information for FERTIMANURE” of the database.

Outline of stakeholder’s meetings

The capitalization of experience and knowledge was built up in order to identify the challenges that had arisen in some projects, to learn from them and avoid similar problems, to avoid overlaps, and take advantage of the results and finally to identify potential synergies with FERTIMANURE.

To this effect, the 5 most relevant projects were selected by all the partners creating a ranking of relevant projects, the first 4 projects were finally selected. Meetings with the coordinators of the 4 projects will be arranged to identify and cultivate connections between the projects and organizations working in the same field for exchange experiences and furthering concepts.

3. Results

The database is published at the FERTIMANURE website (www.fertimanure.eu) and can be used by stakeholders and general public.

The most relevant information of the database is listed in the ANNEX 1 (see ANNEX 1 for more information).

a. Database analysis

With the above tasks, over **163 projects were identified**. Given the complexity of FERTIMANURE project which encompasses the whole value chain, all projects are of great relevance and capitalization of their results contributes significantly to project implementation. For this reason, database will be published on the website and used by the partners during the entire project execution when needed.

Figure 1 depicts schematically the overall ratio between projects implemented at the national level (38%) and those of European (55%) or international level (7%). It has to be mentioned that projects categorized as “national” projects are from European countries, whereas those from non-EU countries like Argentina and Chile are categorized as International. From the European funded projects, the most common funding programs are: **LIFE+**, **H2020 FP7**, **INTERREG**, **H2020 BBI**.



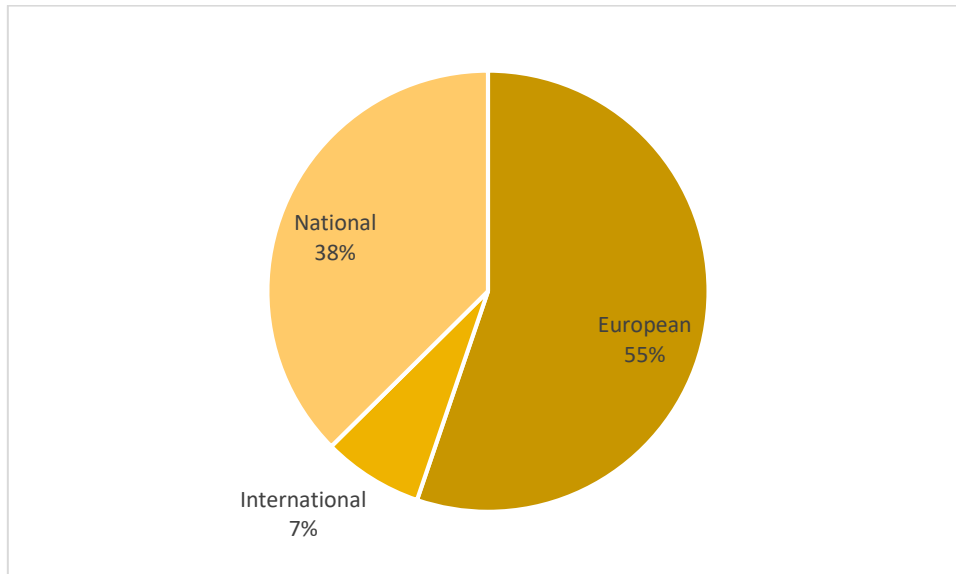


Figure 1. Relation between projects implemented at the national level and those of Europe or international level

The overall budget of all the projects compiled is about 320M Euros where 93% are from European funding and the 6% are from National and 1% from International funding (Figure 2).

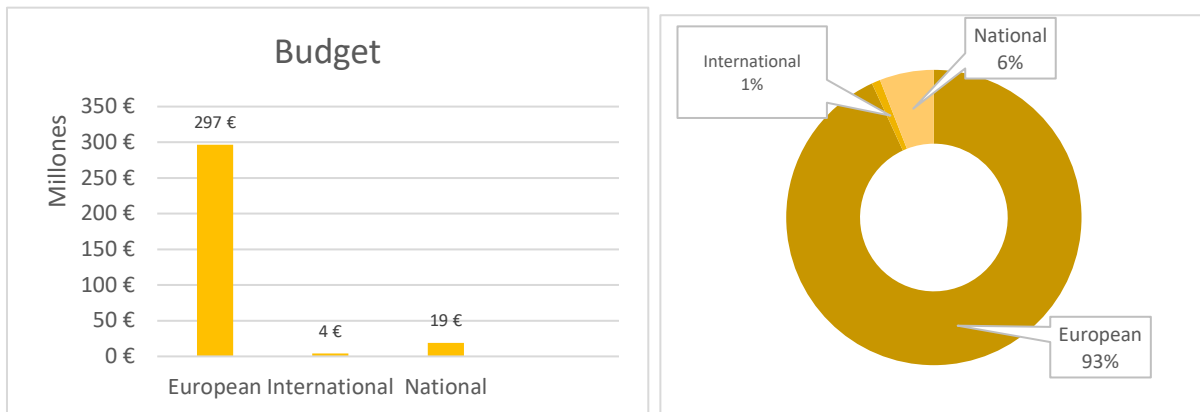


Figure 2. Total of budget for funded projects at European, International and National level

Regarding the status of the projects (Figure 3), 106 of the 163 projects listed on the database are finished and 45 are currently on-going. Ending project years are identified and results show that the first project ended in 2004 and the last would end in 2024 (Figure 4) taking into account that the higher values are from 2015 to 2019.



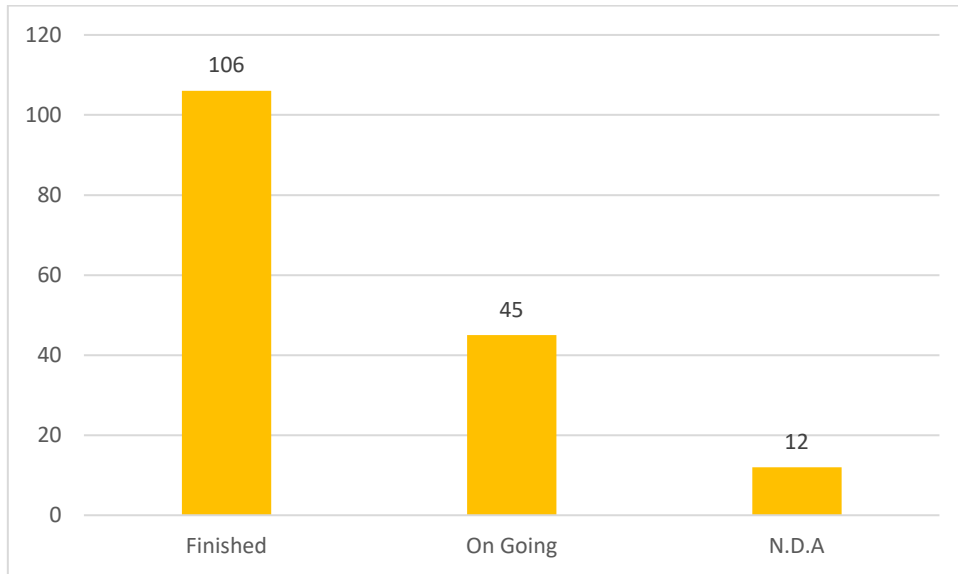


Figure 3. Current status of the projects listed in the database (N.D.A= No Data Available)

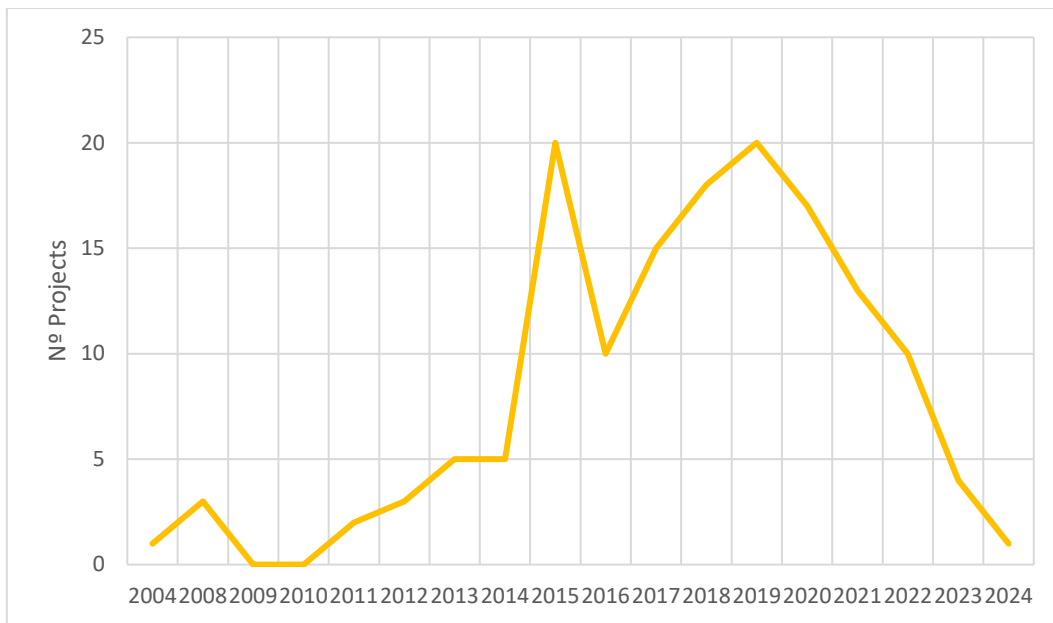


Figure 4. Ending project year of the projects compiled in the database.

In relation to the number of projects per country coordinator origin, the result is observed in Figure 5 which reflects that Spain has a large number of coordinated projects followed by France, Italy and Germany. It has to be mentioned that there are few projects which has not been detected which is the coordinator and these projects has not been taken into account.



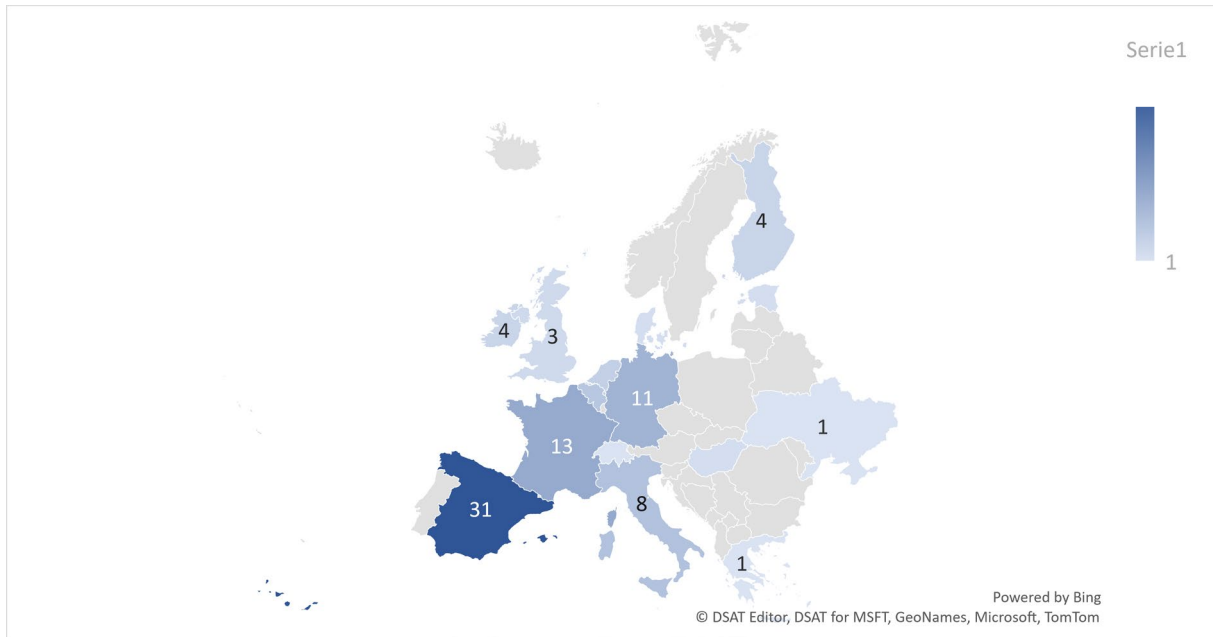


Figure 5. Number of projects coming from the coordinator origin

Project categorization

The Figure 5 below represents the results obtained during the project categorization. End-product and Technology categories are the most represented (with 85 and 67 projects respectively), followed by organic wastes (46), management (30), dissemination (20) and crop systems (1).

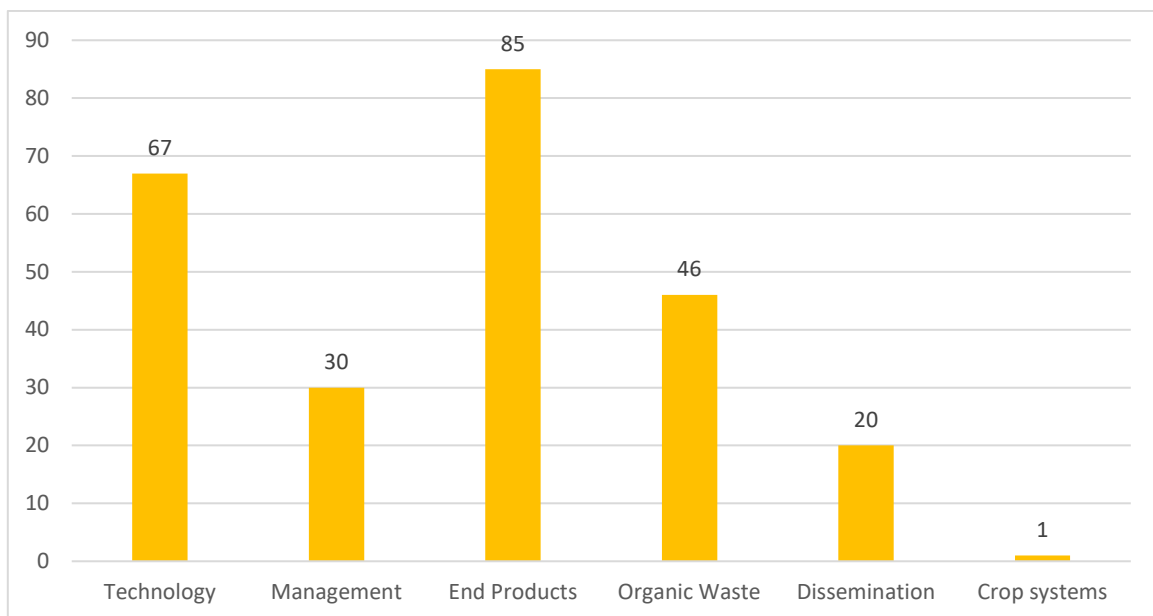


Figure 6. Number of projects categorized during the database processing.



Word cloud generation

Figure 7 represents the 5 different word clouds generated using the project description of the database. There are words like "waste" or "manure" that are present in all word clouds, except in the crop systems cloud.

It must be taken into account that the crop systems cloud is made with words from only one project and that therefore it's a cloud with a very unrepresentative sample of database.

Organic Wastes



Technology



End-products



Dissemination



Management

Crop systems



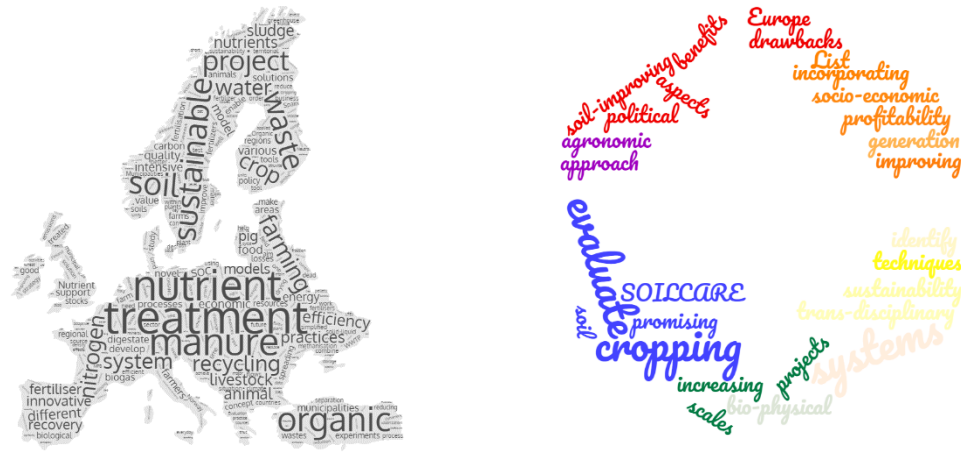


Figure 7. Word cloud obtained from the project description for each category (Organic wastes, Technology, End-products, Dissemination, Management, Crop systems)

Outline of stakeholders meetings

According to the selection of the 4 relevant projects within the poll partners, the most voted projects are:

- Nutri2cycle: Transition towards a more carbon and nutrient efficient agriculture in Europe
- LEX4BIO: Optimizing Bio-based Fertilisers in Agriculture – Knowledgebase for New Policies
- SYSTEMIC: recognises Europe’s challenge to tackle the increasing resources constraint and to facilitate the transition towards a more circular economy
- ReNu2Farm: Nutrient Recycling – from pilot production to farms and fields

Moreover, there are three other projects also selected because of the relevance and the high interaction within FERTIMANURE project: BioEcoSIM, ReuseWaste and IF20-COOPERL.

Taking into advantage that Nutri2cycle and SYTEMIC are led by two FERTIMANURE partners, it is decided to have the first meeting with these projects. Meetings with the project coordinators will be arranged to explore the promotions of the synergies between those two projects and this will be replicated with the other projects.

The structure of the meetings with the projects has been as follows:

- Presentation
- Objectives
- Synergies
- Next steps

This work will be developed in the following months within the WP7 framework, specifically in *Task 7.2.. Dissemination and communication (DC)* activities in order to promote the creation of a Biorefine cluster Community group.



4. Conclusions

In the frame of the FERTIMANURE project, it has been created a project database collecting information on project title, acronym, website, relevant information, coordinator, end year, type of founding current status, type of project, budget, project contact name and project contact email. This data base has been created to identify projects related with manure to take advantage of all the previous work done in the field of nutrient recycling and manure management, and thus give FERTIMANURE an advantage. The database is published on the website (www.fertimanure.eu) so that all partners can use it when they deem appropriate during the project.

163 projects are identified, and they are cataloged in one or two of the six thematic areas, which are organic waste, management, technologies, end-products, dissemination, crop system. End-product and Technology categories are the most represented (with 85 and 67 projects respectively), followed by organic wastes (46), management (30), dissemination (20) and crop systems (1). It has also been seen that the most frequent words in the projects have been the words “waste” and “manure”.

Regarding the capitalization of the projects collected, the global ratio among all the projects is 38% at the national level, 55% at the European level and 7% at the international. As to note, the projects financed with European funds such as FERTIMANURE, the most common financing programs are: LIFE +, H2020 FP7, INTERREG, H2020 BBI.

Based on the interests of FERTIMANURE and the partners, four relevant projects have been selected: Nutri2cycle, LEX4BIO, SYSTEMIC and ReNu2Farm. The intention of selecting these four projects is to explore the synergies promotions between them and FERTIMANURE. This part will be developed through meetings between the project coordinators to promote sustainable synergies between ongoing projects and to adapt the capitalization and improvement activities to the real needs of the project's beneficiaries. This work will be developed within the WP7 framework, specifically in Task 7.2. Dissemination and communication activities (CD) in order to promote the creation of a community group Cluster Biorefine.



ANNEX 1

Table 1. Representative part of database published on the FERTIMANURE website (www.fertimanure.eu).

Project title	Website	End year	Type of funding	CATEGORY 1	CATEGORY 2
Evaluation of manure management and treatment technology for environmental protection and sustainable livestock farming in Europe	No data available	2015	LIFE+	TECHNOLOGY	MANAGEMENT
A blueprint and EU policy-forming protocol for the recycling and valorisation of agri-food waste	http://www.agrocycle.eu	2019	Horizon 2020, H2020-WATER-2015-two-stage, WASTE-7-2015 - Ensuring sustainable use of agricultural waste, co-products and by-products	ORGANIC WASTE	END PRODUCTS
No Agro-Waste - Innovative approaches to turn agricultural waste into ecological and economic assets	http://www.noaw2020.eu	2020	Horizon 2020, H2020-WASTE-2015-two-stage, WASTE-7-2015 - Ensuring sustainable use of agricultural waste, co-products and by-products	ORGANIC WASTE	END PRODUCTS
Optimizing Bio-based Fertilisers in Agriculture – Knowledgebase for New Policies	https://www.lex4bio.eu/	2023	Horizon 2020, CE-RUR-08-2018-2019-2020 - Closing nutrient cycles	END PRODUCTS	
Design of Enzymatic Technologies of plant origin to obtain low risk bioactive molecules with biostimulant or phytosanitary activity.-	No data available	2018	FEDER Catalunya, Acció	TECHNOLOGY	END PRODUCTS
Valorization of urban and bio-waste by insect bioconversion for the generation of innovative products in strategic sectors.	No data available	2022	CIEN, Centro Desarrollo Tecnológico Industrial	TECHNOLOGY	END PRODUCTS



Novel organic recovery using Mobile Advanced technology	No data available	2022	Horizon 2020, H2020-SFS	TECHNOLOGY	END PRODUCTS
On-site valorization alternatives of sewage sludge in vineyard soils, within the framework of the circular economy	No data available	2021	ARC - ACCIO	ORGANIC WASTE	END PRODUCTS
Introduction in the market of a new high quality organic fertilizer obtained by the use of poultry dejection	https://ec.europa.eu/environment/eco-innovation/projects/en/projects/ferpode	2011	EIP ECO-Innovation	ORGANIC WASTE	END PRODUCTS
Green fertilizer upcycling from manure: Technological, economic and environmental sustainability demonstration	https://cordis.europa.eu/project/id/603744	2016	Horizon 2020, H2020-FP7	END PRODUCTS	
Pilot plant for environmentally friendly animal by-products industries	https://cordis.europa.eu/project/id/603986	2017	EIP ECO-Innovation	TECHNOLOGY	END PRODUCTS
Innovative fertilizer from urban waste, bio-char and farm residues as substitute of chemicals fertilizers	http://www.lifere-safe.com/	2015	LIFE+	ORGANIC WASTE	TECHNOLOGY
Management of organic waste using anaerobic co-digestion for its recycling as organic fertiliser	https://ec.europa.eu/environment/eco-innovation/projects/en/projects/apre	2013	EIP ECO-Innovation	MANAGEMENT	END PRODUCTS
An innovative bio-economy solution to valorise livestock manure into a range of stabilised soil improving materials for environmental sustainability and economic benefit for European agriculture	https://cordis.europa.eu/project/id/308637/reporting/de	2016	Horizon 2020, H2020-FP7	ORGANIC WASTE	END PRODUCTS



Recycling of nutrients from residues of thermochemical processing of bagasse and straw	No data available	2018	No data available	ORGANIC WASTE	END PRODUCTS
Sewage sludge to energy, phosphorus and iron by metallurgical phosphorus recycling in one process step - Sewage sludge treatment for Nuremberg area	https://bmbf.nawam-erwas.de/de/project/krn-mephrec	2019	ERWASNET	ORGANIC WASTE	END PRODUCTS
SYSTEMIC recognises Europe's challenge to tackle the increasing resources constraint and to facilitate the transition towards a more circular economy (COM,2015-614). SYSTEMIC addresses these needs by identifying systemic innovation approaches to recover and recycle valuable mineral components from organic waste streams into new products and to integrate them optimally into a local or regional circular economy.	https://systemicproject.eu/	2021	Horizon 2020, H2020-IND-CE-2016-17, CIRC-01-2016-2017: Systemic, eco-innovative approaches for the circular economy: large-scale demonstration projects	ORGANIC WASTE	END PRODUCTS
REcovery and REcycling of nutrients TURNing wasteWATER into added-value products for a circular economy in agriculture	http://www.waterr2return.eu/	2020	Horizon 2020, H2020-CIRC-2016TwoStage, CIRC-02-2016-2017 - Water in the context of the circular economy	ORGANIC WASTE	END PRODUCTS
Phosphorus REcovery for Fertilisers frOm dairy processing Waste	No data available	2022	Horizon 2020, EU Marie Skłodowska Curie Innovative Training Network	ORGANIC WASTE	END PRODUCTS
Ammonia emission reduction in Mediterranean agriculture with innovate slurry fertigation techniques	https://www.lifearimeda.eu/	2021	LIFE+	ORGANIC WASTE	TECHNOLOGY



Environmentally correct and sustainable management of pig slurry based on innovative technologies: demonstration project carried out in Aragón	http://www.life-eswamar.eu/Inicio.aspx	2011	LIFE+	ORGANIC WASTE	TECHNOLOGY
Improvement of the management, valorization and Marketing of livestock by-products through Innovation	http://www.adroches.org/index.php/proyectos/subpgan	2020	AEI-AGRI - PDR	MANAGEMENT	
Development of membrane prototypes to reduce ammonia emissions from manure in poultry and pig farms	http://ammoniatrapping.com/	2020	LIFE+	TECHNOLOGY	END PRODUCTS
Improvement of the liquid fraction of pig slurry and application through localized irrigation	https://www.cam-pogalego.com/es/riego-con-purines-un-proyecto-orensano-para-fertilizar-los-cultivos/	2019	No data available	TECHNOLOGY	ORGANIC WASTE
Synergic TPAD and O3 process in WWTPs for Resource Efficient waste management	http://lifesto3re.com/	2018	LIFE+	TECHNOLOGY	END PRODUCTS
Improving innovation capacities of private and public actors for sustainable and profitable Recycling of LIVESTOCK WASTE	https://re-livewaste.interreg-med.eu/	2020	Interreg-Mediterranean	TECHNOLOGY	END PRODUCTS
Valorisation of the digestate from pig manure as new fertilizers with an organic / mineral base and gradual release	https://www.life-mixfertilizer.eu/en/	2016	LIFE+	TECHNOLOGY	
Transition towards a more carbon and nutrient efficient agriculture in Europe	https://www.nutri2cycle.eu/	2022	Horizon 2020,	TECHNOLOGY	



Improved Nutrient and Energy Management through Anaerobic Digestion	https://inemadhr.wixsite.com/inemad	2016	Horizon 2020, H2020-FP7	MANAGEMENT	
Interreg Vlaanderen Nederland	No data available	2022	Interreg-Vlaanderen-Nederland	TECHNOLOGY	END PRODUCTS
4x4, demonstrating a flexible value chain to utilize biomass functionalities in the processing industry	https://bio4products.eu/about/	2020	INTERREG North-West Europe	TECHNOLOGY	END PRODUCTS
Nutrient Management and Nutrient Recovery Thematic Network	https://nutriman.net/project	2021	Horizon 2020, RUR-15-2018 Thematic networks compiling knowledge ready for practice	TECHNOLOGY	END PRODUCTS
AGRIWASTEVALUE	https://www.agriwastevalue.eu/fr/	2022	INTERREG North-West Europe	END PRODUCTS	
Agri and food waste valorisation co-ops based on flexible multi-feedstocks biorefinery processing technologies for new high added value applications	http://agrimax-project.eu/	2020	Horizon 2020, H2020-BBI-PPP-2015-2-1, BBI.VC3.D5-2015 - Valorisation of agricultural residues and side streams from the agro-food industry	TECHNOLOGY	END PRODUCTS
Innovative Manure Biofertilizers	http://integro.co.ua/	2018	Horizon 2020, H2020 - SME INST	END PRODUCTS	
From microbial interactions to new-concept biopesticides and biofertilizers	https://eventi.fmach.it/INTERFUTURE	2020	Horizon 2020, H2020-MSCA	DISSEMINATION	END PRODUCTS



Solutions for improving Agroecosystem and Crop Efficiency for water and nutrient use	https://www.sola-ce-eu.net/about.html	2022	Horizon 2020, H2020-SFS	END PRODUCTS	MANAGEMENT
Conversion of diluted mixed urban bio-wastes into sustainable materials and products in flexible purple photo biorefineries	https://deep-purple.eu/	2023	Horizon 2020, BBI	ORGANIC WASTE	
REsources from URban Bio-waste	http://www.waste2bio.com/	2019	Horizon 2020, H2020 - ERA-NET BESTF3 & Co-financed by CDTI and MINECO	ORGANIC WASTE	MANAGEMENT
Sustainable cleaning agent and organic fertilizer recovery from sewage sludge	https://www.renewtech.co/	2019	Horizon 2020, H2020 - SME INST	TECHNOLOGY	END PRODUCTS
Developing multifunctional fertilisers for phosphorus and iron supply	https://www.susfert.eu/	2023	Horizon 2020, BBI	END PRODUCTS	
Soil Care for profitable and sustainable crop production in Europe	https://www.soilcare-project.eu/en/	2021	Horizon 2020, EIP-Agri	CROP SYSTEMS	
Upscale and demonstration of a integrated novel microwave pre-treatment system for efficient production of biogas from anaerobic digestion of pig manure to create a sustainable waste management system	https://www.biowave-ad.eu/	2018	Horizon 2020, FTIPilot	TECHNOLOGY	MANAGEMENT
Recovery and Utilisation of Nutrients for Low Impact Fertiliser	http://www.run4life-project.eu	2021	Horizon 2020, H2020-CIRC-2016TwoStage, CIRC-02-2016-2017 - Water in the context of the circular economy	ORGANIC WASTE	END PRODUCTS



Biobased Fertilisers Achterhoek/Kunstmestvrije Achterhoek	http://www.kunstmestvrijeachterhoek.nl	2021	Interreg-Vlaanderen-Nederland	ORGANIC WASTE	END PRODUCTS
Combining algal and anaerobic digestion technology to reduce and reuse nutrient rich digestate converting nutrients to create algal biomass for sustainable animal feeds	https://www.biorrefine.eu/projects/alg-ad	2020	INTERREG North-West Europe	TECHNOLOGY	END PRODUCTS
Improving livestock effluents characterization by innovating methods and models for a better agronomic assessment	http://www.rmt-fertilisationenvironnement.org/moddle/pluginfile.php/1806/mod_resource/content/2/EffluentsElevage_Synth%C3%A8seInnovationsAgronomiques_mars2014.pdf	2012	CasDAR + ADEME	ORGANIC WASTE	END PRODUCTS
Complete the nitrogen cycle in the region Grand Est	https://grandest.cambre-agriculture.fr/productions-agricoles/references-agronomiques/partage-pour-boucler-le-cycle-de-lazote/	2022	EIP-AGRI, FEADER, Grand Est region	MANAGEMENT	
Optimize organic products use at a territorial scale	https://grandest.cambre-agriculture.fr/productions-agricoles/references-agronomiques/protocoles-optimiser-lusage-des-produits-organiques-a-lechelle-territoriale/	2020	ADEME - GRAINE Call	MANAGEMENT	
Environmental impacts of recycle organic waste products on cultivated ecosystems	https://www6.inrae.fr/valor-pro/SOERE-PRO-Presentation-de-l-observatoire	No data available	ADEME, Agence de l'Eau Rhin-Meuse (=Rhin-Meuse water Agency), INRAE (National Institute of	ORGANIC WASTE	



			Agricultural, Food and Environment Research)		
Evaluation of treatment strategy and agricultural recycling of organic matter from farming systems with a major role on climate change mitigation	No data available	2015	ADEME (REACTIF Programme)	ORGANIC WASTE	MANAGEMENT
Territorial strategies of methanisation to combine climate change, nitrogen pollution and soil quality improvement challenges.	No data available	2019	ADEME (REACTIF Programme)	TECHNOLOGY	MANAGEMENT
Reducing ammonia pollutions at local scale	https://hautsdefrance.chambres-agriculture.fr/actualites/detail-de-lactualite/actualites/epandair-une-agriculture-au-service-dun-air-meilleur/	2020	ADEME - Agr' Air Call	DISSEMINATION	
Soil fertility management by sequestration of stable carbon from thermochemical conversion of residual biomass from the compost sector	https://www.iarpole.com/projets/biochar-2021/	2021	FUI (Special French interministerial Fund)	DISSEMINATION	
Nutrient Recycling – from pilot production to farms and fields	https://www.nweurope.eu/projects/project-research/renu2farm-nutrient-recycling-from-pilot-production-to-farms-and-fields/	2020	INTERREG North-West Europe	TECHNOLOGY	END PRODUCTS
Sustainable Algae Biorefinery for Agriculture and Aquaculture	http://www.eu-sabana.eu	2020	Horizon 2020, H2020-BG-2016-1, BG-01-2016 - Large-scale algae biomass integrated biorefineries	TECHNOLOGY	END PRODUCTS



Duckweed technology for improving nutrient management and resource efficiency in pig production systems	http://www.life-lemna.eu/es/	2019	LIFE+	MANAGEMENT	TECHNOLOGY
Phosphorus efficiency in Gallus gallus and Sus scrofa: bridging the gaps in the phosphorus value chain	http://pegasus.fb-n-dummerstorf.de	2020	European Research Area Network on Sustainable Animal Production ERA-NET SusAn programme	MANAGEMENT	ORGANIC WASTE
Phosphate recovery from iron phosphate and iron based phosphate adsorbents	http://www.wetsus.nl/phosphate-recovery	No data available	Kemira, ICL, Green Water Solution, Water authority Brabantse Delta, waterschapsbedrijf Limburg+ national funding, NWO	TECHNOLOGY	END PRODUCTS
Leibniz ScienceCampus Rostock Phosphorus research	https://wissenschafscampus-rostock.de	No data available	Leibniz Association funding	DISSEMINATION	
Efficient carbon, nitrogen and phosphorus cycling in the european agri-food system and related up- and down-stream processes to mitigate emissions	http://www.circul aragronomics.eu	2022	Horizon 2020, Closing loops at farm and regional levels to mitigate GHG emissions and environmental contamination - focus on carbon, nitrogen and phosphorus cycling in agro-ecosystems	MANAGEMENT	
Demonstrative model of circular economy process in a high quality dairy industry	http://www.lifed op.eu/en	2021	INTERREG 2 Seas	ORGANIC WASTE	END PRODUCTS
Environmentally-friendly Management of Organic Fertilizers in Agriculture	http://database.c entralbaltic.eu/pr oject/36	2019	INTERREG and ERDF	MANAGEMENT	END PRODUCTS



Integrated pig manure digestate processing for direct injection of organic liquid fertiliser into irrigation systems	http://www.smartfertilirrigation.eu/en	2018	LIFE+	TECHNOLOGY	END PRODUCTS
Nutrient recovery from biobased Waste for fertiliser production	http://www.newfert.org	2018	Horizon 2020, H2020-BBI-PPP-2014-1, BBI.VC4.R10 - Nutrient recovery from biobased waste streams and residues (Bio-based industries Public-Private Partnerships)	TECHNOLOGY	END PRODUCTS
Enhanced use of fur animal manure	https://www.luke.fi/en/projects/turkisteho	2019	European Agricultural Fund for Rural Development (EAFRD) 2014-2020	ORGANIC WASTE	MANAGEMENT
Protein recovery and recycling from animal by-products processes	http://www.bypr.otval.eu	2021	LIFE+	ORGANIC WASTE	END PRODUCTS
Replacement of Contentious Inputs in organic farming Systems	https://www.relacs-project.eu	2022	Horizon 2020, H2020-SFS	TECHNOLOGY	
Advanced manure standards for sustainable nutrient management and reduced emissions	https://projects.interreg-baltic.eu/projects/manure-standards-92.html	2019	INTERREG Baltic Sea Region Programme	ORGANIC WASTE	
European cluster for biorefinery projects	https://www.biorrefine.eu	No data available	INTERREG North-West Europe	DISSEMINATION	
Platform on Integrated Water Cooperation	http://www.bsrwater.eu	2021	INTERREG Baltic Sea Region Programme	DISSEMINATION	



Dry anaerobic digestion as an alternative management & treatment solution for sewage sludge	http://www.life-anadry.eu/index.php/en	2019	LIFE+	ORGANIC WASTE	END PRODUCTS
Nutrients, energy and livelihood from biogas plants to rural areas	http://www.syke.fi/biokaasulaitokset/arvosteita	2019	EIP / Finnish Ministry of Agriculture and Forestry	TECHNOLOGY	END PRODUCTS
VITiculture Innovative Soil Organic Matter management: variable-rate distribution system and monitoring of impacts	https://en.lifevitisom.com	2019	LIFE+	MANAGEMENT	END PRODUCTS
Development of Processes to Obtain Enzymes During the Composting of Animal Manure for their Potential Use as Biofertilizer	No data available	2012	FONDECYT		
Development of technological processes for the slurry management and the revaluation of manure to obtain biofertilizers	No data available	2012	Innova Bio-Bio		
Development of technological processes for the management of slurry and the revaluation of manure to obtain biofertilizers	No data available	2015	FONDEF		
Management of solid waste generated from the work in a mobile work unit through an approved procedure and protocol for compost processing, replicable to other future experiences in the country	No data available	2015	FONDEF		



Technical and commercial validation of new biofertilizers formulated based on nanobiotechnology	No data available	2017	CORFO		
Formulation of an environmentally neutral E-FORTE fertilizer, from biomass from PTAS	No data available	2017	CORFO		
Characterization and valorization of new biofertilizers, based on solid residues from the harvest and collection of beetroot (<i>Beta vulgaris</i>) in the sugar manufacturing process	No data available	2017	CORFO		
Re-focusing phosphorus use in the UK food system	http://wp.lancs.ac.uk/rephokus	2020	UK Global Food Security programme led by BBSRC, ESRC, NERC and the Scottish government	MANAGEMENT	
Demonstration of an integrated innovative biorefinery for the transformation of Municipal Solid Waste (MSW) into new BioBased products	http://www.urbiofin.eu	2021	Horizon 2020, BBI	TECHNOLOGY	END PRODUCTS
Efficient and sustainable use of poultry manure	https://www.luke.fi/en/producers-initiative-give-rise-to-the-teholanta-power-manure-project/	2019	European Agricultural Fund for Rural Development (EAFRD) 2014-2020	TECHNOLOGY	ORGANIC WASTE
Sustainable up-cycling of agro-, agrofood and fisheries residues in horticulture and agriculture as bioenergy, biochar and chitin-rich products	https://www.interrreg2seas.eu/en/Horti-blueC	2021	Interreg-Vlaanderen-Nederland	ORGANIC WASTE	END PRODUCTS



Direct and indirect biorefinery technologies for conversion of organic side-streams into multiple marketable products	http://www.bbi-indirect.eu	2019	Horizon 2020, BBI	ORGANIC WASTE	END PRODUCTS
Reducing nitrogen loss from livestock production by promoting the use of slurry acidification techniques in the Balti Sea Region	http://www.baltic-slurry.eu	2019	Interreg Baltic Sea Region	TECHNOLOGY	END PRODUCTS
Includes phosphorus filtering from artificially drained agricultural fields	https://www.proefstation.be/project/iwt-a_propeau	2018	IWT (Belgium) and EU funding	DISSEMINATION	
Manure on Demand	http://www.mest-opmaat.eu	2019	Interreg VA	ORGANIC WASTE	END PRODUCTS
CHickens Manure Exploitation and RevAluation	https://www.life-chimera.eu	2019	LIFE+	TECHNOLOGY	END PRODUCTS
Bio-based FERtilising products as the best practice for agricultural management	https://www.bferst.eu	2024	Horizon 2020, BBI	MANAGEMENT	ORGANIC WASTE
A Disruptive Innovative Cooperative Entrepreneurial (DICE) education, training and skills development programme rolling out the next generation of Agri Biorefinery and Valorisation Bioeconomy leaders	https://cordis.europa.eu/project/id/860477	2023	Horizon 2020, MSCA-ITN-2019 - Innovative Training Networks	DISSEMINATION	END PRODUCTS
Integrated business model for turning Bio-waste and sewage sludge into renewable energy and agri-urban fertilisers	http://www.lifeinbrief.eu/?lang=en	2018	LIFE+	MANAGEMENT	



FArming Tools for external nutrient Inputs and water Management	http://www.fatima-h2020.eu	2018	Horizon 2020, H2020-SFS	MANAGEMENT	
The Use of Bio-Effectors for Crop Nutrition and enhancing nutrient use efficiency	http://www.biofactor.info	2017	Horizon 2020, H2020-FP7	END PRODUCTS	TECHNOLOGY
Valorization of pig carcasses through their transformation into biofuels and organic fertilizers	http://www.lifevalporc.eu	2017	LIFE+	ORGANIC WASTE	TECHNOLOGY
Swine-farm revolution	http://www.depurgan.com	2017	Horizon 2020, H2020 - SME INST	TECHNOLOGY	END PRODUCTS
Novel Release-on-demand micronutrient fertilisers for crops	http://cordis.europa.eu/project/rcn/195870_en.html	2017	Marie Skłodowska-Curie Individual Fellowships	END PRODUCTS	
Supercritical water co-oxidation (SCWco) of urban sewage sludge and wastes	http://www.lo2x.com/eng/	2017	LIFE+	ORGANIC WASTE	
Zinc Interaction with Phosphorus in Root Uptake	http://cordis.europa.eu/project/rcn/189891_en.html	2017	Horizon 2020, H2020-FP7	END PRODUCTS	
Cost efficient algal cultivation systems – A source of emission control and industrial development	http://www.bonusportal.org/microalgae	2016	BONUS Innovation funding 2012 (EU Blue Growth Strategy and EU Strategy for the Baltic Region)	END PRODUCTS	
Valorisation of the digestate from pig manure as new fertilizers with an organic / mineral base and gradual release	https://www.lifemixfertilizer.eu/en	2016	LIFE+	ORGANIC WASTE	TECHNOLOGY
Crops and Animals TOGETHER	http://cordis.europa.eu/project/rcn/101746_en.html	2015	Horizon 2020, H2020-FP7	DISSEMINATION	



Demonstration of efficient Biomass Use for Generation of Green Energy and Recovery of Nutrients	http://www.innoenergy.com/case-study/debugger	2015	EIT KIC InnoEnergy & LIFE+	ORGANIC WASTE	END PRODUCTS
Enhancing Resource Uptake from Roots Under Stress in Cereal Crops	http://www.euroot.eu	2015	Horizon 2020, H2020-FP7	DISSEMINATION	
Sewage sludge reuse Phosphate recovery with an innovative HTC technology (HTCycle)	http://cordis.europa.eu/project/rcn/197563_en.html	2015	Horizon 2020, H2020 - SME INST	TECHNOLOGY	END PRODUCTS
Nutrient recovery from manure	http://www.reusewaste.eu	2015	EU Marie Curie Training Network	DISSEMINATION	
Reducing mineral fertilisers and agro-chemicals by recycling treated organic waste as compost and bio-char products	http://www.fertip lus.eu	2015	Horizon 2020, H2020-FP7	TECHNOLOGY	END PRODUCTS
PYROCHAR	http://www.pyrochar.eu	2015	Horizon 2020, H2020-FP7	TECHNOLOGY	
SmartSOIL Tool	https://projects.a u.dk/smartsoil/	2015	Horizon 2020, H2020-FP7	MANAGEMENT	
Reducing mineral fertilisers & chemicals use in agriculture by recycling treated organic waste as compost and bio-char products	http://www.refer til.info	2015	Horizon 2020, H2020-FP7	TECHNOLOGY	END PRODUCTS
Accelerating Renewable Energies through valorisation of Biogenic Organic Raw Material	http://4b.nweurope.eu/index.php?act=project_detail&id=5364	2015	INTERREG North-West Europe	DISSEMINATION	



Recovery of Phosphorus from Sewage Sludge and Sewage Sludge Ashes with the thermo-reductive RecoPhos-Process	http://www.reco-phos.org	2015	Horizon 2020, H2020-FP7	TECHNOLOGY	
Transfer of knowledge in agriculture as an added value in protecting the environment	https://www.keep.eu/keep/project-ext/21591/AGRI-KNOWS?ss=ab209e971da938870ba1289ec2618b02&espon=	2014	INTERREG	DISSEMINATION	
Achieving good water QQuality status in intensive Animal production areas	http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=3645	2014	LIFE+	END PRODUCTS	MANAGEMENT
Marketable sludge derivatives from sustainable processing of wastewater in a highly integrated treatment plant	http://cordis.europa.eu/result/rcn/172107_en.html	2013	Horizon 2020, H2020-FP7	MANAGEMENT	END PRODUCTS
Waste utilisation in phosphoric acid industry through the development of ecologically sustainable and environmentally friendly processes for a wide class of phosphorus-containing products	No data available	2008	Horizon 2020, H2020-FP7	TECHNOLOGY	END PRODUCTS
Regional Development and Integration of unused biomass wastes as Resources for Circular products and economic Transformation	http://www.nweurope.eu/projects/project-search/regional-development-and-integration-of-unused-biomass-wastes-as-resources-for-circular-products-and-economic-transformation-re-direct	2019	INTERREG North-West Europe	TECHNOLOGY	



Converting Organic Matters from European urban and natural areas into storable bio-Energy	http://www.combine-nwe.eu	2015	INTERREG North-West Europe	TECHNOLOGY	ORGANIC WASTE
Baltic Forum for Innovative Technologies for Sustainable Manure Management	http://www.balticmanure.eu	2013	INTERREG Baltic Sea Region Programme	DISSEMINATION	
Nutrient recycles for organic farming	http://brimstonefertilizers.com/?Brimstone_Fertilizers__Winning_van_essenti%C3%ABle_nutri%C3%ABnten_uit_reststromen	2018	DBU (Foundation for Environment, Germany).	ORGANIC WASTE	
Scaling-up APPLICative microbial electrochemical technologies for agro-industrial wastewater recovery	http://sites.unimi.it/e-biocenter	2018	Project (RBSI14JKU3) financed by the SIR2014 Grant, Italian Ministry of University and Research (MIUR).	TECHNOLOGY	END PRODUCTS
From waste to fertilizer - phosphorus and carbon waste mining as nutrient recycling strategy for the future	https://forschung.boku.ac.at/fis/suchen.projekt_uebersicht?sprache_in=en&ansicht_in=&menue_id_in=300&id_in=10302	2018	The Austrian Research Promotion Agency (FFG)	ORGANIC WASTE	TECHNOLOGY
Process for phosphorus recovery process from sewage sludge incineration ash	http://www.klaerschlamm.zh.ch	No data available	Zurich Kanton funding	TECHNOLOGY	
Closing the Global Nutrient Loop	No data available	2020	German BMBF	END PRODUCTS	



The Biochar-Soil-Plant Interface, probing the potential for a sustainable phosphorus fertiliser.	No data available	2020	Natural Environment Research Council	END PRODUCTS	
Technological transition of the Flemish biogas sector towards innovative business models with increased profitability and reduced support dependence	http://www.biogas-e.be/transbio	2019	Co-funded by Flanders Innovation & Entrepreneurship (IWT-VIS)	TECHNOLOGY	END PRODUCTS
Symbiotic partnership network formed to coordinate companies related to nutrient recycling	https://www.bsag.fi/en/action/nutrient-cycling-business-ecosystem/	2018	TEKES, the Finnish Funding Agency for Innovation	DISSEMINATION	
Pyrolysis of sewage sludge and heavy metal elimination for phosphorus recycling	http://www.fibl.org/en/projectdatabase/projectitem/project/1195.html http://www.fibl.org/en/projectdatabase/projectitem/project/1253.html	2018	KTI Commission for technology and innovation	TECHNOLOGY	END PRODUCTS
New innovative methods for nutrient recovery and harvesting in wastewater treatment plants	No data available	No data available	No data available	END PRODUCTS	
Algae delivering waste phosphorus to soil and crops	https://www.biosc.de/algalfertilizer_en	2017	BioSC BOOST Fund NRW-Strategieprojekt, Ministry of Innovation, Science and Research of the German State of North Rhine-Westphalia.	ORGANIC WASTE	END PRODUCTS
AVA-CleanPhos phosphorus recovery process from sewage sludge by hydrothermal carbonization (HTC)	http://sustainabilityconsult.com/news/159-press-release-valuable-phosphorus-from-sewage-sludge-ava-cleanphos-pilot-plant-	No data available	DBU (Germany)	END PRODUCTS	



	comes-online				
Recovering metals from sewage sludge and similar substances by hyperaccumulator plants	http://www.alchemia-nova.net/en/projects/bio-ore/	2014	75% funded by FFG from the Austrian Ministry of Infrastructure and Innovation	END PRODUCTS	
Nutrient recovery and closing loops with biogas technology in Western Finland	https://ec.europa.eu/eip/agriculture/en/news/inspirational-ideas-biovakka-manure-management-produce-biogas-and-nutrients-finland	No data available	Horizon 2020, EIP-Agri	TECHNOLOGY	ORGANIC WASTE
ElectroDialytic recovery of sludge incineration ashes (Danish: ElektroDialytisk genanvendelse af slamASKe)	http://www.kruger.dk/en	2016	Danish EPA & MUDP 2014 (Environmental Technology Development and Demonstration Program, 2014)	TECHNOLOGY	
Low temperature CO2 phosphorus extraction from sewage sludge to produce phosphoric acid (Budenheim process)	https://www.budenheim.com/en/budenheim-the-company/history/conquering-the-world-with-phosphate	No data available	Private company	TECHNOLOGY	END PRODUCTS
Phosphorus recovery from sewage sludge with calcium silicate hydrate (CSH)	http://www.iwar.tu-darmstadt.de/media/iwar_abwasser/technik/abgeschlossene/forschungsprojekte/FIXPhos_Poster_IFAT2012.pdf	No data available	BMBF (Germany)	END PRODUCTS	
Transdisciplinary processes for sustainable phosphorus management	http://www.globaltraps.ch	2014	IFDA and private funding	DISSEMINATION	



The holistic optimization of the biogas process chain focusing on its operational, material, energetic and ecological efficiency.	https://www.igb.fraunhofer.de/en/research/competences/molecular-biotechnology/functional-genomics/next-generation-sequencing/gobi.html	2016	German Ministry of Education and Research	TECHNOLOGY	
Water cradle-to-cradle (C2C) in intensive livestock farming	http://www.biorefine.eu/cluster/projects/h2oc2c	2013	Province West-Flanders (Belgium)	TECHNOLOGY	
Manufacture of organic fertilizers derived from livestock manure	http://www.phosphorusplatform.eu/images/Conference/ESPC2-materials/Conversion%20of%20posters%20ESPC2.pdf	No data available	No data available	END PRODUCTS	MANAGEMENT
Improved Phosphorus Resource efficiency in Organic agriculture Via recycling and Enhanced biological mobilization	https://improve-p.uni-hohenheim.de	2017	Private company	DISSEMINATION	
Transforming sewage sludge to energy, fertiliser and iron in a single step using metallurgical phosphorus recycling	https://bmbf.nawam-erwas.de/en/project/krn-mephrec https://www.nuernberg.de/internet/krn_mephrec	No data available	BMBF (germany)	TECHNOLOGY	
Finnish tool to to plan regional manure nutrient recycling	http://jukuri.luke.fi/handle/10024/481761	No data available	Finland government	TECHNOLOGY	END PRODUCTS
Manure valorization with manure treatment	No data available	No data available	No data available	TECHNOLOGY	



Finnish tool to calculate manure quantity and quality	http://jukuri.luke.fi/handle/10024/540238	No data available	Finland government	TECHNOLOGY	ORGANIC WASTE
Green fertilizers from digestate and manure	http://www.dlvinovision.be/dlvinovision/en/mip-icon-2011-nutricycle	2013	MIP ICON	END PRODUCTS	ORGANIC WASTE
Nutrient recycling tool for municipalities and regions	http://www.ymparisto.fi/en-US/Nutrient_Neutral_Municipality	2017	Six Finish municipalities	DISSEMINATION	MANAGEMENT
Evaluation of technologies for nutrient recovery at Grødaland biogas plant in Rogaland, Norway.	No data available	2015	Private company	TECHNOLOGY	
Transition towards Sustainable Nutrient Economy in Finland	https://www.luke.fi/projektit/nutstransition-towards-sustai	2015	Finland government	DISSEMINATION	
Ochre and biochar: technologies for phosphorus capture and re-use	For links to papers arising from this research see: http://www.research.ed.ac.uk/portal/en/persons/kate-heal(aa3451d2-c9c3-4802-9874-a03baa9b7fc5)/publications.html	2016	University of Edinburgh & Icon Water, Australia	TECHNOLOGY	END PRODUCTS
Better utilisation of phosphorous derived from organic waste products in Norway.	No data available	2017	Norwegian Environmental Directorate	MANAGEMENT	ORGANIC WASTE
Efficient phosphate recovery from agro waste streams by enzyme, strain, and process engineering	https://www.biosc.de/p-eng_en	2016	BioSC BOOST Fund NRW-Strategieprojekt, Ministry of Innovation, Science and Research of the	ORGANIC WASTE	TECHNOLOGY



			German State of North Rhine-Westphalia.		
Renewable phosphorus fertilizer from livestock effluent to prevent water eutrophication	http://www.ifib2015.talkb2b.net/members/details/41 http://users.unimi.it/ricicla	No data available	CARIPO Foundation	END PRODUCTS	
Potential of sewage sludge phosphorus in plant production	No data available	2018	Finland Ministry of Agriculture	END PRODUCTS	
Recovering phosphorus from sewage sludge to fertilizer	No data available	2015	Finland Ministry of Agriculture	END PRODUCTS	
From sewage sludge to fertilizers and soil improvers	http://www.wur.nl/nl/project/Sludge2Soil.htm	2017	Dutch waterboards and sludge treatment companies	END PRODUCTS	
Holistic decision support for slurry storage and treatment	http://wp.lancs.ac.uk/slurry-max	2018	NERC (United Kingdom)	DISSEMINATION	TECHNOLOGY
Optimal Valorization of Digestate with nitrogen, phosphorus and potassium recovery	http://www.ovale-innovation.com/en/valodim-2	2018	French Bank for industry (BPI)	TECHNOLOGY	MANAGEMENT
Clean production and management of slurry in swine production systems of European Union countries, for the evaluation and validation of environmental solutions in Chile, as a strategic factor for the competitiveness of the sector	No data available	2004	FIA	MANAGEMENT	
Ekiji: anaerobic fermentation of agricultural waste for the production of biofertilizers	No data available	2008	FIA	END PRODUCTS	



Energy recovery of agricultural waste in the Province of Valdivia, integrated into a sustainable supply management system, for the production of biogas in centralized cogeneration units, biofertilizers and reduction of pollutants	No data available	2008	FIA	MANAGEMENT	
Slurry treatment plant with biodigester and electrical co-generation for irrigation of biofertilizer	No data available	2014	MINENERGIA	TECHNOLOGY	END PRODUCTS

