Chancen von Agroforst-wirtschaft für die ländliche Entwicklung: Ergebnisse aus dem AGFORWARD-Projekt

Tobias Plieninger[1] , Paul Burgess[2], Michael den Herder[3], Gerardo Moreno[4] , Anastasia Pantera[5], Michael Kanzler[6], John Hermansen[7], Joao Palma[8], Sonia Kay[9], Fabien Balaguer[10]
Rosa Mosquera-Losada[11], and Fabien Liagre[12]

1) University of Göttingen and University of Kassel, Germany; 2) Cranfield University, UK; 3) European Forest Institute, Finland; 4) Universidad de Extremadura, Spain; 5) TEI of Central Greece; 6) Brandenburg Technical University Cottbus – Senftenberg, Germany 7) Aarhus University, Denmark; 8) University of Lisbon, Portugal; 9) Agroscope, Switzerland, (10) AFAF, France; 11) Universidad de Santiago de Compostela, Spain; 12) AGROOF, France

9. Oktober 2018

European Union's Seventh Framework Program for research, technological development and demonstration under grant agreement no 613520

Ziele von AGFORWARD

1. Erfassung und Analyse der aktuellen **Verbreitung** von Agroforstsystemen und ihrer **Rahmenbedingungen** in Europa,
2. **Identifikation, Entwicklung und Erprobung** von Innovationen durch partizipative Forschung,
3. Evaluierung der Effekte innovativer Agroforst-Praktiken auf **Feld-, Betriebs- und Landschafts-Ebene**,
4. Förderung einer breiten Aufnahme von Agroforstwirtschaft durch Entwicklung geeigneter **Förderpolitiken** und **Dissemination**.

Was ist Agroforstwirtschaft?

Kleinflächige, innovative Agroforst-Praktiven: Apfelbäume an 27 m breiten Alleen auf einem Öko-Betrieb in England

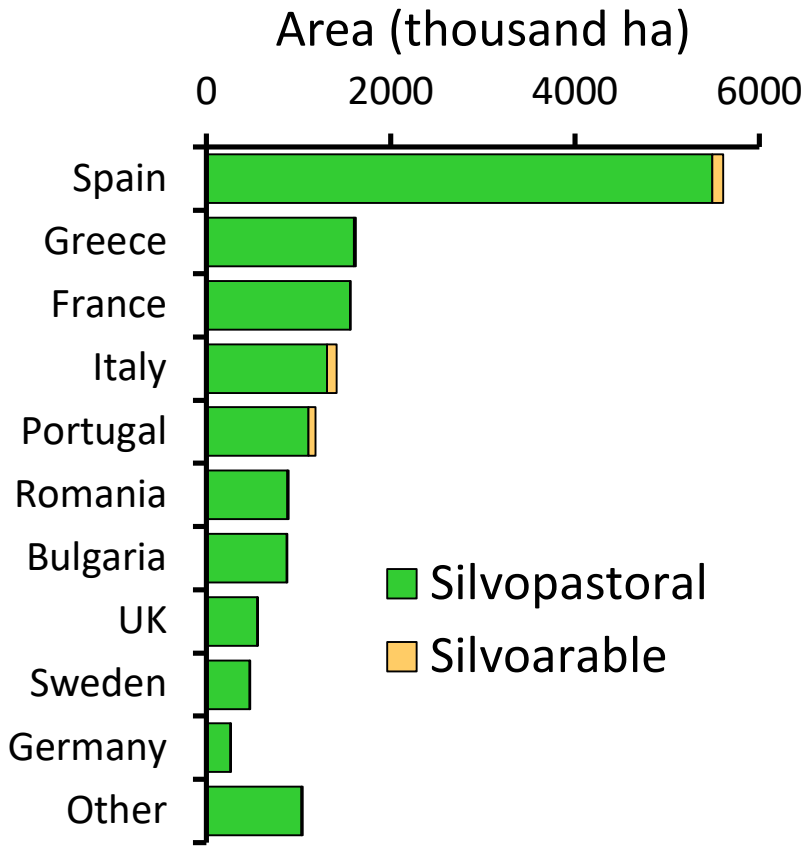
Großflächige, traditionelle Agroforstwirtschaft: Montados in Portugal

Bäume als integraler Bestandteil vieler Agrarlandschaften

Silvopasture und Silvoarable systems sind die wichtigsten Formen von Agroforstwirtschaft in Europa

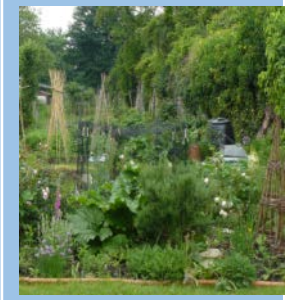
Silvopastoral	Silvoarable			
				
Combining trees and shrubs with forage and animal production	Widely spaced trees and shrubs inter-cropped or annual or perennial crops			

Agroforstwirtschaft, insbesondere Baum-Weide-Systeme, bedecken 3,6% der Fläche der EU



Area of agroforestry: Using LUCAS data:15.4 Mha (3.6% of total area and 8.8% of agricultural area) (den Herder et al. 2017) (excludes 1.8 Mha of homegardens).

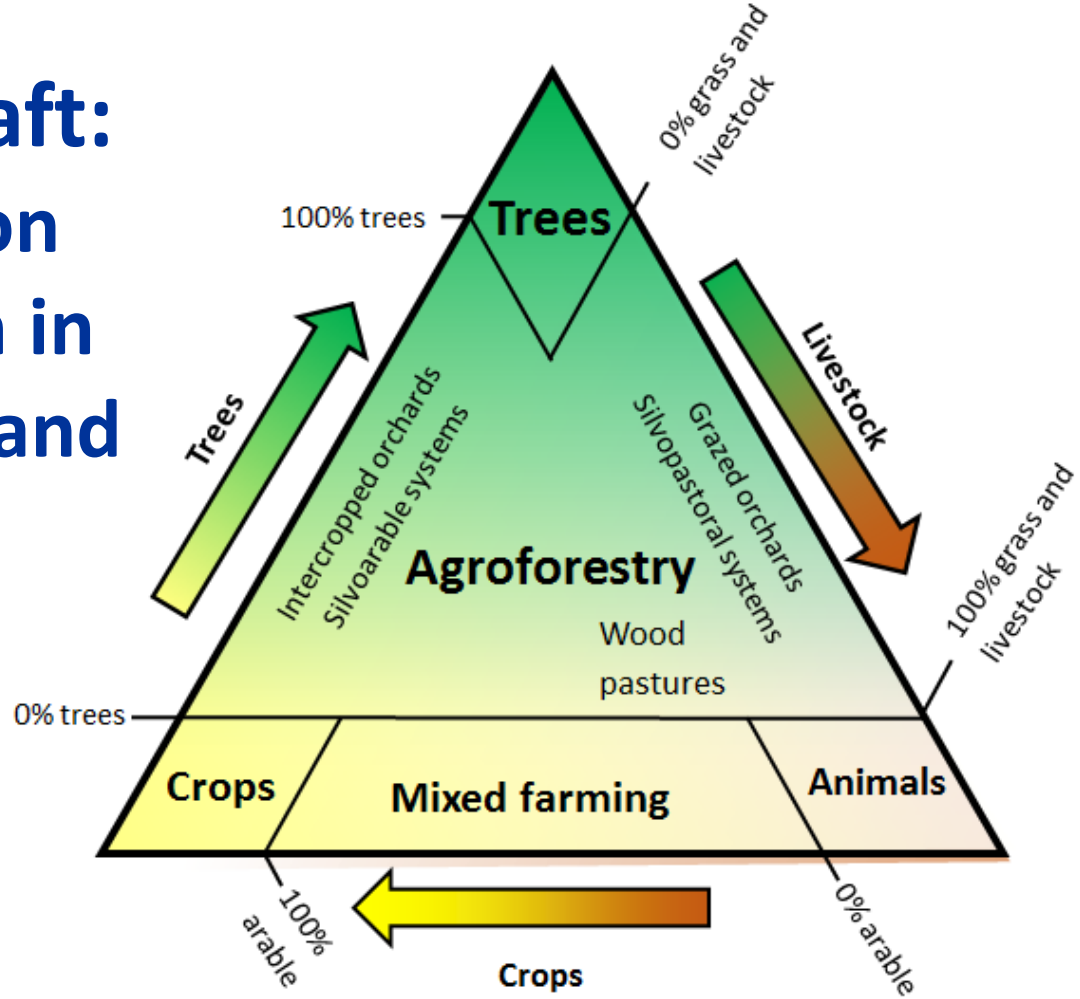
Weitere Formen von Agroforstwirtschaft

Silvopastoral	Silvoarable	Hedgerows, windbreaks and riparian buffer strips	Forest farming	Home-gardens
				
Combining trees and shrubs with forage and animal production	Widely spaced trees and shrubs inter-cropped with annual or perennial crops	Lines of trees/ shrubs bordering farmland to protect livestock, crops, and/or soil and water quality	Forested areas used for harvest of speciality crops	Trees/ shrubs with veg. in urban areas (1.8 Mha)

Agroforstwirtschaft: Vielfalt an Möglichkeiten der Integration von Landwirtschaft und Bäumen

Agroforstwirtschaft:

Bewusste Integration von Gehölzpflanzen in Weide- oder Ackerland



Ziele von AGFORWARD

1. Erfassung und Analyse der aktuellen **Verbreitung** von Agroforstsystemen und ihrer **Rahmenbedingungen** in Europa,
2. **Identifikation, Entwicklung und Erprobung** von Innovationen durch partizipative Forschung,
3. Evaluierung der Effekte innovativer Agroforst-Praktiken auf **Feld-, Betriebs- und Landschafts-Ebene**,
4. Förderung einer breiten Aufnahme von Agroforstwirtschaft durch Entwicklung geeigneter

24 Agroforestry INNOVATION

Economic benefits of grazed apple orchards in England

Grazing under half-standard or standard trees
www.agforward.eu

Why graze orchards with sheep?

Orchard grazing can offer financial and environmental benefits. The experience of stakeholders in the AGFORWARD project is that some lowland sheep breeds (e.g. Shropshire) can successfully graze on orchards which have been pruned to a height of 1.2 m without noticeable losses in apple yields. Sheep producers can profit from an additional source of grass in the orchards, and the release of grazed land for hay production. Orchard owners can profit from reduced mowing costs, increased nitrogen cycling and a rent from the sheep owner. There can also be societal benefits in terms of employment and plant biodiversity.

Cider apple orchards and sheep

Cider apple orchards have significant economic, biodiversity, and societal benefits (Robertson et al. 2012). Cider apples are sold for their juice rather than their appearance and therefore the pesticide regime can be less intensive than that required for dessert apples. This reduction in agrochemical use provides opportunities for integrating sheep. In the UK, about a third of the cider apple orchards are comprised of "standard" or "half-standard" trees, which have been pruned to a height of 2 m and 1–2 m respectively. This pruning allows the yields from apple trees to be maintained when the grass understorey is grazed by "tree-friendly" sheep. In England, orchard owners commonly use Shropshire sheep because, if managed correctly, they cause minimal levels of bark damage.

A key feature of grazed orchard systems is that it is necessary for the sheep to be absent from the orchard for 60 days before apple harvest (generally from August to October) to minimise faecal contamination of the fruit. Hence, a sheep producer must have access to separate non-orchard grassland where the sheep can be kept at this time. Thus, a grazed orchard system involves sheep, apple trees, the grass understorey, and an area of separate non-orchard grassland for supplementary grazing.

Schafbeweidung in Hochstamm-Apfel-Plantagen in England und Frankreich reduziert die Kosten der Grünland-Bewirtschaftung

16 Agroforestry INNOVATION

Grazing sheep under walnut trees

Producing high quality timber whilst reducing costs
www.agfor-ward.eu

Why introduce livestock?

There is a high demand for hardwood timber, such as hybrid walnut, in the EU. To meet this demand, over the last decade, hardwood plantations have substantially increased production in many Spanish regions. Intensive management is often required to grow these trees in short rotations. Such management comprises irrigation, fertilisation, and chemical weed control. However, this level of management has high economic and environmental costs. Plantation management accounts for more than 45% of the total investment costs. Moreover, these operations can have major environmental impacts, similar to the effects of intensive agriculture systems.

Introducing livestock and sowing legumes can reduce the financial costs of these plantations and optimize their environmental functions. This is known as a silvopastoral system.

Where and how to plant

Hybrid walnut trees need a rather humid climate, preferably with a moderate dry period (about 3 months without rains) and not too cold (annual mean temperature above 10°C). Some hybrid walnut progenies (e.g. MJ-209x4Rx *Juglans major x regia*) show a higher tolerance to warm climates, such as in the Mediterranean areas, than local walnut (*Juglans regia*). Although walnut can grow in a wide variety of soil types, it does best in a deep, well-drained soil, with a loamy texture and neutral or slightly basic pH.

Trees should be planted at a density of 333 trees/ha (5x6 m) and where planting 1-2 year-old trees, saplings should be around 60-100 cm height. Irrigation is needed if summer drought occurs. Fertiliser should be applied in early spring at rates of 40 kg N/ha, 40 kg P_2O_5/ha and 50 kg K_2O/ha.

The trees are very sensitive to weed competition during the first 5 years. Thinning and pruning may be required, depending on tree growth.

How to graze

A stocking rate of 1-2 sheep/ha is recommended in the Mediterranean regions. With summer and winter fodder supplementation livestock can remain in plantations all year. Sheep can be introduced in the first years of plantation as the walnut is not palatable during this period. However, trampling damage should be avoided by using tree protection guards during the first 5-6 years. No damage will be caused after this time as the trees would have gained a sufficient height so that the sheep will no longer be able to reach the crowns.

How to sow legumes

A mix of forage legumes (annual species of *Trifolium* spp., *Medicago* spp. and *Ornithopus* spp.) can be sown at a density of 20 kg seeds/ha to a soil depth of 0.5-1.0 cm. In the first year, pasture should only be grazed after crops maturation to ensure self-seeding in the following years.

Anbau von Leguminosen bzw. Schafbeweidung erhöht Holzzuwachs bei Walnuss

“Woodland eggs”

- Hennen nutzen Freiräume intensiver
- Geringere Schäden durch Feder-Picken
- Weniger Austausch mit Wildvögeln

39 Agroforestry INNOVATION

Commercial apple orchards in poultry free-range areas

Increase revenues from your investment in animal welfare
www.agforward.eu

Why plant trees?

Where, how and which trees to plant?


45 Agroforestry INNOVATION

Fodder trees on dairy farms

Extend the grazing season with trees and shrubs
www.agforward.eu

Why browse woody plants?

How to integrate woody plants in a grazed paddock

“Tree fodder”: Blätter von Robinie, Esskastanie, Maulbeere und Esche haben 22% Proteingehalte

Höhere Betriebseinkommen


34 Agroforestry INNOVATION

Agroforestry and decentralised food and energy production

The role of coppicing and pollarding

www.agforward.eu

The tree problem

Fuel production: coppicing and pollarding

System	Crop	Land area (%)	Yield (t DM/ total ha)	Value (£/t)	Output (£/ha/yr)
Monocultures	SRC	100	8.33	60	**500**
	Organic wheat	100	5.00	270	**1350**
Agroforestry	SRC	20	3.35	60	201
	Wheat	80	5.13	270	1385
					1586

Agroforstwirtschaft ist biodivers und speichert Kohlenstoff

20 Agroforestry INNOVATION

Olive trees intercropped with chickpeas

Increasing income from your olive grove
www.agforward.eu

Why chickpeas?

Chickpeas (*Cicer arietinum* L) are valued as a high-quality food for humans. They are also an excellent source of protein for animal feed. They are easy to cultivate, requiring little management and, in general, have low treatment costs. They have high monetary value, so a farmer can gain considerable additional income from cultivating chickpeas among trees.

One of the important characteristics of chickpeas is their low water demand. This makes them ideal for intercropping with trees of similar water economy in Mediterranean and other dry ecosystems.

Another important feature of chickpeas is the nitrogen they provide to the soil by the symbiotic relationship of their roots with nitrogen fixing bacteria. This benefits the farmer by reducing the need for expenditure on nitrogen fertilizers, which also protects the soil and water from nitrogen contamination.

Where and how to plant

A trial was conducted in Molos, Central Greece, in a 67 year-old olive grove of "Kalamon" and "Amphissa" varieties. Tree spacing between the trees was 10m. The trial involved three treatments with three replications: olive trees + chickpea, olive trees + oregano and olive trees alone as a control.

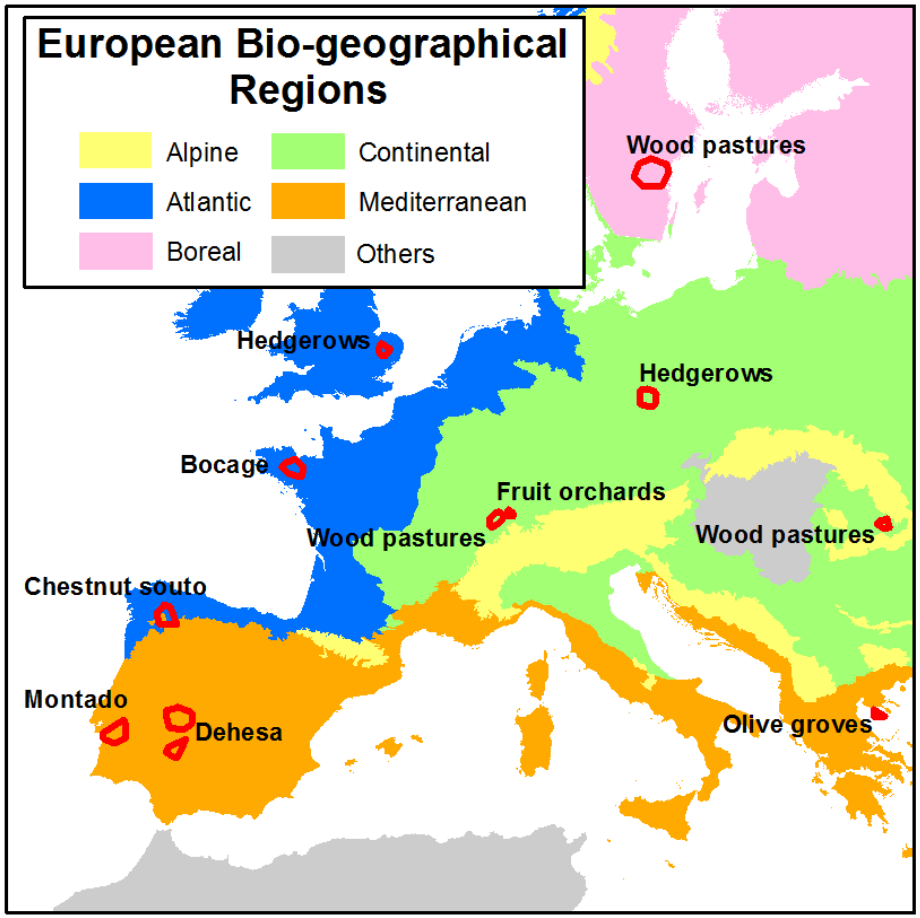
A 0.2 ha area was cultivated with chickpeas and a smaller one with oregano. Another 0.2 ha of the orchards contained olive trees and other tree species and the rest only olive trees. This was used as control. The rows where chickpeas were cultivated were 5 m x 60 m wide. A local variety of chickpeas named "Aenorgyra" was used. This variety was developed by the Hellenic Research Institute and is resistant to fungus infections. The seed quantities were 80 kg/ha. In 2015, crop sowing was delayed until the first week of April due to the wet spring period. Oregano was sown in spring of 2016. The trial was repeated over three years (2015, 2016 and 2017).

The best timing for seeding is between late February and March for lower altitudes. However, at higher altitudes, it can be sown up to late April.

Ziele von AGFORWARD

1. Erfassung und Analyse der aktuellen **Verbreitung** von Agroforstsystemen und ihrer **Rahmenbedingungen** in Europa,
2. **Identifikation, Entwicklung und Erprobung** von Innovationen durch partizipative Forschung,
3. Evaluierung der Effekte innovativer Agroforst-Praktiken auf **Feld-, Betriebs- und Landschafts-Ebene**,
4. Förderung einer breiten Aufnahme von Agroforstwirtschaft durch Entwicklung geeigneter **Förderpolitiken** und **Dissemination**.

Modellierung der Ökosystemleistungen von Landschaften mit / ohne Agroforstwirtschaft

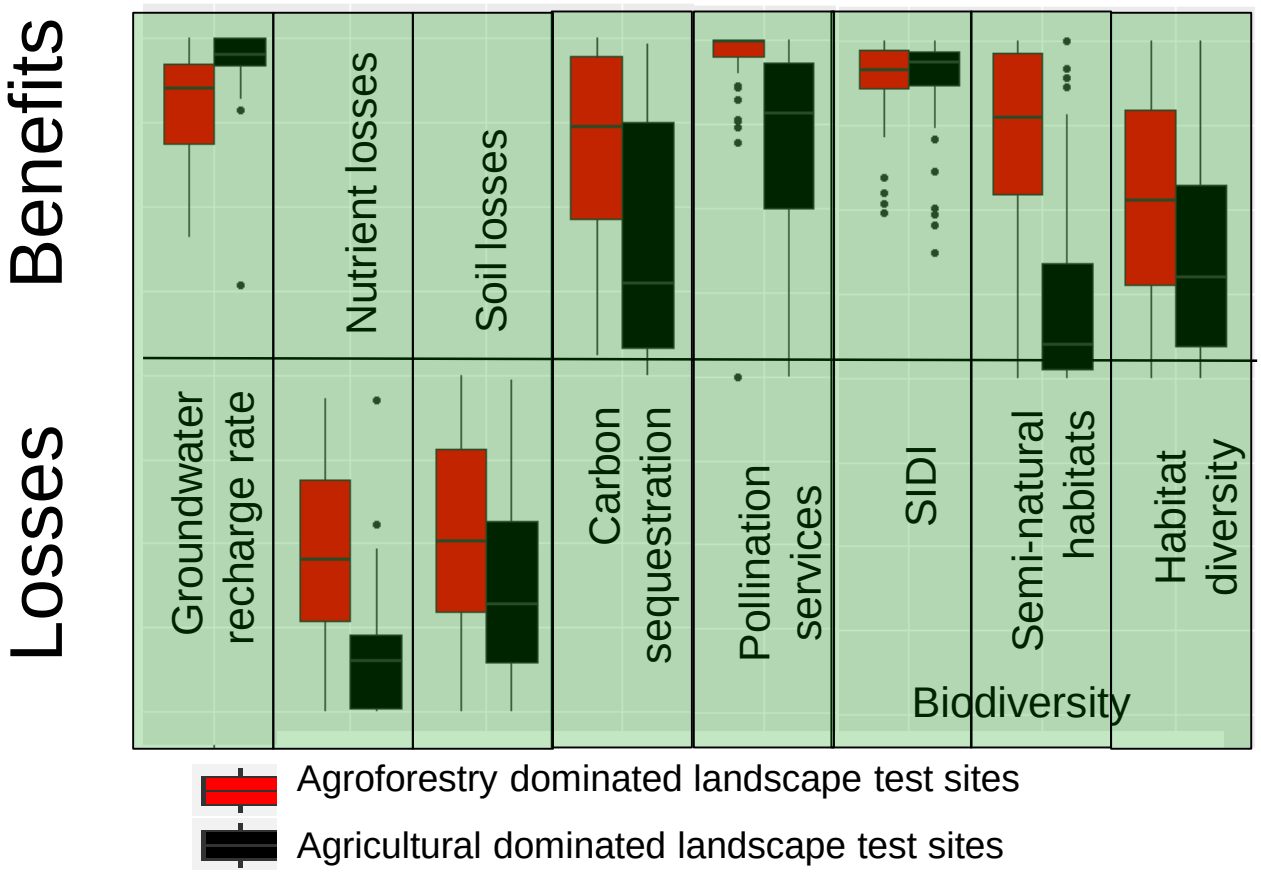


Ecosystem services modelled:

- Crop biomass yield
- Groundwater recharge rate
- Nutrient retention
- Soil conservation
- Carbon sequestration
- Biodiversity
  - Functional biodiversity (Pollination)
  - Habitat diversity

Kay et al. (2017) Agroforestry Systems

Vergleich von Agroforst- und Agrar-Landschaften über 12 Untersuchungsgebiete



Agroforestry landscapes

Higher:

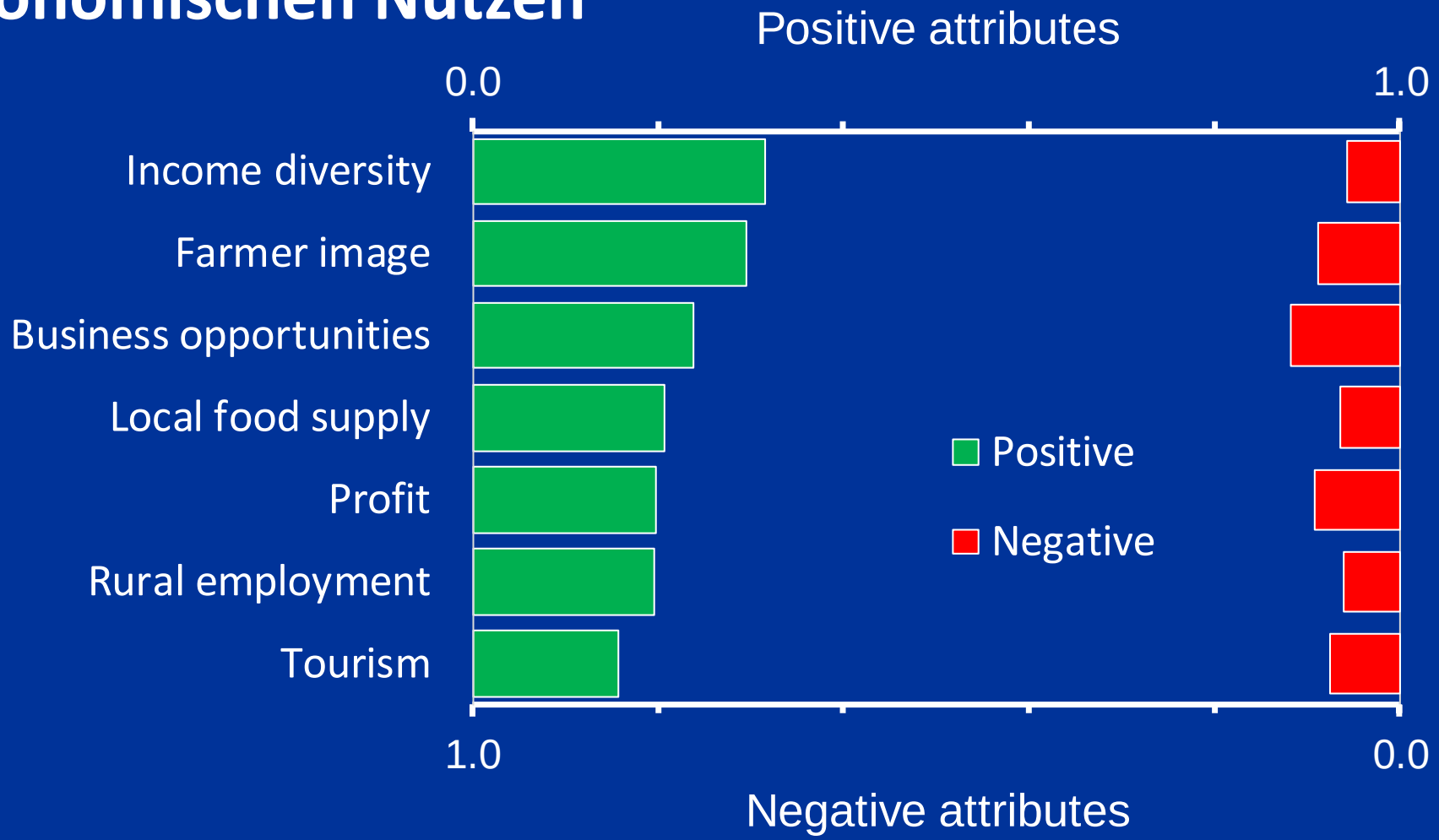
- Nutrient retention
- C sequestration
- Soil conservation
- Pollination services
- Proportions of semi-natural habitats

Lower:

- Groundwater recharge

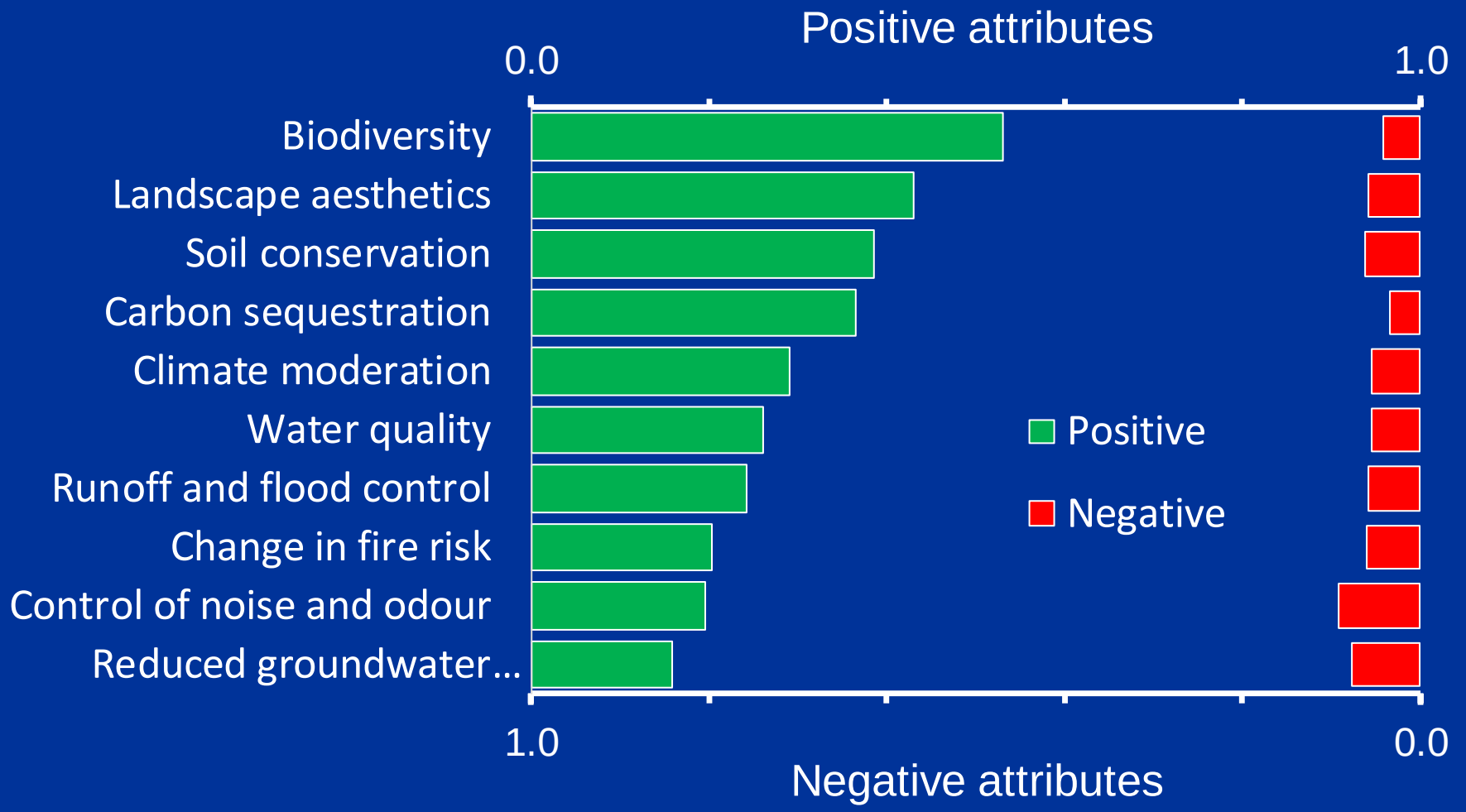
Kay et al. (2017) Agroforestry Systems

Agroforstwirtschaft entfaltet sozialen und ökonomischen Nutzen



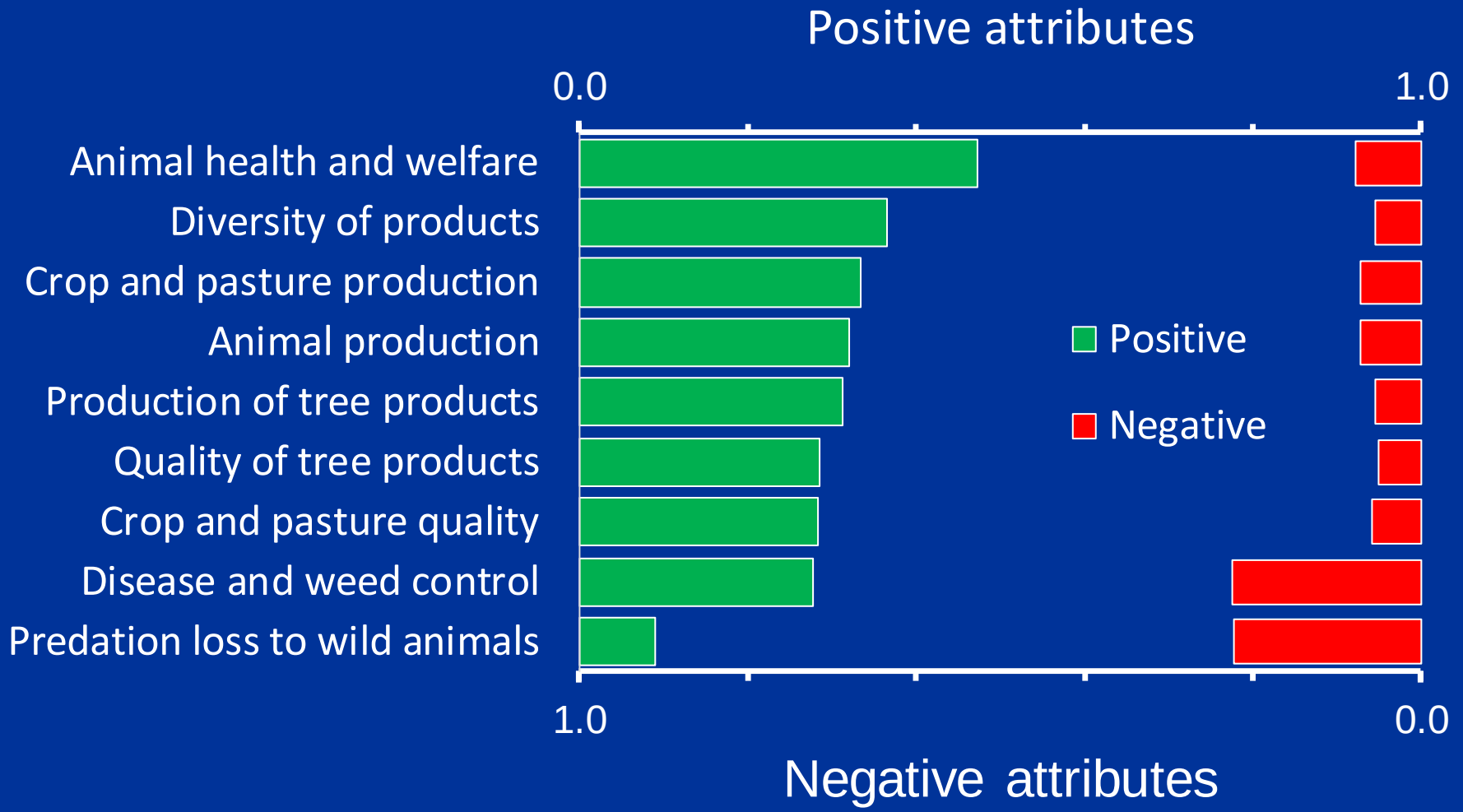
Analysis of 30 stakeholder groups and 344 stakeholders (Garcia de Jalon et al. 2017)

Agroforstwirtschaft entfaltet ökologischen Nutzen



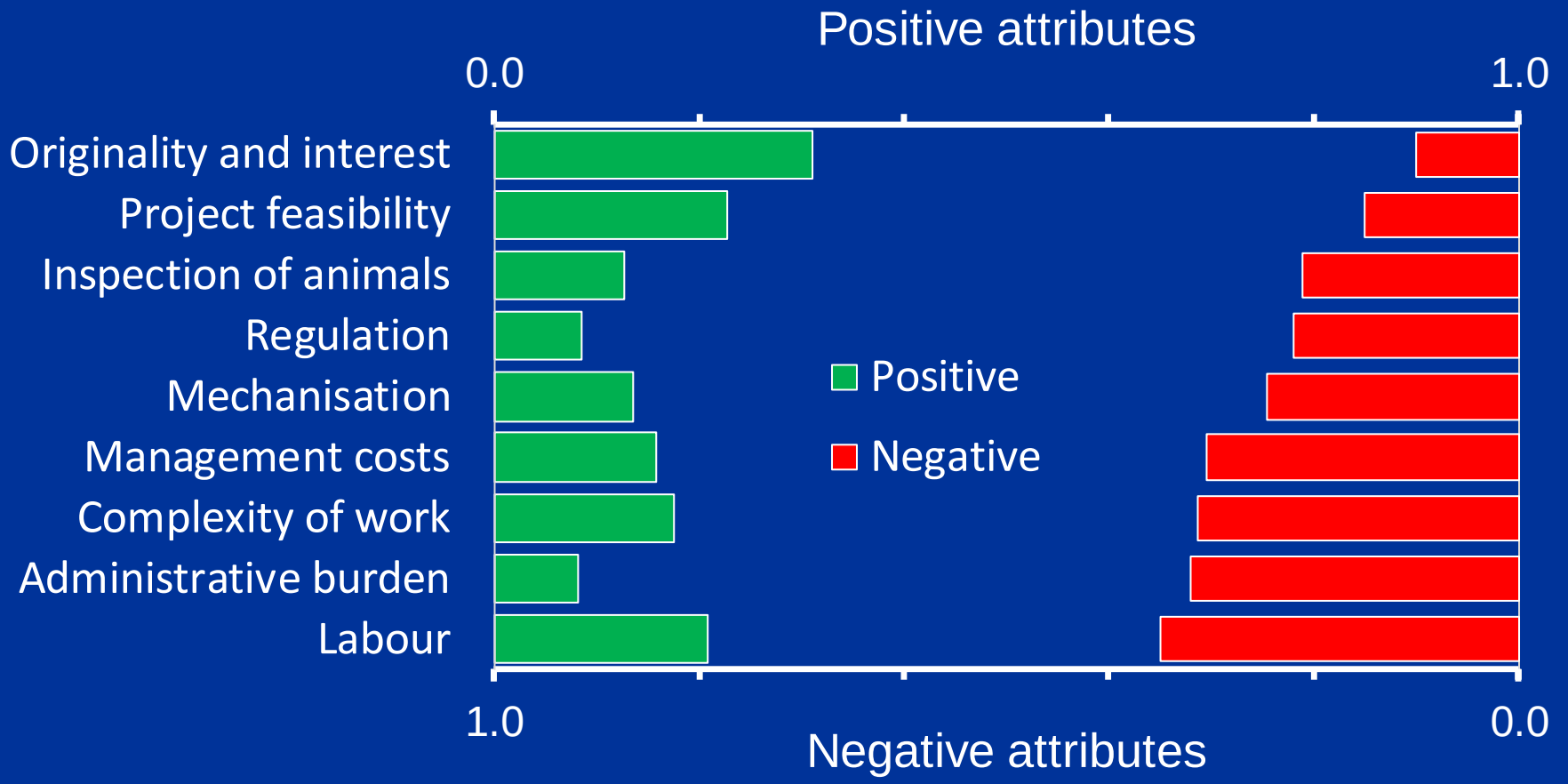
Analysis of 30 stakeholder groups and 344 stakeholders (Garcia de Jalon et al. 2017)

Agroforstwirtschaft schafft Synergien bei der Produktion



Analysis of 30 stakeholder groups and 344 stakeholders (Garcia de Jalon et al. 2017)

Agroforstwirtschaft hat hohe Arbeits- und administrative Kosten



Analysis of 30 stakeholder groups and 344 stakeholders (Garcia de Jalon et al. 2017)

Ziele von AGFORWARD

1. Erfassung und Analyse der aktuellen **Verbreitung** von Agroforstsystemen und ihrer **Rahmenbedingungen** in Europa,
2. **Identifikation, Entwicklung und Erprobung** von Innovationen durch partizipative Forschung,
3. Evaluierung der Effekte innovativer Agroforst-Praktiken auf **Feld-, Betriebs- und Landschafts-Ebene**,
4. Förderung einer breiten Aufnahme von Agroforstwirtschaft durch Entwicklung geeigneter **Förderpolitiken** und **Dissemination**.

Review der gegenwärtigen Förderpolitik u. Entwicklung von Politikempfehlungen

Extent and Success of Current Policy Measures to Promote Agroforestry across Europe

Project name	AGFORWARD (613520)
Work-package	8: Agroforestry Policy Development
Deliverable	Deliverable 8.23: Extent and success of current policy measures to promote agroforestry across Europe
Date of report	29 September 2016 (small corrections: 8 December 2016)
Authors	Rosa Mosquera-Losada, Jose Javier Santiago Freijanes, Andrea Pisanelli, Mercedes Rois, Jo Smith, Michael den Herder, Gerardo Moreno, Nina Malignier, Javier Ruiz Mirazo, Norbert Lamersdorf, Nuria Ferreiro Domínguez, Fabien Balaguer, Anastasia Pantera, , Antonio Rigueiro-Rodríguez, Pilar Gonzalez-Hernández, Juan Luis Fernández-Lorenzo, Rosa Romero-Franco, Anja Chalmin, Silvestre Garcia de Jalon, Kenisha Garnett, Anil Graves, Paul J Burgess
Contact	mrosa.mosquera.losada@usc.es
Approved	Paul Burgess (30 September 2016)

Contents

AGFORWARD (Grant Agreement N° 613520) is co-funded by the European Commission, Directorate General for Research and Innovation, within the 7th Framework Programme of RTD. The views and opinions expressed in this report are purely those of the writers and may not in any circumstances be regarded as stating an official position of the European Commission.

How can policy support the uptake of agroforestry in Europe?

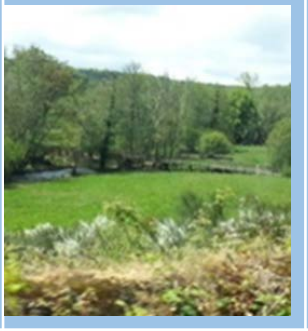
Project name	AGFORWARD (613520)
Work-package	8: Agroforestry Policy Development
Deliverable	Deliverable 8.24: How can policy support the appropriate development and uptake of agroforestry in Europe?
Date of report	7 September 2017
Authors	Maria Rosa Mosquera-Losada, Jose Javier Santiago Freijanes, Andrea Pisanelli, Mercedes Rois, Jo Smith, Michael den Herder, Gerardo Moreno, Norbert Lamersdorf, Nuria Ferreiro Domínguez, Fabien Balaguer, Anastasia Pantera, Vasilios Papanastasis, Antonio Rigueiro-Rodríguez, Jose Antonio Aldrey, Pilar Gonzalez-Hernández, Juan Luis Fernández-Lorenzo, Rosa Romero-Franco, Nic Lampkin, Paul J Burgess
Contact	mrosa.mosquera.losada@usc.es
Reviewed	Paul J Burgess (7 September 2017)

Contents

AGFORWARD (Grant Agreement N° 613520) is co-funded by the European Commission, Directorate General for Research and Innovation, within the 7th Framework Programme of RTD. The views and opinions expressed in this report are purely those of the writers and may not in any circumstances be regarded as stating an official position of the European Commission.

Mosquera-Losada et al. (2016 and 2017)

Unterscheidung zwischen Agroforst-wirtschaft auf Agrarland und in Wäldern

Agroforestry on agricultural land			Agroforestry on forest land		Urban areas
Silvopasture	Hedgerows, windbreaks and riparian buffer strips	Silvoarable	Silvopasture	Forest farming	Home gardens
					
Wood pasture Meadow orchards Grazed orchards		Alley cropping	Forest grazing		Allotments, Gardens

(Mosquera-Losada et al. 2017)

Derzeitige Förderung von Agroforstwirtschaft

Common Agricultural Policy (CAP)	**Agricultural land**	**Forest land**	**Urban area**
Pillar I – direct payments	Payments for farmers who maintain land in good agricultural and environmental condition	No payment	No payment
Pillar II – Rural Development	Up to 27 measures that can support agroforestry including one "agroforestry" measure		

Politikempfehlungen: Auswahl

Recommendation 5

In Pillar I, because of the environmental and societal benefits of trees on farms, agroforestry on arable and pasture land should be fully eligible for direct payments

Politikempfehlungen: Auswahl

9. **In Pillar II, t**he current 27 measures linked to agroforestry should be grouped together in one place
11. Given the increasing risk of forest fires, there should be support for silvopasture (forest grazing), within the agroforestry measure

Agroforstwirtschaft ist eine Form von *Conversation* agriculture

Fabien Balaguer

AFINET
AGROFORESTRY INNOVATION NETWORKS

Zusammenfassung: Agroforstwirtschaft:

1. Ist flächenmäßig bedeutsam (9% der Agrar-flächen der EU) und fördert Multifunktionalität.
2. Kann zum Tierwohl, zur besseren saisonalen Nutzung von Grünland und zum Schutz von Ackerkulturen vor Klimaextremen beitragen.
3. Entfaltet ökologischen und sozialen Nutzen und sollte daher von der Politik unterstützt werden.
4. Beruht auf der Zusammenarbeit mit Landwirten/innen und erfordert ein Umdenken auf der Betriebs- und Landschafts-Ebene.

Acknowledgements

The AGFORWARD project is funded by the European Union's Seventh Framework Programme. This presentation describes some highlights of research completed by about 100 researchers across 14 countries and 27 institutions

Stephanie Aviron, Fabien Balaguer, Staffan Berg, Manuel Bertomeu, Monique Bestman, Valerio Bondesan, Paul Burgess, Francesca Camilli, Eric Cirou, Juliette Colin, Nathalie Corroyer, Dominique Desclaux, Nuria Ferreiro Domínguez, Sebastien Dulieu, Christian Dupraz, Josep Crous Duran, Jean-Claude Emile, Nora Fagerholm, Juan Luis Fernandez, Antonello Franca, Dirk Freese, Helene Le Gallic, Kenisha Garnett, Paula Gaspar, Michail Giannitsopoulos, Juan Carlos Gimenez, Nicolas Girardin, Pilar Gonzalez, Marie Gosme, Anil Graves, Helene Gross, Adrien Guichaoua, Yousri Hannachi, Tibor Hartel, Michael den Herder, John Hermansen, Felix Herzog, Silvestre Garcia de Jalon, José Valentin Roches Diaz, Michael Kanzler, Sonja Kay, Marie T Knudsen, Anne Grete Kongsted, Agata Lam, Norbert Lamersdorf, Isabelle Lecomte, Fabien Liagre, Torgny Lind, Maria Ludes Lopez, Marko Lovrić, Nataša Lovrić, Boki Luske, Nina Malignier, Kostas Mantzanas, Robert Mavsar, Jim McAdam, Jaconette Mirck, Gerardo Moreno, Rosa Mosquera-Losada, Delphine Mézière, Sandra Novak, Tania Oliveira, Tim Pagella, Joao Palma, Anastasia Pantera, Andreas Papadopoulos, Vasilios Papanastasis, Piero Paris, Joana Amaral Paulo, Andrea Pisanelli, Tobias Plieninger, Eric Pottier, Fernando Pulido, Antonio Rigueiro, Mercedes Rois, Adolfo Rosati, Jose Javier Santiago, Giovanna Seddaiu, André Sieffert, Fergus Sinclair, Jo Smith, Erich Szerencsits, Claudine Thenail, Ana Tomás, Margarida Tomé, Mario Torralba Viorreta, Eric Valinger, Philippe Vanlerberghe, Anna Varga, Valerie Viaud, Andrea Vityi, Kevin Waldie, Regis Wartelle, Jeroen Watte, Martin Wolfe, Patrick Worms

European Union's Seventh Framework Program for research, technological development and demonstration under grant agreement no 613520

Publikationen

AGFORWARD (2016). AGFORWARD website. www.agforward.eu

Burgess, P.J., den Herder, M., Dupraz, C., Garnett, K., Giannitsopoulos, M., Graves, A.R., Hermansen, .J.E., Kanzler, M., Liagre, F., Mirck, J., Moreno, G., Mosquera-Losada, M.R., Palma, J.H.N., Pantera, A., Plieninger, T. (2018b) AGFORWARD Project Final Report. 28 February 2018. Cranfield University: AGFORWARD.

http://www.agforward.eu/index.php/en/news-reader/id-1-march-2018-75.html

Burgess, P.J., Rosati A. (2018). Advances in European agroforestry: results from the AGFORWARD project. Agroforestry Systems 92:801–810. https://doi.org/10.1007/s10457-018-0261-3

den Herder, M., Moreno, G., Mosquera-Losada, R.M., Palma, J.H.N., Sidiropoulou, A., Santiago Freijanes, J.J., Crous-Duran, J., Paulo, J.A., Tomé, M., Pantera, A., Papanastasis, V.P., Mantzanas, K., Pachana, P., Papadopoulos, A., Plieninger, T., Burgess, P.J. (2017) . Current extent and stratification of agroforestry in the European Union. Agriculture, Ecosystems and Environment 241: 121–132.

Dupraz C, Liagre F (2008) Agroforesterie : Des arbres et des cultures Broché. France Agricole

Emile JC, Delagarde R, Barre P, Niderkorn V, Novak S (2017). Evaluation of the feeding value of leaves of woody plants for feeding ruminants in summer. 19th EGF Symposium on "Grassland resources for extensive farming systems in marginal regions: major drivers and future scenarios", Alghero, Sardinia (Italy) Grassland Science in Europe, vol 22, 548-550.

Fagerholm N, Torralba M, Burgess PJ, Plieninger T (2016). A systematic map of ecosystem services assessments around European agroforestry. Ecological Indicators 62: 47–65.

Fagerholm, N, Oteros-Rozas E, Raymond CM, Torralba M, Moreno G, Plieninger T (2016). Assessing Linkages between Ecosystem Services, Land-Use and Well-Being in an Agroforestry Landscape Using Public Participation GIS." *Applied Geography* 74 (August). Elsevier Ltd: 30–46. doi:10.1016/j.apgeog.2016.06.007.

Fagerholm, N, Torralba M, Moreno G, Girardello M, Herzog F, Aviron S, Burgess, P.J. et al. (2017). European Cross-Site Analysis of Place-Based Ecosystem Services in Multifunctional Rural Landscapes. Submitted.

García de Jalón, S., Burgess, P.J., Graves, A., Moreno, G., McAdam, J., Pottier, E., Novak, S., Bondesan, V., Mosquera-Losada, M.R., Crous-Durán, J., Palma, J.H.N., Paulo, J.A., Oliveira, T.S., Cirou, E., Hannachi, Y., Pantera, A., Wartelle, R., Kay, S., Malignier, N., Van Lerberghe, P., Tsonkova, P., Mirck, J., Rois, M., Kongsted, A.G., Thenail, C., Luske, B., Berg, S., Gosme, M., Vityi, A. (2017). How is agroforestry perceived in Europe? An assessment of positive and negative aspects among stakeholders. Agroforestry Systems 92:829–848. DOI 10.1007/s10457-017-0116-3

Kay S, Crous-Duran J, Garcia de Jalon S, Graves A, Palma JHN, Roces-Diaz JV, Szerencsits E, Weibel R, Herzog F (2017). Landscape-Scale Modelling of Agroforestry Ecosystems Services: A Methodological Approach. Submitted.

Publikationen

Kay S, Crous-Duran J, García de Jalón S, Graves A, Ferreiro-Domínguez N, Moreno G, Mosquera-Losada MR et al. (2017). "Spatial Similarities between European Agroforestry Systems and Ecosystem Services at the Landscape Scale." Agroforestry Systems. doi:10.1007/s10457-017-0132-3.

Mosquera-Losada, M.R., Santiago Freijanes, J.J., Pisanelli, A., Rois, M., Smith, J., den Herder, M., Moreno, G., Malignier, N., Mirazo, J.R., Lamersdorf, N., Ferreiro Domínguez, N., Balaguer, F., Pantera, A., Rigueiro-Rodríguez, A., Gonzalez-Hernández, P., Fernández-Lorenzo J.L., Romero-Franco, R., Chalmin, A., Garcia de Jalon, S., Garnett, K., Graves, A., Burgess, P.J. (2016). Extent and success of current policy measures to promote agroforestry across Europe.Deliverable 8.23 for EU FP7 Research Project: AGFORWARD 613520. 95 pp.

Mosquera-Losada, M.R., Santiago Freijanes, J.J., Pisanelli, A., Rois, M., Smith, J., den Herder, M., Moreno, G., Lamersdorf, N., Ferreiro Domínguez, N., Balaguer, F., Pantera, A., Papanastasis, V., Rigueiro-Rodríguez, A., Aldrey, J.A., Gonzalez-Hernández, P., Fernández-Lorenzo, J.L., Romero-Franco, R., Lampkin, N., Burgess, P.J. (2017). Deliverable 8.24: How can policy support the appropriate development and uptake of agroforestry in Europe? 7 September 2017. 21 pp. http://www.agforward.eu/index.php/en/how-can-policy-support-the-uptake-of-agroforestry-in-europe.html

Palma JHN (2015). CliPick: Project Database of Pan-European Climate Data for Default Model Use. AGFORWARD 613520. 10 October 2015. 22 pp. http://www.agforward.eu/index.php/en/clipick-project-database-of-pan-european-simulated-climate-data-for-default-model-use.html

Palma J.H.N, Graves A.R., Bunce R.G.H., Burgess P.J., de Filippi R., Keesman K.J., van Keulen H., Liagre F., Mayus M., Moreno G., Reisner Y., Herzog F. (2007) Modelling environmental benefits of silvoarable agroforestry in Europe. Agriculture, Ecosystems and Environment 119, 320 – 334.

Pantera A, Mosquera Losada MR, Ferreiro-Domínguez N, Fernández Lorenzo JL, González-Hernández P, Rigueiro Rodríguez A, Corroyer N, McAdam J, Rosati A, Moreno G, Graves A, and Burgess PJ (2015b). Synthesis of the Research and Development protocols related to Agroforestry for High Value Tree Systems. Milestone Report 10 (3.3 for EU FP7 Research Project: AGFORWARD 613520. (2 October 2015). 10 pp. http://www.agforward.eu/index.php/en/synthesis-of-the-research-and-development-protocols-related-to-agroforestry-with-high-value-trees.html

Reisner, Y., R. de Filippi, F. Herzog, and J. Palma. 2007. "Target Regions for Silvoarable Agroforestry in Europe." Ecological Engineering 29 (4): 401–18. doi:10.1016/j.ecoleng.2006.09.020.

Rois Díaz, M., Lovrić, N., Lovrić, M., den Herder, M., Graves, A.R., Pisanelli, A., Mosquera Losada, M.R., Ferreiro Rodríguez, N., García de Jalón, S., Vityi, A., Varga, A., Burgess, P.J. (2017). Environmental and socio-economic framework conditions of agroforestry in different regions in Europe. Deliverable Report 1.3 for EU FP7 Research Project: AGFORWARD 613520. (10 April 2017). 100 pp.

Torralba, M., Fagerholm, N., Burgess, P.J., Moreno, G., Plieninger, T. (2016). Do European agroforestry systems enhance biodiversity and ecosystem services? A meta-analysis. Agriculture, Ecosystems and Environment 230: 150-161.

Hinweis

Der Vortrag ist eine in die deutsche Sprache übersetzte und geringfügig modifizierte Fassung des folgenden Vortrags:

Burgess P, den Herder M, Moreno G, Pantera A, Kanzler M, Hermansen J, Palma J, Plieninger T, Kay S, Balaguer F, Mosquera-Losada RM, Liagre F (2018). Agroforestry Systems: Results of the AGFORWARD project. Presentation at The Return of Agroforestry Systems
Fiera Agricola, Verona, Italy, 2 February 2018. http://www.venetoagricoltura.org/wp-content/uploads/2018/02/2-Burgess-0202-FVR.pdf