

# Agroecology and Rural Development: Acting in the Global North – with and for the Global South

Dr. Mirjam Steglich, Thomas Beutler, Saymore Ngonidzashe Kativu,  
Segbedji Geraldo Favi, Caroline Kawira, Carolin Grasi, Amina Aden Maa-  
lim, Deborah Kallee, Nimah F. Osho-Abdulgafar, Omotunde Idris Kasali,  
Jonas Schaaf



## Seminar für Ländliche Entwicklung | Centre for Rural Development

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Dr. Mirjam Steglich, Team Leader, PhD Agricultural Sciences  
E-mail: [mirjam.steglich@yahoo.de](mailto:mirjam.steglich@yahoo.de)

Thomas Beutler, M.Sc. Rural Development and Natural Resource Management  
E-mail: [thbeu@hotmail.de](mailto:thbeu@hotmail.de)

Segbedji Geraldo Favi, M.Sc. Sustainable Rural Transformation  
E-mail: [favi.segbedji@yahoo.com](mailto:favi.segbedji@yahoo.com)

Carolin Grasi, M.Sc. Global Development  
E-mail: [carolin.grasi@posteo.de](mailto:carolin.grasi@posteo.de)

Deborah Kallee, M.Sc. Integrated Natural Resource Management  
E-mail: [deborah.kallee@posteo.de](mailto:deborah.kallee@posteo.de)

Omotunde Idris Kasali, M.Sc. Sustainability Science  
E-mail: [omotundekasali@gmail.com](mailto:omotundekasali@gmail.com)

Saymore Ngonidzashe Kativu, M.Sc. Rural Development and Natural Resource Management  
E-mail: [kativu@zarawi.org](mailto:kativu@zarawi.org)

Caroline Kawira, M.Sc. Nutrition and Rural Development  
E-mail: [kawiracarol@gmail.com](mailto:kawiracarol@gmail.com)

Amina Aden Maalim, M.Sc. Agroforestry  
E-mail: [aminkeyaden@gmail.com](mailto:aminkeyaden@gmail.com), [amaalim@kefri.org](mailto:amaalim@kefri.org)

Nimah F. Osho-Abdulgafar, M.Sc. Fisheries  
E-mail: [nimahoshoabdulgafar@gmail.com](mailto:nimahoshoabdulgafar@gmail.com)

Jonas Schaaf, M.Sc. Geography  
E-mail: [jonasschaaf@gmail.com](mailto:jonasschaaf@gmail.com)



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Jonas Schaaf

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## Preface

For 60 years, the Centre for Rural Development (SLE, Seminar für Ländliche Entwicklung), Humboldt-Universität zu Berlin, has trained young professionals in the field of German and international development cooperation.

Three-month empirical and solution-oriented research projects conducted on behalf of German or international development agencies form an integrated part of the one-year postgraduate course. In interdisciplinary teams and with the guidance of experienced team leaders, young professionals carry out assignments on innovative topics, providing consultancy support to the commissioning organisations while involving a diverse range of actors from household to national levels in the process. The outputs of this applied research directly contribute to solving specific development problems.

The studies are mostly linked to rural development themes and have a socio-economic focus, such as improvement of agricultural livelihoods or regimes for sustainable management of natural resources. The host countries are mainly developing or transforming countries, but also fragile states. In the latter, themes such as disaster prevention, peace building, and relief are examined. Some studies develop new methodologies, published in handbooks or guidelines. Further priorities are evaluations, impact analyses, and participatory planning. This study takes place in the Global North since the Sustainable Development Goals are a global concern.

SLE has carried out more than two hundred consulting projects in more than ninety countries and regularly publishes results in this series. In 2022, SLE teams completed studies in Zambia, Uganda, Tunisia, and Europe (Germany and Austria).

The present study analyses agroecological transformation and rural development in Germany and Austria and was conducted in cooperation with the Federal Ministry for Economic Cooperation and Development. The report is also downloadable from [www.sle-berlin.de](http://www.sle-berlin.de).

We wish you a stimulating read.

Prof. Dr. Christian Ulrichs  
Dean of the Faculty of Life Sciences  
Humboldt-Universität zu Berlin

Dr. Susanne Neubert  
Director of the Centre for Rural  
Development (SLE)  
Humboldt-Universität zu Berlin





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## Executive summary

### Background and objective

Three interlinked crises of global dimension—climate change, biodiversity loss, and unsustainable food systems—put increasingly high pressures on land and people. Identified as the land use trilemma because they occur simultaneously and require integrated solutions, these major challenges must be addressed in rural areas. Approaches that focus on one of these crises in isolation insufficiently address the complexity of these challenges which have important social, ecological, and economic implications. Integrated solutions or multidimensional, multiple win–win strategies must be developed.

The Global North increasingly recognises the need to take responsibility for the global ecological emergency that is emerging predominately as the result of its past and present actions (Hickel, 2020). Inhabitants of the Global North have begun to understand the consequences of their high living standards as an outcome linked to the economic growth paradigm now pursued in many parts of the world. While most countries in the Global South remain within their boundary fair shares, they have started to follow the Global North's path, amplifying their contribution to the ecological crisis. Hence, transformation strategies in rural areas need to be elaborated and applied in all parts of the world.

In this study, we explore agroecology as a holistic approach for agri-food system transformation and sustainable rural development. Our aim is to contribute to a better understanding of how the Global North can translate recognition of its responsibility as a key contributor to the climate crisis, biodiversity loss, and unsustainable food systems globally into action locally. These local actions must be informed by greater awareness about positive and negative distance effects (tele-coupling) in the Global South and, more precisely, local requirements and opportunities for the global co-creation of knowledge to foster the Global North's ability to take action with and for the Global South. We anticipate a growing need for joint North–South learning and co-creation of knowledge to “think globally and act locally” in an interconnected world.

While agroecology's potential is increasingly recognised, its actual contributions in the Global North and implication for rural development are not yet well understood. Firstly, important knowledge gaps and misunderstandings exist concerning the concept and its approach. This is particularly evident in the fact that a standard definition and certification system, as used in organic farming does not exist for products grown according to agroecological principles. Methodologies for assessing agroecological practices and measuring the reduction of negative local and distant effects in the Global South have not yet been put into practise

(Mottet et al., 2020). This research report sheds light on these issues by addressing the following key research questions:

- What factors enable agroecological transformation for rural development in the Global North?
- How can agroecology be supported and promoted by international development actors as an approach to address global challenges in the Global North for and with the Global South?
- How can South–North collaboration address the Global North’s responsibility for its actions which produce negative consequences in the Global South?

## **Methodology**

The research methodology takes an integrated landscape approach and applies the Tool for Agroecology Performance Evaluation (TAPE Tool; FAO, 2019) to assess the extent that agroecological principles are practised by local actors on farms and along value chains. Using qualitative data analysis based on MAXQDA software, we describe the characteristics of local agroecological transformation processes and how these are linked to rural development in research regions in the Global North. In addition, we explore the potential distant effects of agroecological transformation in the Global North on the Global South but focus mainly on how local knowledge generation and collaboration within the agroecology framework can be used to inform international development cooperation.

To gather the required data, we undertook extensive key stakeholder assessments at multiple levels and in different sectors in the study regions using Participatory Rural Appraisal (PRA) tools along with some elements of action research. The field research was carried out in four case study areas in rural Germany and Austria; namely Barnim, a district in the Northeast of Berlin; the Wendland, a sparsely populated rural region in the centre of Germany; and alpine areas of Upper Allgäu in southern Germany and Großes Walsertal (Great Walser Valley) in Austria.

The TAPE Tool methodology uses a two-step approach. It combines a general description of the context in which agroecological transformation takes shape with an appraisal of the state of the transformation process based on a set of elements or principles of agroecology. In our study, we maintained the methodology with its agroecology definitions and analytical framework, but placed less emphasis on extensive, in-depth farm-level assessments. Instead, we collected harmonised sets of data in each study region to coherently describe and examine the specific agroecological transformation pathways within their enabling environ-

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ments and respective rural development contexts. We assessed the local governance context based on relevant policy frameworks at the county, district, and (where appropriate) municipal levels, as well as farming system characteristics. An important addition that we make to the FAO TAPE tool methodology is that agriculture is understood in its relation to other relevant sectors. Following the landscape approach logic, we included assessment of non-farming sectors that are linked to agriculture such as, for example, forestry, nature and landscape conservation, renewable energy, and tourism. Using the participatory actor mapping tool, we identified key actors linked to agroecology and sustainable rural development as well as their interrelations. This helps identify additional potentials and obstacles in promoting agroecological transformation.

The collected data for each of the 10 Elements of Agroecology was pooled and analysed as the basis for producing a rating on a scale from one to five. We visualised the resulting metrics in spider webs for each region. The aim is a sufficiently accurate description of the agroecological transformation pathway within the local contexts and scope of this study. We further analysed the findings to describe how agroecology and rural development are linked and to draw conclusions about factors contributing to agroecological transitions,

Our research team was composed of five SLE graduates and five graduate researchers from Kenya, Zimbabwe, Benin, and Nigeria. Passionate about solutions for global environmental sustainability challenges and willing to explore North–South linkages in new, creative ways, we formed a young, diverse team of rural development professionals with specific expertise in climate change, agroforestry, renewable energy, sustainable resource management, and anthropology.

### Study findings

Our research makes it possible to delineate agroecology along locally specific characteristics in each study region and to further describe respective local agroecological transformation dynamics.

Our observations confirmed that *agroecological transition is taking place in all research regions, each following its own pathway*. Importantly, this was the case even in the absence of specific agroecology initiatives present in the study regions. Agri-food system transformation takes shape as a result of existing sustainability, more or less associated with the spectrum of the Elements of Agroecology. This means that the *principles of agroecology are applied while agroecology as an explicit conceptual framework is not well-known by practitioners*. They are valued by farm and non-farm sector actors as important constituents of sustainable agri-food systems and sustainable rural development and should therefore serve as important entry points to further build upon when starting agroecology initiatives.

Specifically, in Barnim, agroecological transformation was limited to the actions of local pioneers expanding their organic farming enterprises, building their own vertical supply chains to access regional markets, and connecting to Berlin. In the Wendland, agroecology is primarily driven by small-scale agents of change, including innovative community supported agriculture (CSA) models, some of which built regional networks across sectors. Shared social values and environmental aspirations are strong factors bringing actors together. In Upper Allgäu, agroecological transformation is promoted by numerous small-scale farmers and the identification of the population within the cultural landscape, embedded in locally determined policy frameworks and strategies promoting sector linkages between tourism, farming, and landscape conservation. In Großes Walsertal, agroecological transformation processes resemble those in Upper Allgäu; however, here, the leadership of the biosphere reserve accomplishes still stronger integration of sectors, while harnessing existing participatory governance processes and well-established actor networks.

The dynamics shaping agroecological transitions in the research regions are diverse and agroecological *transformation goes beyond the application of sustainable farming practices*. While the expansion of organic-certified farmed land is one important driver of agroecology in Germany and Austria, transformation pathways are shaped by a combination of unique local economic, social, political, and environmental realities. It involves the entire range of the agroecology principles and actors outside agriculture have an important influence, positive as well as negative, on agroecological transformation dynamics. Notably, non-farm sectors can function as important allies for agroecology. We have seen this in the potential for sustainable tourism, nature protection, forestry, and communal renewable energy projects.

*Agroecological transformation is influenced by communal governance structures and actors outside of agriculture*. We show that strong communal governance institutions promoting locally determined, participatory processes are associated with agroecological transition supported by the collaborative actions of multiple actors and non-farm sectors. Outcomes include fit-for-purpose ecosystem services, remuneration for small-scale farmers, more synergies in land-use systems, local employment through regional value addition in food processing, and stronger civil society engagement. Regions with stronger actor networks exhibit more initiative and innovation in shaping the regional socio-economic and policy environments to their livelihood advantage and are more successful in forging sustainable transformation solutions. Agroecological elements that address the social architecture of a landscape are thus important and should be given important consideration.

There are several important mutually reinforcing dynamics between agroecology and sustainable rural development and some factors through which agroecol-

ogy specifically contributes to sustainable rural development. We identified three that have been particularly outstanding in our research results. The environmental benefits of *sustainable cultivation methods that maintain or enhance biodiversity*, improving the value of the landscape and making it more attractive for visitors and tourism. This, in turn, generates opportunities for employment and income diversification. The *circular economy principle* adds to this, increasing local value addition in farm and non-farm segments of the economy, foremost the marketing and food processing sectors. The *culture and food traditions principle* promotes enhanced appreciation of the value of healthy and sustainable food, reconnecting the urban population to rural spaces and farming. This increases the willingness to pay a higher price for locally produced food.

Agroecology plays an important role in linking people to food because it fosters regional identity and regional branding. As emphasised by FAO (2018, p. 10), “cultural identity and a sense of place are often closely tied to landscapes and food systems. As people and ecosystems have evolved together, cultural practices and indigenous and traditional knowledge offer a wealth of experience that can inspire agroecological solutions”. Our research confirms these findings with positive examples from Upper Allgäu and Großes Walsertal. In Barnim, regional identity and connections to the food system are weak but could be enhanced through local participation in agroecological transformation processes as nature-based solutions to recovering natural landscapes and the food system. As seen by the example of the Wendland, local identity and traditions are not always rooted in inter-generational practices but also signify identification with contemporary social values and society. According to our findings, regional brands for food products promoted outside of purely profit-oriented private sector marketing objectives offer a mechanism to broadcast and mainstream these aspects of identity.

Adequate state institutions and policy frameworks enable agroecological transformation. However, our research identifies local initiatives promoting varied activities connected to farming, food processing, and landscape conservation as key drivers of agroecological transformation pathways. Civil society engagement was a particularly strong driver in the Wendland where ideals of alternative mindsets and aspirations to live an alternative lifestyle are common. In Barnim, Eberswalde University of Sustainable Development (HNEE) attracts young people willing to stay in the region, some of whom started to promote sustainable living models. In the alpine regions, citizen participation is formalised through local, inclusive governance processes.

Importantly, there is no specific type of governance model or initiative that universally fosters agroecological transformation, but it is rather the locally adapted forms of agency based on existing culture, institutions, and policy. In the Wendland, it is civil society engagement, their established networks, and local

pioneers who drive agroecology. In Barnim, due to incoherent policy implementation and weak actor linkages, it is foremost private-sector-driven initiatives and dispersed individual initiatives that engage in activities favourable to agroecology. In Upper Allgäu, strong local institutions promoting coherent policy frameworks and transparent, participatory governance mechanisms provide a highly conducive environment for agroecological transformation. Finally, in Großes Walsertal a strong sense of community, citizen governance, and the leadership of the biosphere reserve scaffold agroecological transformation. Strengthening governance, participation, and individual agency in support of agroecological transformation should, thus, not follow a prescribed mode, but build on existing processes and local capacities.

The European Union Common Agricultural Policy (CAP) shapes the farming sectors in decisive ways and its negative consequences are well known. However, the ways in which the European policy framework affects farming locally is also shaped through communal agency where governance, citizen participation, and regional development strategies play key roles. Existing opportunities for agroecology are mostly supported through the second pillar of the CAP financing, integrated rural development, with important linkages to the EU-LEADER programme. At the national and state level, adjustments to the CAP are possible and necessary to foster enhanced agroecological transformation. In the study areas, we observed that the opportunities created through the national CAP strategic plans instrument bear potential for broader, holistic agroecology approaches. At the local level, rural development funds need to be applied for and implemented across sectors according to local requirements. Here, the ability to foster synergies between sectors in land use and regional value addition, organised through inclusive and participatory governance structures, is a key factor for enhanced agroecological transformation.

### **Opportunities to implement agroecology initiatives with immediate effects**

Requested by the Germany Ministry for Development Cooperation to identify and further explore initiatives that can function as “low-hanging fruit”, we propose four measures that build on existing initiatives in the research regions. They are designed to function as low-threshold, implementable, and fast-acting instruments promoting agroecology transitions and sustainable rural development in the Global North while fostering collaboration, learning, and knowledge co-creation with the Global South. They simultaneously achieve development impact in the Global South and make an important contribution to Germany’s international development cooperation goals. For Upper Allgäu and beyond, we propose *expansion of the Bio.Regio.Fair*. The Bio.Regio.Fair initiative of Bad Hindelang targets hotels and restaurants in the municipality, promoting globally conscious, sus-



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tainable consumption. Restaurants and hotels agreeing to source a sufficient share of Fairtrade produce in addition to regional products are accredited in a marketing scheme promoted by the municipality. We propose an expansion of the initiative by establishing and consolidating direct linkages to farmers in the Global South from an exemplary partner country which exports a diversity of Fairtrade products. Using agroecology as a common framework of sustainability principles then offers multiple entry points for farmers of the global South, local Alpine farmers, representatives from the hospitality industry, and consumers to directly engage with each other, expanding their mutual understanding of challenges facing farmers globally and the solutions that must be devised locally.

*We propose a collaborative agroecology programme to promote agroforestry and climate adaptation between the University of Eberswalde and research institutions in the Global South.* It will use the agroecology principles as an approach for promoting agroforestry in Germany, learning with and from the Global South. Synergies from collaboration of research institutes, working i.e. with the Kenyan National Forestry Research Institute, will promote agroecology within the broader application of agroecology internationally.

*In collaboration with partner institutions in Austria, we propose the Großes Walsertal Biosphere reserve is exemplified for promoting local knowledge within the agroecology framework.* In the Großes Walsertal biosphere reserve several initiatives for the conservation of biodiversity and maintenance of local culture and social values such as voluntary service and community support are managed by women's associations. These have contributed the systematisation of traditional knowledge that is now part of new, modernised efforts for the sustainable development of the region. Within the international network of UNESCO for biosphere reserve development, the women associations can expand their connections to similar women's initiatives globally, thereby strengthening the role of women in landscape conservation and agroecology promotion as a holistic approach to sustainable rural development.

Inspired by the successes of community supported agriculture in the Wendland, *we propose to build on models for community-supported agriculture (CSA) as an entry point for enhanced civil society engagement for agroecology transformation.* This can take place anywhere, but is particularly suited to engaging urban citizens in farming as a leisure activity. The initiative strengthens the role of community-supported agriculture models in the Global North as a driver for agroecology. The improved connections between both urban consumers and rural areas as well as CSA associations and small-scale farmer associations in the Global South establish the necessary preconditions for better understanding of global interconnectedness, shared climate adaptation issues, and North–South co-creation of knowledge.

## Opportunities for shaping agroecology policy frameworks

Considering the numerous efforts that presently shape national and international policy frameworks (in which Germany already plays an active role), we see the following nine opportunities for German policy makers to further promote and strengthen agroecology as a framework for sustainable agri-food system transformation.

1. *Address the low visibility and understanding of agroecology as a concept and framework for action promoting sustainable agriculture and rural development among practitioners in German and the Global South.* Create a German platform for agroecology that serves as a database, knowledge hub, and networking centre that creates visibility for agroecological actions and projects, provides clarity on the approach, and creates incentives attracting new practitioners. A specific focus within the platform would be on North–South collaboration within an agroecology framework, promoting co-creation of knowledge, and joint learning. Different to many other international development initiatives, the platform would enable much more North–South collaboration at eye level, enabling knowledge and information exchanges in both directions supported by a universal conceptual agroecology framework and terminology.
2. *Continue collaborating with organic producer networks and knowledge platforms as partners in agroecology without diminishing existing organic farming benchmarks.* We recommend promoting knowledge exchange through existing platforms/programmes for co-learning and sharing of knowledge in the field of agroecology in the Global North and South in cooperation with BMEL and national farmers organisations (e.g., The German Farmers' Association, DBV; Arbeitsgemeinschaft bäuerliche Landwirtschaft; ABL), Bund Ökologische Lebensmittelwirtschaft, BÖLW) and those responsible for the Global project, Knowledge Centre for Organic Agriculture in Africa (KCOA) (BMZ, Biovision Africa Trust, Sustainability Institute, Enda Pronat, FENAB & Agrecol Afrique, SEKEM). We recommend a partnering of ABL and BÖLW with BMZ to develop ideas for the establishment of a regional knowledge hub on organic farming in Germany and the Global North that encompasses the idea of the five African knowledge hubs. More emphasis on agroecological approaches must be embedded here as well as exchange platforms.
3. *Assure collaborative efforts between organic producers and organic-producer organisations and agroecology stakeholders establishing clarity of concepts and language.* The conceptual and linguistic demarcations between agroecology and organic farming are not yet well established, leading to misunderstandings and false dichotomies. To assure collaborative efforts and the sustained support of organic producers in the agroecology agenda, we recommend consulting with organic farmers associations (ABL, BÖLW, IFOAM), agroecological

networks (Agroecology Europe, Via Campesina), and research institutions on how to clearly formulate differences and similarities in the idea, approach, content, and vision of both agroecology and organic farming.

4. *Highlight the transformative, multidimensional nature of agroecology as a driver for sustainable rural development.* The BMZ, through the State Secretary, can highlight the role of agroecology in sustainable rural development and the resulting lower externalities, in the State Secretaries' Committee on Sustainable Development to raise awareness across departments and stakeholder groups. The same applies to the BMZ's representation in the Sustainability Forum. To emphasise the role of agroecology as a holistic sustainable approach, we consider it particularly useful to refer to the indicators of the German Sustainable Development Strategy and the principle that actions in Germany should not lead to the detriment of third parties.
5. *Highlight agroecology as an action area that helps reduce or transform negative distance effects in the Global South into positive ones.* The institutional architecture of the German Sustainable Development Strategy provides an entry point to raise public awareness about agroecology and its contributions to reducing or avoiding negative distance effects of social and economic activities, specifically those linked to conventional farming and related agri-food systems in the Global North. Ongoing collaborative North–South research agendas connected to citizen action can further demonstrate this. Results could be highlighted in respective forums and information channels.
6. *Lower barriers to access for funding for localized agroecology initiatives in rural areas.* People with novel ideas about developing their environment and landscape were present in each and every case study region; however, access to funding bars the testing and implementation of those innovations. Therefore, we suggest consulting states, districts, and municipalities to develop methods to provide lower-threshold access for those actors. Regional budgets administered by the rural development offices in Bavaria are viewed as one possibility for replication or adaptation. Thus, those offices serve as the first point of contact. The Regional Hubs for Sustainability Strategies should be involved as well.
7. *Establish North–South partnerships for learning about agroecology transition pathways using the experience of Engagement Global.* Commission Engagement Global is a leading actor in international exchange and runs a programme specifically for establishing and supporting North–South partnerships for joint learning and co-creation of knowledge of agroecological practices and approaches through actor networks in the Global South to the Global North and vice versa. This could be modelled around existing experience of municipal

partnerships. Agroecology approaches are conceptualised here as public–private multi-stakeholder efforts in a region.

8. *Financial and policy support for collaborative North–South research partnerships promoting integrated agroecological landscape approaches.* Agroecology transition requires support and committed collaborative action from non-farm sectors and broad regional stakeholder networks beyond the immediate agri-food system. We therefore suggest developing an action research funding scheme with the Federal Ministry of Education and Research that aims to expand the agroecological landscapes pilot study initiated with the present project, integrating the element of negative externalities in the Global North and the Global South. It is recommended to relate this to the indicators of the German Sustainable Development Strategy and to assure that knowledge and expertise from the Global South is explicitly integrated through novel North–South research partnerships.
9. *Leverage consumer behaviour change through targeted regional programmes and campaigns reconnecting urban and rural spaces through agroecology.* Strategic programmes and campaigns are required to strengthen direct ties between agricultural producers and processors on the one hand and consumers on the other to increase awareness of and appreciation for the role of sustainable farming as the producer of wholesome food and provider of ecosystem services. In turn, this strengthens rural areas through driving up local demand as a result of changes to consumption behaviour. Agroecology approaches, where a focus is placed on the principles of circular economy, culture and food traditions, and local knowledge address these transformative changes.

Stronger regional agri-food system integration will not replace international food supply chains. A heightened awareness of the consequences of imported or unsustainably produced “food from nowhere” in distant places—the Global South—is also necessary. Actors in international cooperation play an important role in actively shaping these campaigns at the policy level, preferably in cooperation with local partners in the Global South, by referring to the responsibility for equity in global development and stimulating solution-oriented action in the Global North. Consumers, the largest group of actors in the food system, hold a great potential to leverage sustainable transformation processes. Policy frameworks, as outlined above, are required to initiate and maintain change processes among all relevant stakeholders and make equitable contributions possible.

## Zusammenfassung

### Hintergrund und Zielsetzung

Drei miteinander verbundene globale Krisen - Klimawandel, Verlust der biologischen Vielfalt und dysfunktionale Ernährungssysteme – haben zunehmend katastrophale Folgen für Land und Menschen. Auch als Trilemma der Landnutzung bezeichnet, weil sie gleichzeitig auftreten und integrierte Lösungen erfordern (WBGU, 2020), müssen diese Herausforderungen besonders in ländlichen Gebieten bewältigt werden. Ansätze, die sich isoliert auf eine dieser Krisen konzentrieren, gehen oft auf Kosten der anderen oder reichen nicht aus, um der Komplexität dieser Herausforderungen gerecht zu werden, die neben der ökologischen auch wichtige soziale und wirtschaftliche Dimensionen einschließt. Es ist daher erforderlich integrierte Lösungen, bzw. Mehrgewinnstrategien zu entwickeln.

Der Globale Norden erkennt zunehmend die Notwendigkeit, Verantwortung für die globale ökologische Notlage zu übernehmen, die zu großen Teilen das Ergebnis seines früheren und gegenwärtigen Handelns ist (Hickel, 2020). Die Bewohner des globalen Nordens beginnen zu verstehen, welche Folgen ihr hoher Lebensstandard hat, der unmittelbar mit dem Paradigma des Wirtschaftswachstums und gleichzeitig mit einem exponentiellen Anstieg des Ressourcenverbrauchs verbunden ist und heute in vielen Teilen der Welt trotz des wachsenden Bewusstseins darüber verfolgt wird. Während die meisten Länder des globalen Südens noch bis vor einigen Jahren innerhalb der Grenzen ihres gerechten Anteils am Verbrauch natürlicher Ressourcen lagen, haben auch sie begonnen, denselben Weg zu beschreiten und tragen damit zunehmend zur ökologischen Krise bei. Daher müssen in allen Teilen der Welt Strategien für die nachhaltige Transformation entwickelt und umgesetzt werden.

In dieser Studie untersuchen wir die Agrarökologie als ganzheitlichen Ansatz für die Transformation der Agrar- und Ernährungssysteme und die nachhaltige ländliche Entwicklung. Wir wollen zu einem besseren Verständnis beitragen, wie der Globale Norden als Hauptverursacher der globalen ökologischen Notlage, durch lokales Handeln Verantwortung übernehmen kann. Lokales Handeln muss durch ein größeres Bewusstsein für dessen positive und negative Fernwirkungen (Fernkopplung/ Telecoupling) im Globalen Süden geprägt sein, um die Fähigkeit des Globalen Nordens zu fördern, mit und für den Globalen Süden tätig zu werden. Es gibt also ein vermehrtes Interesse an gemeinsamem Lernen und gemeinsamer Wissensgenerierung von Nord und Süd, um in einer vernetzten Welt "global zu denken und lokal zu handeln". Nicht zuletzt auch deshalb, weil sich im Zuge der Globalisierung bislang bereits zu simplifiziert bemessene Nord-Süd Dichotomien zunehmend auflösen.

Während das Potenzial der Agrarökologie zunehmend anerkannt wird, sind die tatsächlichen Beiträge im Globalen Norden und ihre Auswirkungen auf die ländliche Entwicklung noch nicht ausreichend bekannt. Es bestehen Wissenslücken und Missverständnisse in Bezug auf das Konzept und seinen Ansatz. Die Agrarökologie verfügt bislang über keine Standarddefinition. Für Produkte, die nach agrarökologischen Grundsätzen angebaut werden, gibt es keine Zertifizierung oder Kennzeichnung, wie sie für ökologische Produkte verwendet wird. Methoden zur Bewertung agrarökologischer Praktiken und zur Messung ihrer lokalen Wirkung sowie ihrer Fernwirkung im Globalen Süden sind noch wenig in die Praxis umgesetzt worden (Mottet et al., 2020). Der vorliegende Forschungsbericht bringt mehr Licht in diese Problematik, indem er die folgenden Forschungsfragen behandelt:

- Welche Faktoren fördern eine agrarökologische Transformation für die ländliche Entwicklung im Globalen Norden?
- Wie kann die Agrarökologie von internationalen Entwicklungsakteuren als ein Ansatz zur Bewältigung globaler Herausforderungen im Globalen Norden für und mit dem Globalen Süden unterstützt und gefördert werden?
- Wie kann die Zusammenarbeit zwischen Süd und Nord die Verantwortung des Globalen Nordens für sein Handeln und dessen negative Folgen im Globalen Süden berücksichtigen?

### **Forschungsmethodik**

Die Forschungsmethodik nutzt einen integrierten Landschaftsansatz und wendet das Instrument zur Evaluierung Agrarökologischer Ansätze (TAPE-Tool; FAO, 2019) an, um zu bewerten, inwieweit agrarökologische Prinzipien von lokalen Akteuren in landwirtschaftlichen Betrieben und entlang von Wertschöpfungsketten praktiziert werden. Durch eine qualitative Datenanalyse mittels der Software MAXQDA beschreiben wir die Charakteristika lokaler agrarökologischer Transformationsprozesse und wie diese mit der ländlichen Entwicklung in unseren Forschungsregionen im Globalen Norden verbunden sind. Darüber hinaus untersuchen wir die möglichen Fernwirkungen der agrarökologischen Transformation im Globalen Norden auf den Globalen Süden, konzentrieren uns aber vor allem darauf, wie lokale Wissensgenerierung und Zusammenarbeit im Rahmen der Agrarökologie für die internationale Entwicklungszusammenarbeit genutzt werden können.

Um die erforderlichen Daten zu sammeln, haben wir umfangreiche Erhebungen unter Einbeziehung der wichtigsten Interessengruppen auf mehreren Ebenen und in verschiedenen Sektoren in den Untersuchungsregionen durchgeführt. Hierzu haben wir Methoden der partizipativen ländlichen Befragung (Participatory

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Rural Appraisal, PRA) und Elemente der Aktionsforschung eingesetzt. Die Feldforschung wurde mittels vier Fallstudien in vier ländlichen Regionen in Deutschland und Österreich durchgeführt; im Barnim, ein Landkreis im Nordosten Berlins; im Wendland, eine dünn besiedelte ländliche Region in der Mitte Deutschlands; im Oberallgäu und im Großen Walsertal, beide alpine Bergregionen, das erste in Süddeutschland, das zweite in Österreich.

Die Methodik des TAPE-Tools beruht auf einem zweistufigen Ansatz. Sie kombiniert eine allgemeine Beschreibung des Umfelds, in dem die agrarökologische Transformation stattfindet, mit einer Bewertung des Transformationsprozesses auf der Grundlage der Prinzipien der Agrarökologie. Für unsere Studie behalten wir die Methodik mit ihren agrarökologischen Definitionen und ihrem analytischen Rahmen bei, legen aber weniger Wert auf umfassend detaillierte Bewertungen auf Betriebsebene. Stattdessen erheben wir in jeder Studienregion harmonisierte Datensätze, um die jeweiligen agrarökologischen Transformationspfade innerhalb ihrer Rahmenbedingungen und ihres ländlichen Entwicklungskontexts zu beschreiben und zu analysieren. Hierfür betrachten wir u.a. die landwirtschaftlichen Produktionssysteme, aber auch lokale politische Rahmenbedingungen auf Kreis-, Bezirks- und Gemeindeebene. Der Logik des Landschaftsansatzes folgend, schließen wir die Bewertung von nicht-landwirtschaftlichen Sektoren, wie z.B. Forstwirtschaft, Natur- und Landschaftsschutz, erneuerbare Energien und Tourismus, ein. Mit Hilfe des partizipativen *Akteurs-Mapping* identifizieren wir Schlüsselakteure, die mit Agrarökologie und nachhaltiger ländlicher Entwicklung verbunden sind, sowie deren Interaktionen. Dies hilft, zusätzliche Potenziale und Hindernisse für die Förderung der agrarökologischen Transformation zu identifizieren.

Um die Merkmale der agrarökologischen Transformationsprozesse darzustellen, haben wir die gesammelten Daten für jedes der 10 Elemente der Agrarökologie zusammengefasst und auf einer Skala von eins bis fünf bewertet und die resultierenden Werte in Form von Spinnennetzdiagrammen visualisiert. In Folge haben wir die Ergebnisse analysiert, um zu beschreiben, wie Agrarökologie und ländliche Entwicklung miteinander verbunden sind, und um die Faktoren zu identifizieren, die den agrarökologischen Wandel begünstigen oder behindern.

Unser Forschungsteam setzte sich aus fünf SLE-Absolvent:innen und fünf Doktorand:innen aus Kenia, Simbabwe, Benin und Nigeria zusammen. Vereint in unserem Engagement, Lösungen für globale ökologische Nachhaltigkeitsprobleme zu finden und die Zusammenhänge von Nord und Süd auf neue, kreative Weise zu erforschen, stellten wir zusammen ein Team mit Expertise in den Bereichen Klimawandel, Agroforstwirtschaft, erneuerbare Energien, nachhaltiges Ressourcenmanagement und Anthropologie.

## Ergebnisse der Studie

Unsere Forschung ermöglichte es, Agrarökologie entlang lokaler Besonderheiten in jeder Untersuchungsregion zu beschreiben und die jeweilige lokale agrarökologische Transformationsdynamik weiter zu beleuchten.

## Eigenschaften der agrarökologischen Transformation in den Forschungsregionen

Unsere Studie hat bestätigt, dass agrarökologische Transformationsprozesse in allen Forschungsregionen – wie erwartet tatsächlich - stattfinden, allerdings dies in jeder Region auf eine ganz spezifische, eigene Art und Weise. Erste und wichtige Schlussfolgerung ist daher, dass es nicht den einen geeigneten Verbreitungspfad für Agrarökologie gibt, sondern dass es zahlreiche Wege dorthin zu geben scheint.

Dies ist der Fall, obwohl es in keiner der Untersuchungsregionen spezielle Agrarökologie-Initiativen gab. Die Transformation des bestehenden Ernährungssystems nimmt in Folge nachhaltigen Handelns Gestalt an, dessen Ausprägung über die Elemente der Agrarökologie bestimmt werden kann. Das bedeutet, dass die Prinzipien der Agrarökologie Anwendung finden, obwohl die Agrarökologie als begrifflicher konzeptioneller Rahmen nicht bekannt ist. Agrarökologische Maßnahmen werden zumeist von bäuerlichen und nicht-bäuerlichen Akteuren als wichtige Bestandteile nachhaltiger Landwirtschaft und nachhaltiger ländlicher Entwicklung geschätzt. *Agrarökologie-Initiativen können daher – so unsere Schlussfolgerung – jeweils auf der in den Beispielregionen vorzufindenden Praxis wirksam aufgebaut werden.*

Im Barnim beschränkte sich die agrarökologische Transformation auf selbst initiierte Aktivitäten lokaler Pioniere, die ihre ökologischen Landwirtschaftsbetriebe und ihre eigenen vertikalen Versorgungsketten aufbauen, um so besseren Zugang zu regionalen Märkten zu erhalten. Im Wendland wird die Agrarökologie in erster Linie von kleinen Akteuren vorangetrieben – einschließlich einer Reihe innovativer Initiativen der solidarischen Landwirtschaft (CSA) – von denen einige sektorübergreifende regionale Netzwerke schufen. Gemeinsame soziale Werte und ökologische Bestrebungen sind hierbei ein starker verbindender Faktor, der die Akteure zusammenschweißt. Im Oberallgäu wird die agrarökologische Transformation durch zahlreiche Kleinbauern und die Identifikation der Bevölkerung mit der Kulturlandschaft gefördert. Diese sind eingebettet in lokal bestehende politische Rahmenbedingungen und Nachhaltigkeitsstrategien, die sektorale Verknüpfungen, z. B. zwischen Tourismus, Landwirtschaft und Landschaftsschutz fördern. Im Großen Walsertal ähneln die politischen Rahmenbedingungen der agrarökologischen Transformationsprozesse denen im Oberallgäu. Allerdings gelingt hier unter der Leitung des Biosphärenreservats eine noch stärkere Integri-



on verschiedener Sektoren, wobei auf bereits bestehende partizipative politische Entscheidungsprozesse und gut etablierte Akteursnetzwerke aufgebaut wird.

Die Dynamik, die den agrarökologischen Wandel in den Forschungsregionen prägt, ist vielfältig. Bemerkenswert und unbedingt positiv zu werten ist dabei, dass die *agrarökologische Transformation über die Anwendung nachhaltiger landwirtschaftlicher Praktiken hinaus geht*.

Während die Ausweitung ökologisch zertifizierter Anbauflächen natürlich schon eine wichtige Triebkraft der Agrarökologie in Deutschland und Österreich ist, werden die Transformationspfade durch das Zusammenspiel eigener lokaler ökonomischer, sozialer, politischer und ökologischer Gegebenheiten geprägt. Dies umfasst die gesamte Bandbreite der agrarökologischen Prinzipien der FAO. Wie unten näher ausgeführt wird, haben Akteure außerhalb der Landwirtschaft einen wichtigen Einfluss auf die agrarökologische Transformationsdynamik, sowohl positiv als auch negativ. Nichtlandwirtschaftliche Sektoren können als wichtige Verbündete für die Agrarökologie fungieren. Wir haben dies am Potenzial des nachhaltigen Tourismus, des Naturschutzes, der Forstwirtschaft und der kommunalen Projekte für erneuerbare Energien, festgestellt.

*Die agrarökologische Transformation kann durch kommunale Verwaltungsstrukturen und Akteure außerhalb der Landwirtschaft wirksam befördert oder gehemmt werden.* Wir zeigen auf, dass starke kommunale Regierungsinstitutionen, die lokal bestimmte, partizipatorische Prozesse fördern, mit einem greifbareren agrarökologischen Wandel verbunden sind, der durch gemeinsame Aktionen verschiedener Akteure und nicht-landwirtschaftlicher Sektoren unterstützt wird. Zu den wirksamen Fördermaßnahmen gehören unter anderem eine zweckmäßige Vergütung von Ökosystemleistungen für Kleinbauern, mehr Synergien in Landnutzungssystemen, lokale Beschäftigung durch regionale Wertschöpfung in der Lebensmittelverarbeitung und ein stärkeres Engagement der Zivilgesellschaft im Bereich nachhaltiger Ernährungssysteme. Regionen mit besser entwickelten Akteursnetzwerken zeigen mehr Initiative und Innovation bei der Gestaltung des regionalen Umfelds zu ihrem Vorteil und sind erfolgreicher bei der Entwicklung nachhaltiger Lösungen. Die agrarökologischen Elemente, die sich mit den gesellschaftlichen und sozialen Aspekten von Wandel befassen, sind daher wichtig und sollten nicht vernachlässigt werden.

### **Drei wichtige Beiträge der Agrarökologie zur nachhaltigen ländlichen Entwicklung**

Es gibt mehrere wichtige, sich gegenseitig verstärkende Dynamiken zwischen der Agrarökologie und der nachhaltigen ländlichen Entwicklung sowie einige Faktoren, durch die die Agrarökologie speziell zur nachhaltigen ländlichen Entwicklung beiträgt. Drei Faktoren traten in unseren Forschungsergebnissen besonders

in Erscheinung. Der besondere Nutzen nachhaltiger Anbaumethoden, die die biologische Vielfalt erhalten und verbessern, und damit nicht nur den ökologischen Wert einer Kulturlandschaft steigern und sie für den Tourismus attraktiver machen. Mehr Vielfalt überträgt sich über Produkte, Dienstleistungen und Wertschöpfungskettenausweitung auch auf andere Bereiche und schafft zusätzliche Chancen durch mehr Beschäftigung und Einkommensdiversifizierung. Das Prinzip der Schließung von Nährstoffkreisläufen in der ökologischen Landwirtschaft und der Kreislaufwirtschaft in sämtlichen Wirtschaftsbereichen entspringt dem gleichen Grundgedanken und trägt in allen Fällen dazu bei, die lokale Wertschöpfung in landwirtschaftlichen und nichtlandwirtschaftlichen Bereichen der Regionalwirtschaft zu erhöhen, vor allem in der Vermarktung und der Lebensmittelverarbeitung. Das Prinzip der Kultur und der Ernährungstraditionen trägt zudem dazu bei, die Wertschätzung für gesunde und nachhaltige Lebensmittel zu erhöhen und die Stadtbevölkerung wieder mit angrenzenden ländlichen Räumen und der Landwirtschaft in unmittelbarem Kontakt zu bringen. Dies erhöht die Bereitschaft, für lokal erzeugte Lebensmittel einen höheren Preis zu zahlen.

### **Förderung eines günstigen Umfelds für Agrarökologie und einer nachhaltigen ländlichen Entwicklung**

Die Agrarökologie spielt eine wichtige Rolle dabei, Menschen und ihre Ernährung wieder in ein engeres Verhältnis zu bringen, weil sie regionale Identität und regionale Vermarktung auf positive Weise fördert. Wie bereits von der FAO (2018, S. 10) betont wurde, sind "kulturelle Identität und Ortssinn oft eng mit Landschaften und Lebensmittelsystemen verbunden. Da sich Menschen und Ökosysteme gemeinsam entwickelt haben, bieten kulturelle Praktiken sowie indigenes und traditionelles Wissen einen reichen Erfahrungsschatz, der agrarökologische Lösungen inspirieren kann". Unsere Forschung bestätigt diese Erkenntnisse mit positiven Beispielen im Oberallgäu und im Großen Walsertal. Im Barnim sind die regionale Identität und die Verbindungen zum Ernährungssystem bei den Menschen derzeit nur schwach ausgeprägt, könnten aber durch die lokale Beteiligung an agrarökologischen Transformationsprozessen als naturbasierte Lösung zur Wiederherstellung der natürlichen Landschaft und des Ernährungssystems gestärkt werden. Wie das Beispiel des Wendlands zeigt, müssen lokale Identität und Traditionen nicht immer in althergebrachten Praktiken verwurzelt sein, sondern können auch eine neu entstehende Identifikation mit zeitgenössischen sozialen Werten und der Gemeinschaft bedeuten. Unseren Erkenntnissen zufolge bieten regionale Marken für Lebensmittel, die außerhalb rein gewinnorientierter Marketingziele gefördert werden, einen Mechanismus zur Verbreitung und Verankerung dieser Identitätsaspekte.

*Angemessene staatliche Institutionen und politische Rahmenbedingungen begünstigen die agrarökologische Transformation. Unsere Forschung zeigt jedoch, dass*

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*lokale Initiativen, die verschiedene Aktivitäten im Zusammenhang mit der Landwirtschaft, der Lebensmittelverarbeitung und der Landschaftspflege fördern, die wichtigsten Triebkräfte für agrarökologische Transformationspfade sind.* Zivilgesellschaftliches Engagement war ein besonders starker Motor im Wendland, wo Ideale einer alternativen Denkweise und das Bestreben, einen alternativen Lebensstil zu führen, weit verbreitet sind. Im Barnim zieht die Hochschule Eberswalde (HNEE) junge Menschen an, die in der Region bleiben wollen und begonnen haben, nachhaltige Lebensmodelle zu fördern. In den Alpenregionen ist die Bürgerbeteiligung durch lokale, integrative Regierungsprozesse stärker formalisiert, was die gemeinschaftliche Unterstützung einer agrarökologischen Transformation begünstigt.

Am wichtigsten ist, dass es keine spezifischen lokalen Regierungs- und Entscheidungsfindungsprozesse waren, die modellartig die agrarökologische Transformation fördern wollten, *sondern dass es vielmehr lokal angepassten Formen des Handelns auf der Grundlage der bestehenden Kultur, Institutionen und Politiken sind, die den Wandel fördern.* Im Wendland ist dies das zivilgesellschaftliche Engagement, darauf etablierte Netzwerke und vor allem lokale Pioniere, die die Agrarökologie vorantreiben. Im Barnim sind es aufgrund der inkohärenten Politikumsetzung und der schwachen Vernetzung der Akteure vor allem privatwirtschaftliche Initiativen und verstreute Einzelinitiativen, die sich für die Agrarökologie engagieren. Im Oberallgäu bieten starke lokale Institutionen, die kohärente politische Rahmenbedingungen und transparente, breite, partizipative Entscheidungsfindung fördern, ein äußerst günstiges Umfeld für die agrarökologische Transformation. Und nicht zuletzt gibt es im Großen Walsertal einen starken Gemeinschaftssinn, starke zivile Beteiligung in der Regionalregierung und die Leitung des Biosphärenreservats. *Die Stärkung der Handlungsfähigkeit zur Unterstützung der agrarökologischen Transformation sollte daher nicht einem vorgeschriebenen Modus folgen, sondern auf bereits bestehenden Prozessen und lokalen Kapazitäten aufbauen.*

Die Gemeinsame Agrarpolitik (GAP) der Europäischen Union prägt den Agrarsektor in entscheidender Weise und ihre lange Zeit politisch gewollten, aber inzwischen umfassend negativen Strukturwandelfolgen, die an vielen Orten die Existenz kleinerer landwirtschaftlicher Familienbetriebe gefährden, sind bekannt. Die Art und Weise, wie sich der europäische politische Rahmen auf die Landwirtschaft vor Ort auswirkt, wird jedoch auch durch kommunales Handeln gestaltet, bei dem regionale Regierungsprozesse, Bürgerbeteiligung und die Umsetzung regionaler Nachhaltigkeitsstrategien eine Schlüsselrolle spielen. Bestehende Möglichkeiten für die Agrarökologie werden maßgeblich durch die zweite Säule der GAP gefördert, die die integrierte ländliche Entwicklung finanziert und wichtige Verbindungen zu den LEADER-Programmen der EU aufweist. Auf nationaler

und staatlicher Ebene sind Anpassungen der GAP möglich und notwendig, um eine verstärkte agrarökologische Transformation zu fördern. Auf lokaler Ebene müssen die Mittel für die ländliche Entwicklung sektorübergreifend und entsprechend den lokalen Anforderungen entworfen und umgesetzt werden. Hier ist die Fähigkeit, Synergien in der Landnutzung, z.B. durch Aufbau multifunktionaler Nutzungen und die regionale Wertschöpfung zu fördern, Schlüsselfaktoren für eine verbesserte agrarökologische Transformation.

### **Möglichkeiten zur Umsetzung sofort wirksamer agrarökologischer Initiativen**

Gemäß dem Auftrag des deutschen Bundesministeriums für Entwicklungszusammenarbeit (BMZ) schlagen wir Maßnahmen vor, die auf bestehenden Initiativen aufbauen und als so genannte "*low-hanging fruits*" dienen können. Sie sind als niedrigschwellige, umsetzbare und schnell wirkende Instrumente konzipiert, die den agrarökologischen Wandel und die nachhaltige ländliche Entwicklung im Globalen Norden fördern und gleichzeitig die Zusammenarbeit, das Lernen und die gemeinsame Wissensgenerierung mit dem Globalen Süden vorantreiben. Sie erzielen damit Entwicklungseffekte im Globalen Süden und leisten einen wichtigen Beitrag zu den Zielen der internationalen Entwicklungszusammenarbeit Deutschlands.

*Für das Oberallgäu und darüber hinaus schlagen wir eine Ausweitung der Bio.Regio.Fair vor.* Die Maßnahme baut auf der Bio.Regio.Fair-Initiative von Bad Hindelang auf, die sich an Hotels und Restaurants in der Gemeinde richtet und einen global bewussten, nachhaltigen Lebensmittelkonsum fördert. Restaurants und Hotels, die sich verpflichten, neben regionalen Produkten auch einen beträchtlichen Anteil an Fairtrade-Produkten zu beziehen, werden in ein von der Gemeinde gefördertes Marketingprogramm aufgenommen. Wir schlagen eine Ausweitung der Initiative vor, indem eine direkte Verbindung zu Bauern und Bäuerinnen im globalen Süden aufgebaut und verstetigt wird und Partnerländer identifiziert werden, aus denen ein Großteil der Fairtrade-Produkte importiert werden. Die Verwendung der Agrarökologie als gemeinsamer Rahmen für die Nachhaltigkeitsprinzipien bietet den Bauern des globalen Südens, den lokalen Alpenbauern, den Vertretern des Gastgewerbes und den Verbraucherinnen und Verbrauchern mehrere Ansatzpunkte, um direkt miteinander in Kontakt zu treten und ihr gegenseitiges Verständnis für die Herausforderungen, mit denen sie konfrontiert sind, und die Lösungen, die vor Ort entwickelt werden, zu erweitern.

*Angepasst an die Möglichkeiten im Barnim schlagen wir ein Agrarökologie-Programm zur Förderung von Agroforstwirtschaft und Klimaanpassung in Zusammenarbeit mit der Hochschule Eberswalde und Forschungseinrichtungen im Globalen Süden vor.* Die Initiative wird die partizipative Agroforstwirtschaft in ländlichen Gebieten im Globalen Norden in Zusammenarbeit mit relevanten Akteuren im

Globalen Süden fördern. Die Initiative nutzt die Prinzipien der Agrarökologie als Ansatz, um mit und vom Globalen Süden zu lernen, wo vor allem in ariden Regionen die Klimaanpassungsforschung und -politik bereits Erfolge erzielt hat. Synergien aus der Zusammenarbeit von Forschungsinstituten, z. B. mit dem nationalen Waldforschungsinstitut Kenias, werden die Agrarökologie im Rahmen der breiteren Anwendung ihrer ökologischen, ökonomischen und sozialen Prinzipien in beiden Regionen durch Wissenskoooperation und Aktionsforschung fördern.

*In Zusammenarbeit mit Partnerinstitutionen in Österreich schlagen wir vor, das Beispiel des Biosphärenparks Großes Walsertal für die Förderung des lokalen Wissens im Rahmen der Agrarökologie zu nutzen.* Im Biosphärenpark Großes Walsertal werden mehrere Initiativen zur Erhaltung der biologischen Vielfalt, zur Bewahrung der lokalen Kultur und sozialer Werte wie Freiwilligenarbeit und Unterstützung der Gemeinschaft, insbesondere von Frauenvereinen gefördert. Diese haben dazu beigetragen, traditionelles Wissen zu systematisieren und nun als Teil neuer, modernisierter Bemühungen für eine nachhaltige Entwicklung der Region zu nutzen. Innerhalb des internationalen Netzwerks der UNESCO-Biosphärenreservatsentwicklung können die Frauenvereine ihre Verbindungen zu ähnlichen Fraueninitiativen weltweit ausbauen und so die Rolle der Frau bei der Erhaltung von Kultur- und Naturlandschaften stärken und die Agrarökologie als ganzheitlichen Ansatz für eine nachhaltige ländliche Entwicklung fördern.

*Inspiziert von den Erfolgen im Wendland schlagen wir vor, auf Modellen für eine solidarische Landwirtschaft (CSA) als Basis für eine verbesserte agrarökologische Transformation aufzubauen.* Dies ist besonders geeignet, um mehr Stadtbewohnerinnen und -bewohner wieder in direkten Kontakt mit der Landwirtschaft zu bringen. Die Initiative stärkt Modelle der solidarischen Landwirtschaft (CSA) im Globalen Norden als Motor für die Agrarökologie und stärkt die Verbingung der städtischen Verbraucherinnen und Verbraucher mit der Landwirtschaft und den ländlichen Gebieten, während sie gleichzeitig die CSA-Verbände mit den Kleinbauernverbänden im Globalen Süden verbindet, um ein besseres Verständnis der globalen Verflechtungen, der gemeinsamen Probleme der Klimaanpassung und der gemeinsamen Wissensgenerierung im Norden und Süden zu erreichen.

### **Möglichkeiten für die Gestaltung der politischen agrarökologischen Rahmenbedingungen**

In Anbetracht der zahlreichen Anstrengungen, die derzeit nicht nur „Bottom-Up“, sondern auch „Top Down“ unternommen werden, um die nationalen und internationalen politischen Rahmenbedingungen weiter zu gestalten und in denen Deutschland bereits eine aktive Rolle spielt, sehen wir für die deutschen politischen Entscheidungsträger folgende Möglichkeiten, die Agrarökologie als Rahmen für eine nachhaltige Transformation der Agrar- und Ernährungssysteme weiter zu fördern und zu stärken.

1. *Verbesserung der Sichtbarkeit und des Verständnisses von Agrarökologie als Konzept und Handlungsrahmen zur Förderung nachhaltiger Landwirtschaft und ländlicher Entwicklung, v.a. unter Landwirt:innen in Deutschland und im Globalen Süden.* Schaffung einer deutschen Plattform für Agrarökologie, die zugleich als Datenbank, Wissensdrehzscheibe und Raum zur Vernetzung dient, um so die Sichtbarkeit agrarökologischer Maßnahmen und Projekte zu erhöhen, mehr Klarheit über den Ansatz zu schaffen und Anreize für neue Akteure zu bieten, sich für Agrarökologie einzusetzen. Ein besonderer Schwerpunkt der Plattform wäre außerdem die Zusammenarbeit zwischen Nord und Süd, um die gemeinsame Wissensgenerierung und das gemeinsame Lernen um agrarökologische Transformationsprozesse zu fördern. Im Gegensatz zu vielen anderen internationalen Entwicklungsinitiativen würde die Plattform eine viel stärkere Nord-Süd-Zusammenarbeit auf Augenhöhe ermöglichen, die den Wissens- und Informationsaustausch in beide Richtungen unterstützt, indem sie denselben konzeptionellen Agrarökologie-Rahmen und dieselbe Terminologie verwendet.
2. *Fortsetzung der Zusammenarbeit mit ökologischen Erzeugernetzwerken und Wissensplattformen als Partner der Agrarökologie, ohne das bestehende Regelwerk des ökologischen Landbaus zu schwächen.* Der Wissensaustausch sollte durch den Aufbau von Wissensnetzwerken auf bestehenden Strukturen der bislang noch nicht direkt kooperierenden Akteure aus dem Globalen Norden und dem Globalen Süden gefördert werden. Zu diesem Zweck empfehlen wir, gemeinsam mit dem BMEL und den nationalen Bauernverbänden (Deutscher Bauernverband (DBV), Arbeitsgemeinschaft bäuerliche Landwirtschaft (ABL), Bund Ökologische Lebensmittelwirtschaft (BÖLW)) und den Verantwortlichen für das globale Projekt Knowledge Centre for Organic Agriculture in Africa (KCOA) (BMZ, Biovision Africa Trust, Sustainability Institute, Enda Pronat, FENAB und Agrecol Afrique, SEKEM) bestehende Programme für Co-Learning und Wissensaustausch im Bereich Agrarökologie zu gewinnen. Darüber hinaus sollten ABL und BÖLW in Zusammenarbeit mit dem BMZ Ideen für die Einrichtung eines regionalen Wissenszentrums für den agrarökologischen Landbau in Deutschland entwickeln, das Erfahrungen der fünf afrikanischen Wissenszentren aufgreift. Eine stärkere Betonung agrarökologischer Ansätze muss hier verankert werden, ebenso wie Austauschformate und -programme zur Zusammenarbeit mit anderen zielverwandten Bestrebungen.
3. *Sicherstellung der Zusammenarbeit zwischen ökologischen Erzeuger:innen, ökologischen Erzeugerorganisationen und Akteuren der Agrarökologie, um ein klares Konzept und eine klare Sprache zu schaffen.* Die begrifflichen und sprachlichen Abgrenzungen zwischen Agrarökologie und ökologischem Landbau sind noch nicht eindeutig geklärt, was zu Missverständnissen und falschen Dichotomien

führt. Um die Zusammenarbeit und die nachhaltige Unterstützung der Öko-Erzeuger:innen für die Agrarökologie zu gewährleisten, empfehlen wir, mit Öko-Bauernverbänden (ABL, BÖLW, IFOAM) und agrarökologischen Netzwerken (Agroecology Europe, Via Campesina) und Forschungseinrichtungen darüber zu beraten, wie Unterschiede und Gemeinsamkeiten in Idee, Ansatz, Inhalt und Vision von Agrarökologie und ökologischem Landbau klar und in einfacher Sprache formuliert und zur verstärkten Kooperation genutzt werden können.

4. *Hervorhebung des transformativen, multidimensionalen Charakters der Agrarökologie als Motor für eine nachhaltige ländliche Entwicklung.* Das BMZ kann über den Staatssekretär die Rolle der Agrarökologie für eine nachhaltige ländliche Entwicklung und verringerte Externalitäten im Staatssekretärsausschuss für nachhaltige Entwicklung hervorheben, um ressort- und akteursübergreifend zu sensibilisieren. Gleiches gilt für die Vertretung des BMZ im Nachhaltigkeitsforum. Um die Rolle der Agrarökologie als ganzheitlich nachhaltigen Ansatz zu unterstreichen, halten wir es für besonders sinnvoll, auf die Indikatoren der deutschen Nachhaltigkeitsstrategie und den Grundsatz zu verweisen, dass Entwicklung in Deutschland nicht zu Lasten des globalen Südens gehen darf.
5. *Hervorhebung der Agrarökologie als Aktionsbereich, der dazu beiträgt, negative Fernwirkungen im Globalen Süden zu verringern oder in positive zu verwandeln.* Die institutionelle Architektur der deutschen Nachhaltigkeitsstrategie bietet einen Ansatzpunkt, um die Öffentlichkeit für die Agrarökologie und ihren Beitrag zur Verringerung oder Vermeidung negativer Fernwirkungen sozialer und wirtschaftlicher Aktivitäten im Globalen Norden, insbesondere solche durch konventionelle Landwirtschaft und damit verbundenen Agrar- und Ernährungssysteme, zu sensibilisieren. Laufende Nord-Süd-Forschungskooperationen, die zusätzlich mit Bürgeraktionen verbunden werden sollten, können dies anschaulich demonstrieren, und über bekannte Foren und Informationskanäle hinweg, Ergebnisse breitenwirksam transportieren.
6. *Herabsetzen der Hürden für den Zugang zu Finanzmitteln für lokalisierte Agrarökologie-Initiativen in ländlichen Gebieten.* Menschen mit neuen, effektiven Ideen zur nachhaltigen Entwicklung ihrer Landkreise und Kulturlandschaften wurden in allen Fallstudienregionen angetroffen. Allerdings bleibt ihr großes Problem, ihre Ideen auch umzusetzen, da der Zugang zu Finanzmitteln oft entweder ihr Wissen oder ihre Kapazitäten übersteigt. Es wird daher vorgeschlagen, gemeinsam mit dem BMEL in Ländern, Kreisen und Kommunen zu beraten, wie ein niedrighschwelliger Zugang für diese Akteure geschaffen werden kann. Die von den Ämtern für Ländliche Entwicklung in Bayern verwalteten Regionalbudgets könnten als ein positives Beispiel dienen. Beziehen Sie in

Ihren Austausch auch die Regionalen Netzstellen für Nachhaltigkeitsstrategien (RENN) mit ein.

7. *Nutzen der Erfahrungen von Engagement Global zum Aufbau von Nord-Süd-Partnerschaften lokaler Akteure zum gemeinsamen Lernen über agrarökologische Transformationspfade.* Beauftragen Sie Engagement Global als führenden Akteur im internationalen Austausch mit Kommunen und der Zivilgesellschaft mit einem Programm, das Nord-Süd-Partnerschaften für gemeinsames Lernen und die gemeinsame Wissensgenerierung in der Förderung agrarökologischer Praktiken und Ansätze initiiert und unterstützt. Dies könnte sich an den bestehenden Erfahrungen mit kommunalen Partnerschaften orientieren. Agrarökologische Ansätze werden hier als öffentlich-private Multi-Stakeholder-Bemühungen in einer Region konzipiert.
8. *Finanzielle und politische Unterstützung für kooperative Nord-Süd-Forschungspartnerschaften zur Förderung integrierter agrarökologischer Landschaftsansätze.* Der Übergang zur Agrarökologie erfordert die Unterstützung und engagierte Zusammenarbeit nicht-landwirtschaftlicher Sektoren und breiter regionaler Stakeholder-Netzwerke über die unmittelbaren Agrar- und Ernährungssysteme hinaus. Wir schlagen daher vor, gemeinsam mit dem Bundesministerium für Bildung und Forschung (BMBF) ein Förderprogramm für Aktionsforschung zu entwickeln, das darauf abzielt, die mit dem vorliegenden Projekt initiierte Pilotstudie der Agrarökologischen und des integrierten Landschaftsansatzes, stärker um die Erfassung negativer externer Effekte im Globalen Norden und im Globalen Süden zu erweitern. Es wird empfohlen, dies mit den Indikatoren der deutschen Nachhaltigkeitsstrategie zu verknüpfen und sicherzustellen, dass Wissen und Expertise aus dem Globalen Süden durch neuartige Nord-Süd-Forschungspartnerschaften explizit integriert wird.
9. *Veränderung des Verbraucherverhaltens durch gezielte regionale Programme und Kampagnen, die den städtischen und den ländlichen Raum durch Agrarökologie wieder miteinander verbinden.* Strategische Programme und Kampagnen sind erforderlich, um die direkten Beziehungen zwischen den landwirtschaftlichen Erzeugern einerseits und den Verbraucher:innen andererseits zu stärken und so das Bewusstsein und die Wertschätzung für die Rolle der nachhaltigen Landwirtschaft als Erbringerin gesunder Lebensmittel und Ökosystemleistungen zu erhöhen. Das dadurch veränderte Konsumverhalten stärkt den ländlichen Raum durch eine erhöhte lokale Nachfrage. Agrarökologische Ansätze, bei denen der Schwerpunkt auf den Prinzipien der Kreislaufwirtschaft, lokaler Kultur und Lebensmitteltraditionen sowie dem lokalen Wissen liegt, bewirken diese transformativen Veränderungen. Jedoch wird eine stärkere regionale Integration der Agrar- und Ernährungssysteme nicht den internationalen Handel ersetzen. Notwendig ist ein geschärftes Bewusstsein für die Folgen nicht



nachhaltig produzierter Lebensmittel des Globalen Südens. Akteuren der internationalen Zusammenarbeit kommt eine wichtige Rolle zu, diese Kampagnen auf politischer Ebene aktiv zu gestalten, vorzugsweise in Zusammenarbeit mit lokalen Partnern im Globalen Süden, indem sie auf die individuelle Verantwortung für globale Gerechtigkeit hinweisen und lösungsorientiertes Handeln im Globalen Norden anregen. Die Verbraucher:innen, die größte Akteursgruppe im Ernährungssystem, haben eine große Hebelwirkung in Transformationsprozessen. Die politischen Rahmenbedingungen, wie sie oben skizziert wurden, sind jedoch notwendig, um Veränderungsprozesse aufrechtzuerhalten bzw. zu verstärken.

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## Abbreviations

ABL	Arbeitsgemeinschaft bäuerliche Landwirtschaft (Association for Peasant Agriculture)
ALE	Amt für Ländliche Entwicklung (Office for Regional Development)
ASSD	Austrian Strategy for Sustainable Development
AU	African Union
AVL	Amt der Vorarlberger Landesregierung (Office of the Vorarlberg Provincial Government)
AwZ	Ausschuss für wirtschaftliche Zusammenarbeit und Entwicklung (Committee on Economic Cooperation and Development)
BMBF	Bundesministerium für Bildung und Forschung (Federal Ministry of Education and Research)
BMEL	Bundesministerium für Ernährung und Landwirtschaft ( <a href="#">Federal Ministry of Food and Agriculture, Germany</a> )
BMLFUW	Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (Federal Ministry for Economic Cooperation and Development, Germany)
BÖLW	Bund Ökologische Lebensmittelwirtschaft (Federation of the Organic Food Business)
BUND	Bund für Umwelt und Naturschutz Deutschland
CAP	Common Agricultural Policy
CFS	Committee on World Food Security
CSA	Community-supported agriculture
DBV	Deutscher Bauernverband (The German Farmers' Association)
Destatis	Statistisches Bundesamt (Federal Statistical Office, Germany)
DG AGRI	Directorate-General for Agriculture and Rural Development
DG INTPA	Directorate-General for International Partnerships



## XXXIV Abbreviations

ECVC	European Coordination Via Campesina
EIP-AGRI	European Innovation Partnership for Agricultural productivity and Sustainability
ELARD	European Leader Association for Rural Development
ENRD	European Network for Rural Development
F2F	Farm to Fork
HLPE	High Level Panel of Experts on Food Security and Nutrition
HNEE	Hochschule für nachhaltige Entwicklung Eberswalde (Eberswalde University of Sustainable Development)
IFOAM	International Federation of Organic Agriculture Movements
IHK	Industrie- und Handelskammer (Chamber of Commerce and Industry)
IYFEP	International Young Farmers Exchange Programme
IPES-Food	International Panel of Experts on Sustainable Food Systems
JRC	Joint Research Centre
KCOA	Knowledge Centre for Organic Agriculture in Africa
LAG	Lokale Aktionsgruppe (Local Action Group)
LEADER	Liaison entre les actions de développement de l'économie rurale (Links between the rural economy and development actions)
LES	Lokale Entwicklungsstrategie (Local Development Strategy)
LVÖL	<a href="#">Landesvereinigung für den ökologischen Landbau</a> (State Association for Organic Agriculture)
ML	Niedersächsisches Ministerium für Ernährung, Landwirtschaft und Verbraucherschutz (Lower Saxony Ministry of Food, Agriculture and Consumer Protection)
MLUL	Ministerium für Ländliche Entwicklung, Umwelt und Landwirtschaft Brandenburg (Ministry for Rural Development, Environment and Agriculture Brandenburg)
MU	Niedersächsisches Ministerium für Umwelt, Energie, Bauen und Klimaschutz (Lower Saxony Ministry for the Environment, Energy, Building and Climate Protection)

ÖPUL	Österreichisches Programm zur Förderung einer umweltgerechten, extensiven und den natürlichen Lebensraum schützenden Landwirtschaft (Austrian Programme for the Promotion of Environmentally Sound, Extensive Agriculture that Protects the Natural Habitat)
PRA	Participatory Rural Appraisal
reg REK	Regionales Räumliches Entwicklungskonzept (Regional Spatial Development Concept)
REGIO	Regionalplanungsgemeinschaft (Regional Planning Community)
REGIO-V	Regionalplanungsgemeinschaft: Vorarlberg (Regional Planning Community of Vorarlberg)
REGIO-VWB	Regionalplanungsgemeinschaft: Vorarlberg-Walgau-Bludenz (Regional Planning Community of Vorarlberg-Walgau-Bludenz)
RENN	Regionale Netzwerkstellen Nachhaltigkeitsstrategien (Regional Hubs for Sustainability Strategies)
SDG	Sustainable Development Goal
SEWOH	Special Initiative "ONEWORLD – No Hunger"
StMELF	Bayerische Staatsministerium für Ernährung, Landwirtschaft und Forsten (Bavarian State Ministry for Food, Agriculture and Forestry)
STMUV	Bayerische Staatsministerium für Umwelt und Verbraucherschutz ( <a href="#">Bavarian State Ministry of the Environment and Consumer Protection</a> )
TAPE	Tool for Agroecology Performance Evaluation
WBGU	Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen (German Advisory Council on Global Change)



## 1 Global challenges and a new understanding of development

Since the adoption of the 2030 Agenda, international development objectives no longer exclusively refer to “developing countries” but to all countries throughout the world (United Nations, 2015). It is now recognised that countries of the Global North<sup>1</sup> have significant development needs as well (Horner, 2020). While significant differences exist, rural areas in both the Global North and Global South are confronted with the trilemma of land use (Wissenschaftlicher Beirat der Bundesregierung für Globale Umweltfragen [WBGU], 2020). They must tackle several crises simultaneously: the climate crisis, massive biodiversity loss, and unsustainable agriculture, i.e. food systems. Linear approaches to problem solving that focus on one of these crises insufficiently address simultaneous challenges; dimensions of the land-use trilemma are neglected by linear solutions. Integrated solutions or multidimensional, multiple win–win strategies must be implemented.

Rural development goes beyond land-use questions and includes vital economic, social, and political–institutional dimensions (Berdegué et al., 2011). The hopes and livelihood perspectives of rural inhabitants tend to be neglected worldwide. In the Global North, the shift to industrial, capital-intensive agriculture with high land productivity has caused regional ageing and depopulation despite compensatory measures (Timmer, 2009). Globally, rural areas are characterised by fewer opportunities in employment, education, communication, and mobility. In the Global South, vast socio-economic differences between rural and urban areas are reflected in income disparities (Badiane & Makombe, 2014). Chronic hunger is common in rural areas and affects, for example, about 25 % of West Africa’s population, while in the cities of the same countries, the middle class has stable access to food (Freguin-Gresh et al., 2012). The causes for these differences are predominately low land productivity due to lack of access to productive inputs, including education, farming equipment, improved plant varieties, and market information.

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<sup>1</sup> The concept of dividing the world into Global North and Global South was developed in the 1980s as a result of an assessment of state’s development status. With the exceptions of Australia and New Zealand, the Brandt Line classified states in the northern hemisphere as being above average in development according to economic indicators, while those around the equator and in the southern hemisphere were below average. The authors are aware of the hyper-simplicity of the concept, especially the differences within states; however, given our intent to capture linkages and perceptions of actors in Germany, Austria, and the EU, general categorisation into Global North and Global South is tenable.

## 2 Global challenges and a new understanding of development

Hence, transformation strategies in rural areas need to be elaborated and urgently and resolutely applied in all dimensions – in the Global South and the Global North. To counter these challenges (increasingly through true collaborative efforts), a new understanding of development cooperation where all parties engage with each other at eye level is necessary and emerging. Previously, the Global South was widely viewed as dependent on the support of the Global North in developing along a pathway of modernisation; however, a relational view is being adopted more and more frequently of late. This view focuses on inequalities between the Global North and Global South, but also between urban and rural areas, as further explained below.

The Global North is coming to recognise the need to take responsibility for the global ecological crisis resulting predominantly from its past and present actions (Hickel, 2020). Inhabitants of the Global North have begun to regard the fatal consequences of their high living standards as an outcome that is directly linked to the economic growth paradigm they pursue.<sup>2</sup> While most countries in the Global South remain within their boundary fair shares, they have started to follow the North's path, amplifying their contribution to the ecological crisis. Our research project, therefore, builds on the premise that taking responsibility for global inequalities is linked to the Global North's ability to gain understanding of the direct and indirect distance effects of its actions.<sup>3</sup> The science of telecoupling describes these intricate global interconnections with research in areas including global supply chains, capital markets, epidemics, tourism, trade, and knowledge and information flows, amongst others (Liu et al., 2013). A focus of interest in this study is knowledge in a telecoupled world and, more precisely, the local requirements and opportunities for global co-creation of knowledge to foster the Global North's ability to take action with and for the Global South. We anticipate a growing need for joint North–South learning and co-creation of knowledge to “think global and act local” in an interconnected world.

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<sup>2</sup> Using a carbon accounting methodology based on the principles of planetary boundaries and equal access to atmospheric commons, Hickel's (2020) findings show the Global North was responsible for 92% of global excess CO<sub>2</sub> emissions in the year 2015 (with the USA at 40 % of excess global CO<sub>2</sub> emissions and the European Union at 29 %).

<sup>3</sup> In an interconnected world, actions in one part cause impact in other parts, both expected and unexpected. Effects of local action in faraway places are often overlooked but may cause significant damage. These effects can be further differentiated as direct and indirect distance effects, with indirect effects being those that occur as spill-over effects in distant places. These cause–effect relations are explained and examined by the science of telecoupling, described in the conceptual framework chapter.

Our aim is to contribute to a better understanding of how the Global North can translate recognition of its responsibilities as the main contributor to the climate crisis, biodiversity loss, and unsustainable food systems globally into action locally. That local action should be informed by greater awareness about positive and negative distance effects (telecoupling) in the Global South. Many examples of unintended negative distance effects of the Global North's local actions have been identified in recent years, some of which are described as illustrations in [section 3.3](#).

In this study, we examine distant effects (with specific focus on knowledge flows) connected to the global food system and agricultural practices in rural areas. Primarily, we explore the contours of agroecology as a holistic approach for agri-food system transformation and sustainable rural development in four case study regions in the Global North while assessing existing direct collaborative linkages these regions maintain to the Global South. Since the spectrum of distance effects in an interconnected world is highly complex and difficult to investigate empirically, especially in a short-term practise-oriented research project, this study focuses on international cooperation as a key aspect of telecoupling affecting knowledge and information networks. This project therefore aims to build better understanding of existing and outstanding local and global knowledge interactions that promote the development and use of agroecological transformation processes. These local–global interactions make important contributions to informed actions in our interconnected world where each region is regarded as a protagonist in the creation and dissemination of locally and globally relevant knowledge. The findings, therefore, can be used to foster the dissemination of agroecological principles and approaches for sustainable rural development in the Global North and Global South.

### **1.1 Agroecology as a policy for sustainable rural development**

Agroecology<sup>4</sup> as a suitable framework and target concept for sustainable food system transformation has enjoyed growing acceptance in recent years, even amongst conventionally minded circles. In fact, the 2019 German conservative-

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<sup>4</sup> No standard definition for agroecology as a concept exists, although its contours have been internationally embraced to constitute those set out by the High Level Panel of Experts on Food Security and Nutrition (HLPE) of the UN Committee on World Food Security (CFS).

## 4 Global challenges and a new understanding of development

majority parliament passed a parliamentary resolution which would see the mainstreaming of agroecology into Germany's sustainable development policy on rural development needs. Since 2021, the Federal Minister for Food and Agriculture of the new German government is of the Green Party. It is expected that a much more ambitious transformation and sustainability strategy, closer aligned to existing recommendations especially that of the *Agriculture Futures. A task for society as a whole* (Zukunftskommission Landwirtschaft, 2021) is resolutely implemented.

Since 2019, the parliament already emphasises the agroecological approach as an answer to "social problems such as poverty, inequality, gender inequity, hunger, malnutrition and also ecological challenges such as deforestation, water scarcity, increasing CO<sub>2</sub> emissions and loss of biodiversity" (Deutscher Bundestag, 2019a, p. 1). This endorsement is an acknowledgement of the holistic and transformational characteristic of agroecology (Barrios et al., 2020). It recognises agroecology as a vital part of strategies tackling nationally and internationally agreed sustainable development targets (Mottet et al., 2020). As such, the parliamentary resolution marks an important step toward a harmonised multi-level policy framework that integrates German sustainability objectives and local action into key international framework documents such as the European Green Deal<sup>5</sup> and the Paris Agreement.<sup>6</sup> Both the European Green Deal and the Paris Agreement identify the Global North's responsibilities to address global challenges. Therewith, another impetus for rethinking development cooperation is given.

In our study, we identify examples of new ways for collaboration and knowledge sharing between the Global South and Global North while investigating the role of agroecological approaches for sustainable development in rural areas in Europe.

### 1.2 Problem statement

The research study focuses on three underlying and interlinked problem elements and working hypotheses:

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<sup>5</sup> The European Green Deal, approved in 2020, is a set of policy initiatives by the European Commission that aim for climate neutrality in the European Union (EU) by the year 2050.

<sup>6</sup> The Paris Agreement sets out a global framework to limit global warming to well below 2°C, preferably 1.5°C, compared to pre-Industrial levels. It also aims to strengthen countries' abilities to handle the impacts of climate change and support them in their efforts.

1. Unsustainable development in one part of the world causes harmful long-distance effects in other parts of the world, increasing North–South imbalances.
2. Rural areas worldwide are the regions with the highest social and economic development needs.
3. There is a lack of knowledge about the linkages between agroecology as a holistic approach for the transformation of agri-food systems and its contribution to rural development.

Our primary research interest in tackling these interlinked problem elements is to gain a better understanding of how the BMZ and its partner organisations can be supported in enhancing local action in the field of agroecology in the Global North to promote sustainable rural development worldwide. In this regard, the contribution of agroecology to the transformation of agri-food systems in the Global North and its implication for rural development are not yet well understood. Firstly, there exist important knowledge gaps and misunderstandings concerning the concept itself and its approach. This is particularly evident in the fact that a standard definition for agroecology does not exist. Furthermore, the holistic nature of agroecology as an approach that integrates economic, social, and ecological dimensions should not be reduced to its ecological farming practices elements (International Panel of Experts on Sustainable Food Systems [IPES-Food], 2018). Lastly, the principles of agroecology provide guidance for how efforts for food system transformation can be undertaken, but they do not constitute objective targets in themselves (Levard et al., 2019). Methodologies for assessing agroecological practices and measuring the reduction of negative local and distant effects in the Global South are not well known (Mottet et al., 2020). Furthermore, there is a lack of concise and systematic knowledge of the current state of agroecological practices in rural areas in the Global North and Global South. This research report sheds light on these issues.





## 2 Research framework

### 2.1 Research objectives

This research investigates development action in the Global North in view of related distance effects in the Global South. Due to the novelty of this focus, the study is a pilot project and the scope of the research is predominantly explorative in nature. It aims to identify options for strengthening agroecology for agri-food systems transformation and sustainable rural development in the Global North, particularly in Germany, with relevance for sustainable development in the Global South, focussing on South–North collaboration, strengthened international partnerships, and co-creation of knowledge. We aim to contribute to the following overall goals:

1. Improved implementation of agroecological approaches and policies in rural regions of the Global North thereby positively influencing sustainable rural development in both, the Global North and Global South, and
2. Fostering the co-creation of knowledge, i.e. South–North cooperation.

Thus, the study will deliver on the following **outcomes**:

1. Policymakers in international development cooperation are better able to demonstrate how agroecological approaches contribute to the global transformation of food systems.
2. International development actors in the Global North are better able to promote policies that strengthen local sustainable development action, which at the same time has positive development impacts in the Global South.
3. Agroecology and a new understanding of collaboration in international development based on acting in the Global North for and with the Global South are integrated into research and training programs at SLE (and other relevant research institutes).

To achieve these outcomes, the study aims to produce the following **outputs**:

1. Stakeholder mapping and analysis in the field of agroecology across Germany/Europe.
2. Better understanding about methods to assess and analyse agroecological approaches in the Global North.

## 8 Research framework

3. Identification and analysis of pragmatic, positive, low-threshold, fast-acting examples of agroecological initiatives in Germany/Europe that contribute to rural development and have positive effects in the Global South.
4. Identification of novel partnership models and interventions with established BMZ partners and potential new partners for interventions in the Global North and/or intensified South–North learning.
5. Manual for organising and conducting tandem research in the Global North for collaborative learning and improved collaborative engagement in tackling global development challenges.
6. Recommendations for the development of new training modules at SLE on relevant topics from this research project.
7. Strengthened SLE partnerships with relevant African research institutes.
8. At least one publication such as a policy brief or discussion paper on the research project topics.

### 2.2 Research questions

To attain the objectives of this study and to address the stated problem, we developed the following key research questions:

1. What factors enable agroecological transformation for rural development in the Global North?
2. How can agroecology be supported and promoted by international development actors as an approach to address global challenges in the Global North for and with the Global South?
3. How can South–North collaboration address the Global North's responsibility for its actions which produce negative effects in the Global South?

### 3 Conceptual framework

In our conceptual framework, we integrate a delineation of how we view rural development and how it is conceptualised within our research. We then explain the concept of agroecology and how it serves as an approach to the sustainable transformation of agri-food systems. We introduce telecoupling as a science that helps to disentangle the often complex and difficult-to-discern distance effects of agri-food systems, making it possible to discover the specific cause-and-effect relationships that exist in an interconnected world. In the following, we introduce each of these concepts separately and outline how they relate to each other.

#### 3.1 How we understand rural development

The multi-layered demands of rural development, as a policy as well as a process, is a key concern that we integrated in the conceptual framework of our study by recognising differences and similarities in the Global North and Global South.

In this study, we were specifically interested in rural landscapes dominated by agriculture.<sup>7</sup> Rural areas worldwide are characterised by relatively low and sometimes decreasing population density, necessitating long communication and transportation routes. About 39 % of Europe's landmass is used for agriculture (European Union Science Hub, 2021); the world's average is 37 % (World Bank, 2022). The differences between rural and urban livelihoods are much more pronounced in the Global South. Here, 80% of the people living in extreme poverty live in rural areas (United Nations, 2015). Although rural areas are the primary places of agricultural production, phenomena such as food and nutrition insecurity, unsustainable land use, and rural exodus are more common here (WBGU, 2020). Consequences of climate change are evident in these regions, for example through lower yields, land degradation, or water scarcity, all of which can translate to additional stress on the human–environment systems.

Factors contributing to climate change that originate in rural areas may include high-intensity agriculture, shifting land-use patterns, deforestation, and soil degradation. Just as rural areas have an important role to play in climate change mitigation, they play roles in preserving biodiversity as well through “nature-based solutions”. Rural areas, therefore, represent key spaces for sustainable de-

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<sup>7</sup> Land used for agriculture in our report includes crop and livestock production.

## 10 Conceptual framework

velopment, poverty reduction, and hunger alleviation (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung [BMZ], 2021). Hence, rural areas lie at the heart of development policies. At international levels, these globally occurring challenges are primarily addressed through the Sustainable Development Goals (SDGs) (United Nations, 2015).

Rural development must be understood not only as a goal, but as a challenging process. Development plans formulated by district, municipal, or regional governance bodies describe development objectives and depict structural elements guiding the envisaged local development process. In our research investigation, these documents served as reference points of what constitutes rural development.

In our research, we regard land-use issues as a prominent challenge in rural development and place a focus on related sustainability concerns. Different from urban societies, people residing in rural regions utilise land resources based on more direct ties to the land itself. We understand land as a scarce livelihood resource. Land-use decisions have ecological, social, and economic dimensions. Demands on land exceeding the capacities of ecosystems create enormous pressure on the land, with consequences including, for example, biodiversity loss, soil loss and degradation, water depletion, and climate change.

### 3.2 What is agroecology?

There is a growing consensus that agroecology as a concept and as an approach for the sustainable transformation of agri-food systems makes important contributions to improving livelihoods in rural areas through income derived from agriculture (D'Annolfo et al., 2017). Nevertheless, research investigating the effects of agroecology in this regard is primarily carried out with a focus on development concerns established in the Global South (FAO, 2019; Levard et al., 2017; Mottet et al., 2020).

Agroecology has three meanings: it is a social movement, a practice, and a science.

*As a social movement* agroecology emerged in the Global South. One of its largest proponents internationally, the peasant grassroots organization La Via Campesina, operates as a global network of over 200 million small-scale farmers and landless farm workers. La Via Campesina also developed the concept of food sovereignty in the 1990s, in part as a response to the "green revolution" (Werchez Peral, 2020). The agroecological movement emphasises a holistic approach to farming that takes the social and political dynamics of agricultural systems into

account. Human values, not the least justice and equity, as well as inclusive governance are constituents of the agroecology movement. Food sovereignty calls for access to healthy, local, and sustainably produced food as a human right. Therefore, “agroecology is seen as a bottom-up pathway to food sovereignty, building on traditional knowledge systems, supported rather than led by science, where small producers, their communities and organizations, rather than agri-food business play a central role” (High Level Panel of Experts on Food Security and Nutrition [HLPE], 2019, p. 38).

With a focus on promoting environmentally sustainable farming practices, agroecology *as a practice* emerged in the 1960s as an alternative to industrial farming systems (IPES-Food, 2016). It combines principles such as nutrient cycling, improvement of soil structure, water retention properties, biodiversity conservation, crop-associated biodiversity (agro-biodiversity), and others, reducing the dependency on external inputs, especially chemical fertilisers and pesticides (HLPE, 2019).

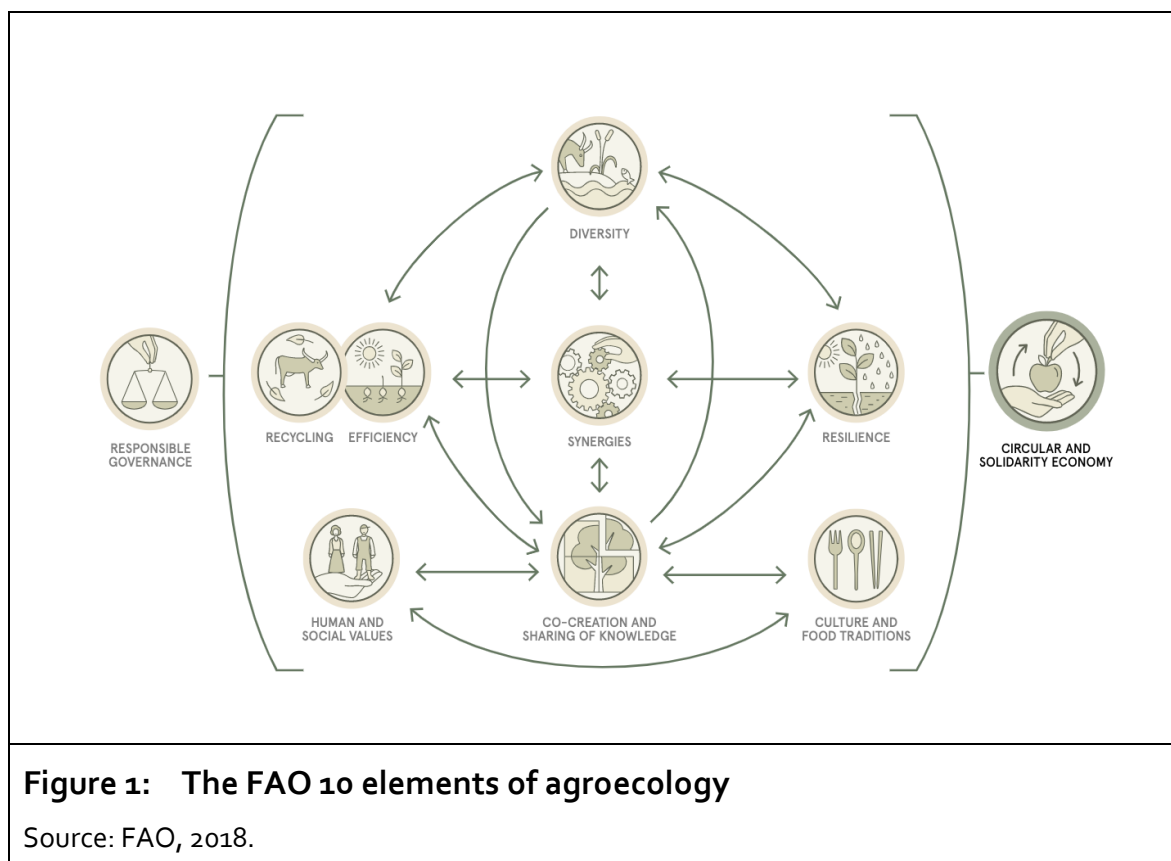
*As a science*, the discipline of agroecology came to life in the early 20th century describing linkages between agricultural production and ecosystems and identifying related ecological principles. According to Dalgaard et al. (2003), the term underwent a number of changes until agri-food systems became known as an integrated discipline that embraces agroecology including elements of agronomy, ecology, economics, and sociology.

Resulting from an international and inclusive consultation process that established a framework to guide and support member countries' engagement with agroecology, FAO (2018) defines ten constituent, interlinked, and interdependent elements of agroecology: 1) diversity, 2) synergies, 3) efficiency, 4) resilience, 5) recycling, 6) co-creation and sharing of knowledge, 7) human and social values, 8) culture and food traditions, 9) responsible governance, and 10) circular and solidarity economy, as depicted in **Figure 1**. The inner six elements of the diagram describe characteristics of agroecological systems in terms of foundational practices and innovation approaches, the bottom two elements to the left and right describe normative aspects, and the outer two elements describe enabling factors.

*Diversity*, such as of crops, breeds, and genetic resources, is key in agroecological systems for food security and natural resource enhancement. The *co-creation and sharing of knowledge*, including producer's context-specific knowledge of agricultural biodiversity, through participatory processes are key to developing agroecological solutions for local challenges. Building of *synergies* in agri-food sys-

## 12 Conceptual framework

tems is a key consideration of agroecology that supports production and multiple ecosystem services. Improved *efficiency* in the use of natural and external resources is also a key feature of agroecological practices, as is *recycling*, leading to lower economic and environmental costs for agricultural production. Furthermore, agroecological systems demonstrate ecological *resilience* to natural disturbances and, in turn, promote the socioeconomic resilience of peoples and communities. *Human and social values* such as equity and inclusion form part of the holistic concept of agroecology, reflected in its support for women's empowerment and decent jobs for youth within agri-food systems. Agroecology promotes *culture and food traditions*, thereby strengthening food and nutrition security and maintaining the ecosystem. The need for effective and *responsible governance* at different levels to support the transition to a sustainable agri-food system is recognized by agroecology. Lastly, agroecology seeks to reconnect producers and consumers through a *circular and solidarity economy* that prioritises local economic development.



Barrios et al. (2020) explain that the 10 elements can serve as an analytical tool to assist policymakers, researchers, or practitioners in planning, managing, and evaluating agroecological transitions. They can help to facilitate the identification

of entry points for an exploration, analysis, and hence better understanding of transformative change processes for sustainable agriculture and food systems.

We use the 10 elements defined by FAO as constituent principles describing the concept of agroecology because of the wider use of a corresponding methodology (the TAPE tool described in detail in [Chapter 5](#) below) that makes use of these elements in assessing agroecological transformation processes.

### 3.3 How we understand telecoupling

Telecoupling is described as a process that connects distant social and ecological systems; examples thereof include trade, migration, tourism, air circulation, and technology or information transfer over distances at times around the globe (Hull & Liu, 2018). Telecoupling examines sustainability challenges with a focus on global, interconnected systems and specifically seeks to unravel the related complex, interdependent land-use changes. It “refers to socioeconomic and environmental interactions between distant coupled human and natural systems” (Hull & Liu, 2018, p. 40). Garrett and Rueda (2019) investigated the contemporary trends toward mass consumption of foods that “come from nowhere” and the simultaneous “emergence of niche markets for ‘exotic’ place-based products and ‘sustainable’ products”. They argue that the two phenomena are, at the same time, the outcome of new physical and informational telecouplings while also causing new, additional physical and informational telecouplings. The former is rather unsustainable in its results (i.e., monocrops, land grabs, deforestation, degradation, biodiversity erosion) while the latter brings about “opportunities for engagement of value chain actors in determining the social and ecological processes of food production and marketing” (Garret & Rueda, 2019, p. 116).

As such, the science of telecoupling offers enhanced clarity, specifically about the global consequences of often-ignored externalities of the economic growth paradigm and related activities in the Global North. In an increasingly connected world, the concept gains ever more importance as it goes beyond the narrower perspective of international trade relations. Telecoupling is explicit about the feedbacks and spill overs that connect distant places, including the examination of drivers of land-use change, with the objective of expanding the strategic leverage points for policymaking (Friis & Nielsen, 2019).

Still, the majority of telecoupling studies explore international commodity chains. For example, organically produced pineapple from Costa Rica is sold in a German supermarket, providing income benefits to workers in Costa Rica and



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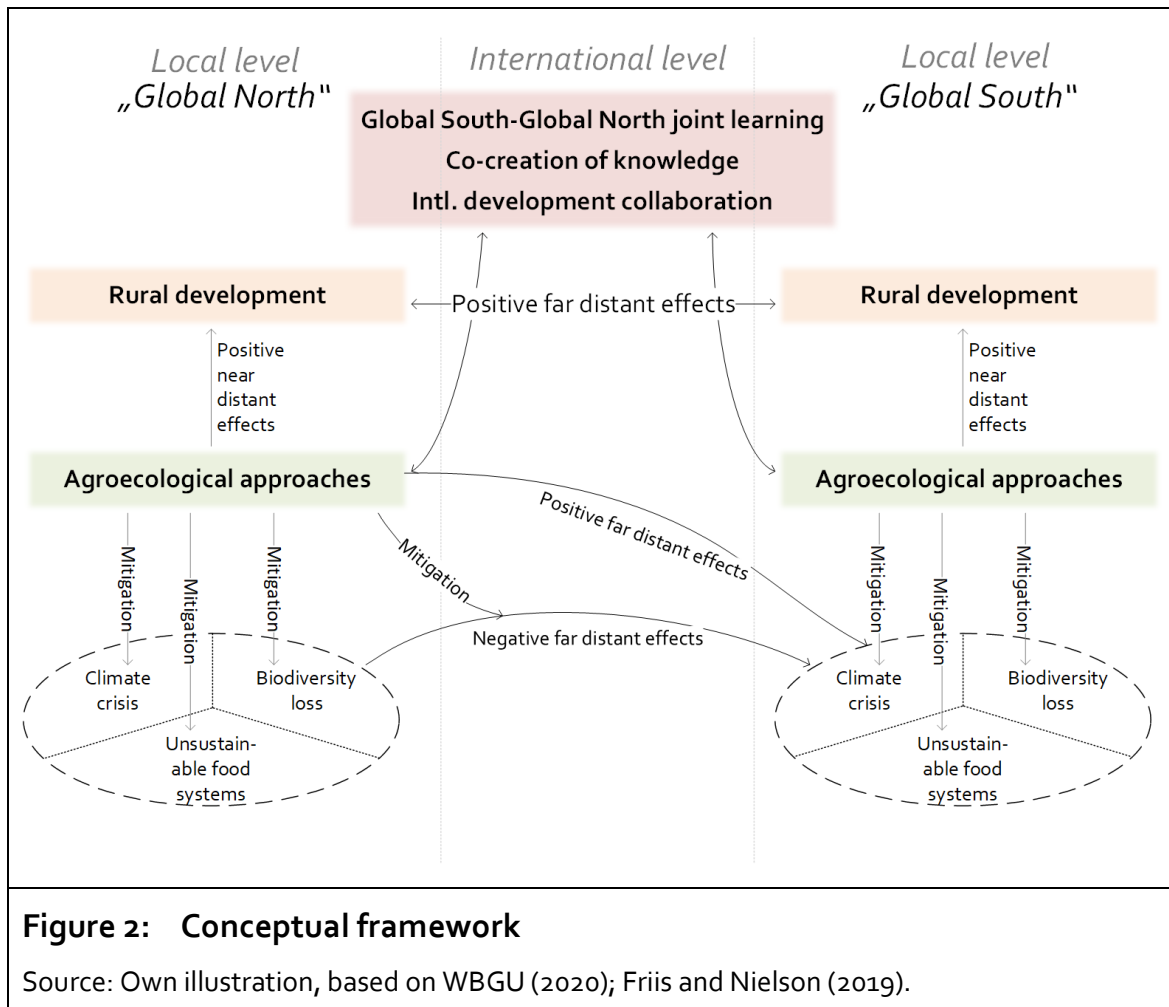
tropical fruit purchase access to consumers in Germany. However, the telecoupling study unveils the negative side effects that come with the packing of the pineapples on wooden pallets that are produced from pristine Colombian rainforest (Interview E05). This example shows that often hidden externalities have indirect negative effects in places that might not fall under sustainability regulation and are ill-prepared to manage the posed challenges adequately. Telecoupling is explicit about the question of normative decisions and sustainability trade-offs, identifying the need for wider considerations about who benefits from which actions and in what way (Nielsen et al., 2019).

In our study, we use the insights that telecoupling research provides to add specificity to the above-mentioned coupled sustainability trade-offs in addressing North–South linkages through the flows of trade, resources, knowledge, and information. As local spaces are shaped and often influenced by global connections and flows, land-use changes in one place might be provoked by social or environmental shifts elsewhere. The sustainability of one place is necessarily linked to the sustainability of other places. Put differently, if we want to assess how sustainable our systems of interest are, we need to incorporate the effects that these systems have elsewhere—spatially and temporally (Interview E02; Challies et al., 2019; Hull & Liu, 2018). However, remaining within the scope of this research project, we introduce telecoupling as a way of thinking or a set of notions that we take into the field leading us to think in terms of sending, receiving, and spill-over systems, agents and flows, as well as causes and effects. Moreover, we exclusively focus on knowledge and information in this regard, to better understand options for learning and awareness creation in an interconnected world, further described in [section 3.4](#) below.

### 3.4 How the concepts link: The roles of joint learning and co-creation of knowledge

**Figure 2** shows how the concepts of rural development, agroecology, and telecoupling are connected, forming the contours of our larger conceptual framework. Here, rural development processes are both affected by and affect telecoupled flows that connect rural areas across space between the Global North and the Global South. Climate change, biodiversity loss, and unsustainable food systems are the three central challenges of rural development (WBGU, 2020), which we consider a quasi-universal concern. Agroecology helps mitigate these challenges and, at the same time, contributes to rural development in several ways: fore-

most, production of healthy food, local value addition, income creation, and nature conservation through sustainable farming practices (Mottet et al., 2020).



**Figure 2** shows that the effects of action in one region are not limited to that region itself; they can be felt in geographically distant regions. Better known are negative effects in distant places, such as, the local marketing difficulties that West African poultry producers face due to competition with imported chicken from the EU that is sold at dumping prices as a result of excess production linked to the EU's farm subsidy system and consumer preferences (Rudloff & Schmiege, 2016; Kulla et al, 2021).

At this point, two of our central assumptions regarding agroecology reflected in the conceptual framework form the focus of our study interest. First, agroecology can mitigate negative externalities and positively influence rural development through local economic, social, and environmental benefits (intracouplings), as well as positive far distant effects (telecouplings). Note that we use "positive" and "negative" to refer to telecoupled *effects*. Yet the mere couplings are neutral;

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normativity is ascribed to the effects depending on the perspective taken. Second, agroecology can improve South–North collaboration through joint learning and the co-creation of knowledge. Using the common concept and approach of agroecology enables the horizontal sharing and exchange of knowledge, connecting different parts of the world in an international eye-level exchange. The formation of new international partnerships and joint engagements in agroecology can promote sustainable rural development in distant places while creating better understanding about the nature of these distant effects. Familiar with the agroecology framework and its principles applied to respective local circumstances, farmers in different places are thus facilitated in their dialogue by a common terminology and conceptual framework that make it easier to share knowledge and ideas about successes and failures related to, for example, biodiversity conservation, the establishment of agro-forestry systems, or the promotion of local marketing and value addition.

Agroecology, by providing a shared frame of reference and set of values, can ease the process of coming to a common understanding of how to collaborate on a local, regional, national, and international level toward sustainable rural development. As such, we understand joint learning and rural development as transformative processes that positively impact each other, rather than finite outcomes or products to be transferred and adopted from one region to another.

Concerning knowledge exchange and shared learning, we need to be clear about our understanding of *knowledge*. Agroecology recognizes different kinds of knowledge as equally relevant. In our study, we appreciate the multiple forms that knowledge can take in different contexts. These go beyond “universal”, technical, and codified forms of knowledge toward contextual, practical skills and flexible knowledge. Importantly, these different forms of knowledge—traditional and scientific knowledge—are not exclusive, they rather complement each other. As such, knowledge is a practice of creating a shared understanding (Scott, 1998).

Our project aims to explore the intersection of agroecology and rural development in the Global North while considering far distant effects in the Global South, focussing on awareness of these effects and the opportunities latent in joint learning and co-creation of knowledge around agroecology as a means to shape and intensify international collaboration.

## 4 Agroecology concepts and instruments in national and international policy frameworks

Agroecology has gained important momentum in international forums and organisations, among them most prominently the FAO and the HLPE-Food. Both recognise the potential of agroecology as a driver for sustainable food system transformation and set the international agenda accordingly. Starting from the global level via the European Union to national strategies, this chapter provides an overview of where and how agroecology is included in key policy frameworks that shape sustainability agendas. Furthermore, we aim to provide sufficient insight into the international and national policy environment and related policy processes and how these may hinder or promote agroecological transformation and sustainable rural development in our study regions. This also constitutes the basis to identify entry points at the policy level for strengthening agroecology in agri-food system transformation in the Global North and Global South.

### 4.1 International strategies

FAO systematised elements of agroecology to provide policymakers with a basis for national strategy development and monitoring. It shows how agroecological action directly contributes to the achievement of the SDGs. Other key international bodies, foremost the High-level Political Forum on Sustainable Development and UN Committee on World Food Security (CFS), contribute and support these processes. The latter commissioned HLPE-Food (which serves as the CFS's science-policy interface) in 2019 to prepare a comprehensive report on agroecology and other innovative approaches to food security as the basis for the CFS Plenary Session.

Agroecology, as conceptualised by the FAO, is a holistic approach that simultaneously incorporates ecological and social concepts and principles that provide guidelines for “the design and management of food and agricultural systems” (FAO, 2018, p. 2). As described in more detail in [Chapters 3](#) and [5](#), the FAO presents the 10 Elements of Agroecology (see [Figure 1](#)) as an “analytical tool” to help “operationalise agroecology” at the state level, through which structures of agricultural systems can be assessed to provide a basis to policymakers designing policies (FAO, 2018, p. 2).

The social dimension of the agroecological approach for sustainable food system transformation is a core feature emphasising the role of local actors. Inclu-

sion, participatory involvement, ownership in planning and implementing the agroecological strategies and practices, and finding context-specific solutions all contribute to a more sustainable development of local agri-food systems (FAO, 2018). To sufficiently capture these system changes, the present study applied the integrated landscape approach as a basis for better understanding options to promote agroecological approaches within the context of sustainable rural development.

## **4.2 EU-level strategies**

Launched in 2019, the European Green Deal is the central EU strategy for achieving net-zero emission of greenhouse gases by 2050 and addresses topics including energy, circular economy, buildings, mobility, and biodiversity (European Commission, 2019). The Green Deal comprises further thematic and integral strategies, particularly the Farm to Fork Strategy (briefly examined here for its relevance for agroecological transitions and sustainable rural development in Europe). Agroecology is seldom explicitly mentioned either as a concept or as an approach for the sustainable transition of European agri-food systems. We, therefore, point to important stakeholders, their ongoing advocacy efforts, and related discourse in Brussels for a better understanding of factors promoting and hindering agroecology at the policy level of the EU.

### **4.2.1 The European Green Deal**

Regarding sustainable rural development, the European Green Deal emphasises the importance of financially supporting rural areas to harness opportunities in the circular and bio- economy (European Commission, 2019). However while circular and solidarity economy is one of the 10 Elements of Agroecology, the Green Deal makes no explicit mention of agroecology as an approach in support of its ambitions.

### **4.2.2 Farm to Fork Strategy**

The Farm to Fork (F2F) Strategy is the EU's comprehensive approach to address the challenges of achieving sustainable food systems (European Commission, 2020a). It sets out to reduce the environmental and climate footprint of the EU food system, strengthen its resilience, ensure food security, and lead a global transition toward sustainability in food systems (European Commission, 2020a).

Regarding agroecology, the F2F Strategy suggests the creation of "eco-schemes" for funding agroecology and other sustainable practices, the develop-

ment of new knowledge and innovations to scale up agroecological approaches in primary production through a dedicated partnership on "agroecology living laboratories", as well as focussing its international cooperation on food research and innovation (European Commission, 2020a).

However, there is criticism of the F2F Strategy and its recognition of the role of agroecology in shaping agri-food systems. The European food sovereignty movement (Nyéleáni, 2021) argues that the F2F Strategy fails to pay sufficient attention to the potential of agroecology, thereby restricting its ability to adequately support peasant agriculture and small-scale producers. Similarly, food sovereignty scholars have criticised that agroecology is defined in a limited way in the F2F Strategy despite its widespread recognition among farmers, social movements and international academia for the key role it plays in integrating ecological principles into agricultural systems (Alberdi et al., 2021). Moreover, the European Environmental Bureau noted that the F2F Strategy regrettably fails to "set a clear direction for EU agriculture toward agroecology" (European Environmental Bureau, 2020, p. 1).

With regard to agroecology's contribution to sustainable rural development, the F2F Strategy makes no specific mention.

#### **4.2.3 The New Common Agricultural Policy (2023–2027)**

Constituting about 40 % of the total EU budget, the Common Agricultural Policy (CAP) is among the most crucial policy instruments shaping the agricultural sector and rural development in member states. In June 2021, the European Commission, the Council of the EU, and the European Parliament agreed on the reform of the CAP. Taking effect in 2023, the new CAP seeks to foster a sustainable and competitive agricultural sector that can support the livelihoods of farmers and provide healthy sustainable food for society, including rural areas (European Commission, n. d.). It is also regarded as the main instrument that should be used to deliver the objectives of the Farm to Fork Strategy and support agroecological transitions in the food systems in the EU (World Wildlife Fund, 2020).

The new CAP focuses on nine key specific objectives based on social, environmental, and economic goals (European Commission, n. d.). It seeks to ensure viable farm income and resilience toward achieving food security, sustainably increase competitiveness and agricultural productivity, and improve farmers' position in the value chains. Further, it aims to contribute to climate change mitigation and adaptation, foster efficient management of natural resources such as soil and water, and contribute to the protection of biodiversity. Additionally, it intends to

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attract young people into agriculture, promote employment and growth in rural areas, and improve the response of EU agriculture to societal demands on food and health.

Although the new CAP mentions the allocation of at least 25 % of the direct payments for “eco-schemes” as a financial support of sustainable farming practices, it has been strongly criticised for not providing visibility on agroecology and for cutting the rural development budget by 28 % (Roberts, 2020). Further, the European Committee of the Regions also suggests that the new CAP does not meet current challenges, even if it provides member states and their regions with some tools to support agroecology (European Committee of the Regions, 2021). However, Peeters et al. (2020) had proposed measures to address this inadequacy and thereby make the CAP more agroecological. First, they proposed the replacement of subsidies per hectare (or per livestock head) with a base income per full-time equivalent worker to correct the distortion of the relative costs of production factors. Second, they argued that direct payments for the production of public goods in the context of quality food production would make CAP more meaningful. Third, they proposed additional measures including the implementation of a training network to support farmers’ transition to agroecological systems, the creation of agroecological farm networks to serve as “agroecological lighthouses”, and the creation of a fund for facilitating development and purchasing tools and equipment.

The CAP identifies the rural development challenge with indicators linking rural areas to population and income shares. Rural areas account for 44 % of the EU territory with 19 % of its population living in these areas but their per capita income significantly lower (by a third) than the EU average (Lanos et al., 2019).

Lanos et al. also note that under the eighth CAP objective (promotion of employment and growth in rural areas), Pillar II of the CAP provides a comprehensive toolkit for sustainable development in rural areas across the EU, but there is need to make adjustments in cases such as economic opportunities in sectors outside agriculture. Furthermore, the success of the LEADER programme in bringing local actors together and developing local governance capacities were mentioned, but the bottom-up approach has been compromised in some cases. Lastly, they mention that the rural development policy under the new CAP aims at contributing to the closure of the socioeconomic gap between rural and urban populations by making rural areas more viable and attractive, especially for young people.

### 4.3 Stakeholders concerned with agroecology on the European level

The growing popularity of agroecology in Europe is primarily driven by upstream state institutions and civil society actors. Important perspectives of selected key players and their ambitions is presented subsequently. It should be noted that while there are organisations advancing agroecology on a national or international level within the EU, the following organisations have a dedicated EU-wide focus.

The *Directorate-General for Agriculture and Rural Development* (DG AGRI), the European Commission's department responsible for EU policy on agriculture and rural development, holds a reserved perspective on driving agroecology within the agriculture policy discourse and practice across the EU. The DG AGRI referred to agri-environmental commitments and eco-schemes that include agroecological approaches for more sustainable food systems across the EU as part of the new CAP (Interview Bro5). However, no specific strategy was mentioned that would determine how to leverage agroecology and its drivers within the CAP.

The *Directorate-General for International Partnerships* (DG INTPA)<sup>8</sup> is another institutional stakeholder with considerable leverage in the promotion of agroecology and is seen as more active in this regard. With prime involvement in initiatives like the Digitalisation: Economic and Social Impacts in Rural Areas (DESIRA) initiative of the European Commission, which aims to contribute to sustainable transformation of agriculture and food systems in low- and middle-incomes countries, DG INTPA seeks to support the uptake of agroecological approaches in developing countries (Interview Bro2). The DG INTPA also initiates training sessions on agroecology and, in cooperation with EU delegations, participates in global fora including the UN Climate Change Conference of the Parties in Glasgow, placing an emphasis on agroecology as an approach to reduce carbon emissions from agriculture.

Through its Food Security Unit, the *Joint Research Centre* (JRC), which is the European Commission's knowledge and science service, provides independent scientific advice and support to EU policy and has been instrumental in influencing

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<sup>8</sup> The European Commission's Directorate-General for International Partnerships is responsible for formulating the EU's international partnership and development policy, with the ultimate goals of reducing poverty, ensuring sustainable development, and promoting democracy, human rights, and the rule of law across the world.



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the discourse on agroecology in the Commission. A workshop at the JRC in 2015 marked a renaissance in awareness raising at the Commission that contributed to the founding of the association *Agroecology Europe* (Interview Bro3).

The *European Innovation Partnership for Agricultural productivity and Sustainability* (EIP-AGRI), another key actor within the Commission's structure by virtue of its work fostering competitive and sustainable farming and forestry, has become an important stakeholder for agroecology in Europe. They steer focus groups on practices including agroforestry, mixed farming systems, short food supply chains, and wildlife and agricultural production. EIP-AGRI is well-placed to drive agroecology within the EU. The *agroecology living labs* are a stated priority area for 2022 (Interview Bro6).

The *European Network for Rural Development* (ENRD)<sup>9</sup>, particularly through its thematic work on "Greening the Rural Economy", has been involved in supporting the adoption of agroecological approaches in rural areas in the EU. ENRD has dedicated some support to development of the bioeconomy in rural areas, while stressing the indirect support opportunities that the bioeconomy can offer to agroecology by adding value to sustainable farming practices and allowing farmers to diversify their activities and income sources (Interview Br10).

Meanwhile, as part of the European Parliament, the work of the *Agriculture Committee and Environmental Committee* is aimed at reconciling agriculture, climate protection, and biodiversity. Here, concept and approaches of agroecology are central. However, concerns have been raised by lobby groups over the effect of agroecological approaches on food security globally that these committees now will need to address (Interview Bro7).

The *European Coordination Via Campesina* (ECVC), the European arm of the international peasant movement La Via Campesina, has been active in propagating the manifestation of agroecology as a social movement across Europe. Striving for societies where agriculture serves communities rather than corporations, it is rooted in the right to food sovereignty and defines, as its main objectives, the defence of peasants' rights as well as the promotion of diverse and sustainable peasant farming. To achieve this objective in the European food system, ECVC recognises the core values of legitimacy, fairness, solidarity, and sustainability. It is en-

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<sup>9</sup> ENRD was established in 2008 by the European Commission, DG AGRI. The ENRD supports the effective implementation of EU Member States' Rural Development Programmes by generating and sharing knowledge, as well as through facilitating information exchange and cooperation across rural Europe.

gaged in policy processes and participates in civil discussion processes of the European Commission and the United Nations.

Founded in 2015, *Agroecology Europe* advocates for agroecology with a specific focus on knowledge production and sharing. It is an association of non-governmental organisations, groups, institutions, private companies, and individuals interested in promoting agroecology across Europe. It seeks to foster interaction between science, practitioners, and social movements by facilitating knowledge sharing and action. The overall goal of the association is to support agroecological research, education, and training; share agroecological knowledge; and advance agroecology as part of food systems transformation in Europe. A key output has been an exercise mapping of agroecology projects worldwide.

The *COLEACP (Europe-Africa-Caribbean-Pacific Liaison Committee)* platform is a not-for-profit private sector association representing the interests of EU importers and ACP (Africa–Caribbean–Pacific) producers and exporters of fruit, vegetables, flowers, and plants. They perceive agroecology as an opportunity to support agricultural SMEs outside Europe in their transition to sustainable production as well as in facilitation of export promotion to the EU (Interview Bro4). The *European Leader Association for Rural Development (ELARD)* does not yet actively leverage its expansive network of around 2200 *Local Action Groups (LAGs)* in 26 European countries to facilitate knowledge sharing on agroecological approaches although their role could be instrumental, since several good-practice examples of food systems-related projects in LAGs are linked to positive rural development outcomes.

The European branch of the *International Federation of Organic Agriculture Movements (IFOAM)* is an international movement for the promotion of organic agriculture and, while working toward a shared vision of food system transformation with agroecologists, they are particularly concerned about the dangers that come as agroecology waters down established approaches and strategies that currently demonstrate effective means to shift conventional farming to sustainable systems. As a result of their joint efforts, organic farming is legally recognised and can be measured in its success, for example in the share of farmland under ecological certification schemes or the number of farms certified across Europe. Their discontent with agroecology relates to the lack of methods to measure agroecological outcomes and, thus, demand stronger recognition of the advantages of the legal status of organic farming practices within the EU (Interview Brog).

### 4.4 German national development strategies

In recent years, agroecology has started to find entry into key German policy documents, primarily in regard to international development and Germany's role in contributing to the SDGs. Understanding these processes and the contextual dimension of the policy environment is important in identifying strategic entry points for strengthening the role of agroecology and properly apprehending local action in our study region within the context of these frameworks.

#### 4.4.1 German Sustainable Development Strategy

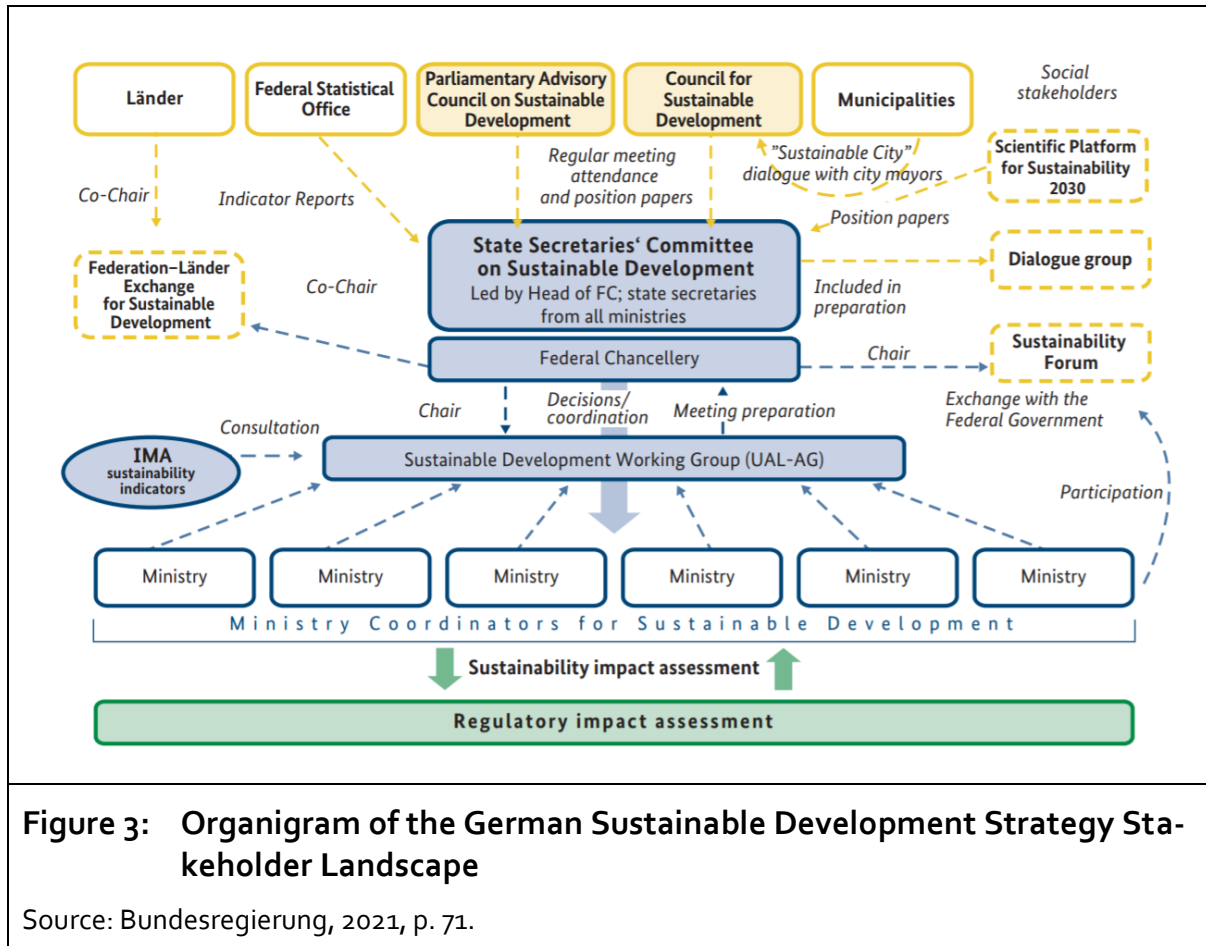
Germany's first *Sustainable Development Strategy* dates from 2002. It is regularly developed and adapted to incorporate newly recognised global challenges as well as commitments the German government has entered and, thus, to existing international goals and objectives. The latest version is dated 2021, which is the version referred to here. It is aligned with the UN SDGs and contains a strengthened international perspective. The German government commits itself to the achievement of the SDGs with reference to its specific role in terms of responsibility as a country of the Global North. Development cooperation funds and measures are seen as an instrument through which both these aspects are combined (Bundesregierung, 2021).

Sustainable development is the basic principle of the policies of the German Federal Government (Bundesregierung, 2021). Even policies that are directed inwards are attributed to global responsibility, as Principle 2a states: "Wherever possible, our actions in Germany must not cause burdens for people or the environment in other countries" (Bundesregierung, 2021, p. 367). In this way, every action is drawn into the global context.

Illustrated in **Figure 3** below, the federal government's sustainability strategy is applied by the ministries in assessing and further developing the appropriateness of set principles, indicators, and goals and to monitor respective outcomes. The participation of civil actors from research, the private sector, and associations, as well as the arts and media is guaranteed in its implementation. The strategy is further development through various fora.

Regarding rural development, explicit reference is made to the Special Initiative "ONEWORLD – No Hunger" (SEWOH), a key instrument by which German development policy commits itself to fostering sustainable food systems and rural development in its partner countries (Bundesregierung, 2021). Germany also follows an integrated approach to rural development internally that recognises existing framework conditions in the regions and the knowledge of local inhabitants.

Social, cultural, and economic needs are put in perspective with the ecological dimension. However, agroecology as an approach to the transformation toward sustainable food systems is not explicitly mentioned in the strategy.



However, reference is made to the 2019 Arable Farming Strategy of the [Federal Ministry of Food and Agriculture](#) (Bundesministerium für Ernährung und Landwirtschaft [BMEL]). While agroecology is not mentioned, action areas of the strategy paper are reminiscent of agroecological elements, principles, and implementation potentials (BMEL, 2019). It would thus be possible to build on these similarities as an entry point to further strengthen the role of agroecology.

#### 4.4.2 Bundestagsbeschluss 19/8941: Meeting sustainable development goals through recognising and supporting agroecology's potential

The core of the demand directed at the German government by the resolution drafted by the Committee on Economic Cooperation and Development (Ausschuss für wirtschaftliche Zusammenarbeit und Entwicklung [AwZ]) is the

commitment to recognise the potential of agroecology to achieve environmentally and socially sustainable agricultural and food systems and the commitment to applying agroecological principles in development cooperation as a matter of priority (Deutscher Bundestag, 2019b). This includes both diplomatic advocacy and operational implementation. The latter also refers to rural areas in Germany. Referring to rural regions of the Global South, agroecology as an approach to tackle the negative effects of current agricultural structures is incorporated into German development cooperation and the sustainable development of rural areas. Holistic approaches to tackle hunger are understood to be best suited to fairly and comprehensively address causes and effects of hunger. The coalition parties of the committee refer in their proposed resolution to the conceptualised FAO 10 Elements of Agroecology and its application guideline (Deutscher Bundestag, 2019b). This is expected to contribute to the achievement of SDG Goal 1 (Poverty Reduction) and SDG Goal 2 (Food Security). Agroecology is particularly valued in the resolution because its transformative character stimulates sustainable development.

The coalition parties also understand agroecology as a form of economy, referring to on-farm activities. By applying agroecological technical practices, it is expected to achieve an improvement in the nutritional status of people in developing countries as well as positive effects on the environment (Deutscher Bundestag, 2019b).

In the area of international coordination for the strategic promotion of agroecology, the German government is called upon to continue to support the dynamics in international bodies such as the UN, FAO, CFS, and the International Fund for Agricultural Development and to advocate for them from its position (Deutscher Bundestag, 2019b). Another clear reference to the German Sustainable Development Strategy is that agricultural products produced in Germany must not be produced and exported at the expense of developing countries. The resolution ultimately also addresses policies for which the Ministry of Agriculture is responsible. There is a clear call to promote the concept of agroecology to reduce poverty in rural areas. This must be anchored in the revised concept for the development of rural areas presented by the BMEL (Deutscher Bundestag, 2019b).

In the field of implementation of development cooperation strategies, one priority is to support SEWOH, especially through establishment of Knowledge Centres for Organic Agriculture, the central agencies for the generation and exchange of sustainable agriculture knowledge in and with Africa. Farmer organisations from industrialised, emerging, and developing countries exchange knowledge and

experience on agroecological farming methods on an intercontinental basis via the formats supported by the German government. In addition, education with reference to agroecological knowledge and its transfer in training programmes in Africa is called for. The basic idea and goal of this is to be able to meet growing nutritional and labour needs. The co-creation and sharing of knowledge are thus importantly prioritised by the parliament agreement (Deutscher Bundestag, 2019b).

## 4.5 Austrian national development strategies

### 4.5.1 Austrian Strategy for Sustainable Development (ASSD)

Adopted by the Austrian Federal Government in 2002, the Austrian Strategy for Sustainable Development (ASSD) "sets the points for a policy of sustainability that has a long-term orientation and defines binding framework conditions" (Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft [BMLFUW], 2002, p.6). It contains sustainability targets and provides a coherent direction for sector policies. The ASSD is an obligatory directive for the Federal Government of Austria and other state actors such as provinces, regions, and municipalities as well as businesses and citizens. The ASSD formulates twenty key objectives, with five key objectives contained in each of four fields of action, namely *quality of life*, *business location*, *living spaces*, and *international responsibility*. Relevant to these objectives are the targets, approaches, and indicators defined in the ASSD.

In terms of agroecological transition promotion, the ASSD references the efforts of the Austrian Development Cooperation in supporting the preservation of the Indo-Maiz rainforest reservation in Nicaragua. It also mentions the implementation of the Austrian Programme for the Promotion of Environmentally Sound, Extensive Agriculture that Protects the Natural Habitat (ÖPUL) geared toward facilitating a transition to sustainability in Austrian agriculture through financial incentives for the renunciation of fertilisers and pesticides. The ÖPUL programme is one of the three ways in which the ASSD promotes rural development in Austria, beside strengthening agricultural businesses and creating socially acceptable income.

Following an analysis of the content and process of the ASSD, Martinuzzi and Steurer (2003) conclude that the design of the implementation process is relatively policy relevant, that high-level political commitment is crucial, and that experience and lessons learned should not only be transferred vertically from interna-

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tional organisation to individual countries, but also horizontally between the countries themselves.

## 5 Research methodology

This study investigates agroecology and how it is linked to rural development in the Global North. It explores potential distant effects of agroecological transformation of the Global North in the Global South, the latter focussing mainly on knowledge and information flows. We use four case studies to assess the extent agroecological principles and practices are being implemented at the local level in selected countries of the Global North (Germany and Austria). For this purpose, the research methodology takes an integrated landscape approach and applies the TAPE<sup>10</sup> tool logic to assess and evaluate how the FAO 10 Elements of Agroecology are valued and practised by local actors in the farm and non-farm sectors. To gather the required data, we undertook extensive multi-level and multi-sector key stakeholder assessments in the study regions using Participatory Rural Appraisal (PRA) tools along with some elements of action research.

We analyse the findings to better understand how agroecology and rural development are linked and to draw conclusions about factors contributing to agroecological transitions. How does agroecological transformation with its ecological, social, and economic dimensions look in our case study locations? How can these examples contribute to the expansion of agroecological transformation processes elsewhere? We examine policies, such as the EU GAP and local governance mechanisms, for their enabling and disabling effects. We ask how examples of successful agroecological transformation processes can be used in development cooperation via novel approaches building on the co-creation of knowledge and joint learning efforts.

Development research undertaken in the Global North, in collaboration with researchers from the Global South, is a relatively novel undertaking. The research project serves as a pilot study. The research design is primarily exploratory in nature and uses qualitative methods to identify existing agroecological practices and approaches in rural areas in the Global North, analysing these within local rural development parameters and for their implications for South–North learning modes.

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<sup>10</sup> Tool for Agroecology Performance Evaluation (TAPE) is described in detail in section 5.3



## 5.1 Collaboration with study partners from the Global South

To date, the SLE postgraduate programme has equipped German-speaking young professionals with knowledge and skills to enter international development collaboration. As such, research projects have typically been carried out in the Global South with the German team leading the research and collaborating closely with a group of local researchers. Based on learning and experience over the years, this has become SLE's Tandem Research approach.

However, in this project, five researchers from four African Union (AU) countries collaborated with five SLE postgraduate researchers in studying different regions of Europe (mainly in Germany) together. The AU researchers were selected from over 60 applications received in response to a call published in June 2021. The aim was to have an interdisciplinary team of young, diverse rural development professionals explore North–South linkages in new, creative ways. The African collaborators arrived in Germany between 8th August and 25th August 2021. After a few initial days designated to team building and co-development of the research approach and field study methodology, two teams (each comprised of two and three German and African researchers) travelled to the study regions to carry out the field work, collaborate in analysis, and write the study report.

## 5.2 The landscape approach in the study

With its spatial perspective, the landscape approach offers a cross-sectoral, holistic method for exploring the interrelationships between agroecological transformation and rural development. The approach makes it possible to capture and analyse aspects of the inherent complexity of transformation processes and nature of agri-food systems.

As depicted in **Figure 4**, a landscape is understood to have a multifunctional character. In this regard, WBGU (2020) describes the functions of land and the challenges that multiple demands on land create for land-use decisions in rural areas. A wide range of stakeholders place partially conflicting demands on rural areas as they carry out their activities and provide for their needs. Sustainable development of rural areas must, therefore, be adapted and negotiated according to a diversity of activities and needs. Negotiations that regulate land use and its activities thus create a dynamic process of structural development. As various stakeholders are involved, a holistic view of the systems (landscapes) is required.

When using a landscape approach as an analytical tool, a specific geographical area or “place” is taken as the starting point; in our case, the four study regions

described in [Chapter 6](#) are these starting points. To understand the totality of the landscape functions and services, the landscape approach considers its actors, their roles, their motivations, and their actions as well as the linkages between actors.

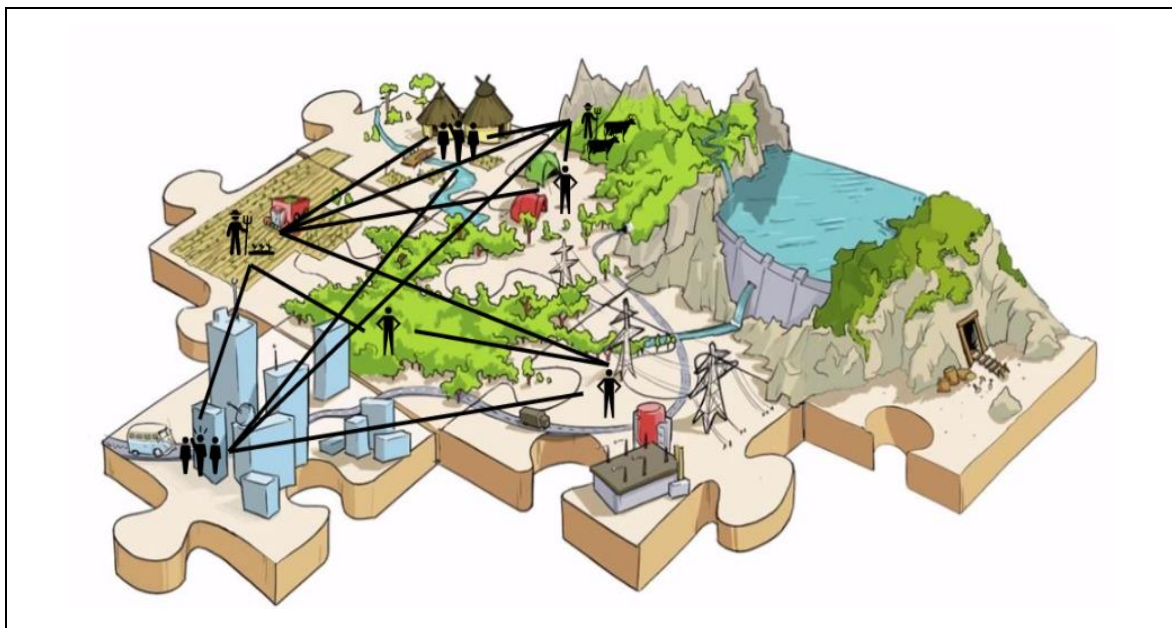
Landscapes are not understood as isolated entities. Flows and influences from outside are understood as influencing factors just as the flows that go from the landscape to the outside: goods, knowledge, or other material and immaterial goods. However, special emphasis is placed on the influence of policies from levels above the district level. An integrated landscape approach combines policy-level influences, activities, and motivations with those of stakeholders, all of which influence the rural developments in the case study regions. This integrative element of the landscape approach goes beyond silos and mono-causalities and was the essential criterion for our choice of study approaches.

The transition to sustainable agriculture and sustainable food systems cannot be achieved through farm-level efforts alone (UNEP, 2012). Wezel et al. (2016) therefore integrate agroecology into the landscape approach. They define places where agroecological transformation take place as “agroecology territories... engaging in a transition process towards sustainable agricultural and food systems” (p. 135). The aim is to systematise an understanding of the allocation and its underlying governance mechanisms of appropriated natural resources present in a landscape. With respect to the transformation toward sustainable food systems through agroecological approaches, Wezel et al. (2016) pose three core areas that collectively characterise agroecology territories constituted

- first, by the adaptation of agricultural practices, which is understood as the transition from conventional to sustainable practices in agriculture (pp. 135–137);
- second, through the conservation of biodiversity and natural resources, which is understood as the basis for the creation of agroecology territories (and other ecosystems) (pp. 137–139); and
- third, and of particular relevance in the context of the present study, through the development of embedded food systems in territories (landscapes), which exploit the potentials in terms of social and economic values, taking into account the ecological dimension and thus leading to sustainable social change (pp. 139–140).

Wezel et al. (2016) explain that actions within the landscape framework emanate from a multitude of actors, representing a community of actors who shape

the landscape's agroecological transformation. In our study, we identify key actors in the farm and non-farm sectors and describe how they form a "community of stakeholders who combine actions for the adaptation of agricultural practices, the conservation of biodiversity and natural resources, and the development of embedded food systems" (Wezel et al., 2016, p. 140). During the research, stakeholders reflected on the dynamics of an agroecological transformation within their agroecological territory.



**Figure 4: The landscape approach**

Source: van Oosten & Wageningen Centre for Development Innovation, 2015; own revision.

### 5.3 The assessment of agroecological transformation

With the growing consensus that agroecological approaches make important contributions to sustainable agri-food systems, researchers and development stakeholders alike are increasingly interested in investigative methods. Several analytical frameworks and methodologies for assessing, measuring, and evaluating the outcomes of transformation processes have been developed. Two prominent examples are the Agroecology Criteria Tool (Biovision, 2019) and the Agroecological Transitions Working Group's toolbox for the evaluation of agroecology (CIRAD, 2019). We used the methodological components of FAO's analytical TAPE framework as guidance for the development of a methodological approach adjusted to the objectives of the present study.

The tools start with a general description of the context in which agroecological transformation takes shape and characterises the progress based on a set of elements of agroecology. An important shortcoming of the existing tools for the purpose of our study is their resulting average assessments for all collected farm-level information to provide a monitoring guideline for agroecological transformation and comparison between regions. Moreover, the tools have been developed for the low information environments of farming systems in the Global South. While social, economic, and governance dimensions are integrated, the focus is placed on extensive assessments of practices at the farm level. However, our study aims to understand agroecological transformation within the farming and rural development contexts at a regional level, specifically in the Global North.

For our study, we used the FAO 10 Elements of Agroecology definitions and maintained the overall analytical framework introduced by the TAPE tool while placing less emphasis on extensive farm-level assessment of agroecological practices. We collected harmonised data sets in each study region that describe specific agroecological transformation pathways and their enabling environments.

**Table 1** displays an overview of the methodological two-step approach used in our study. First, the enabling environment is described by providing a detailed description of the relevant regional/local context, i.e., farming system characteristics, policy frameworks shaping farming and rural development, relevant non-farm sectors for the agroecological transformation, and key actors promoting agroecology and rural development. Second, a characterisation of the agroecological transformation based on a ranking of the FAO 10 Elements of Agroecology is produced. The agroecological pathway of every research region is unique and determined by its own potential and framework conditions. All the information available for each of the FAO 10 Elements of Agroecology was pooled and analysed as a basis for its rating on a scale from one to five. The resulting metrics are visualised in spider webs in [Chapter 6](#) for each region. The aim is a sufficiently accurate description of the agroecological pathway of transformation within the local context and scope of this study, not a scientific method.

An important addition that we make to the FAO TAPE tool methodology is that agriculture is understood in its relation to other relevant sectors. This helps identify additional potentials and obstacles in promoting agroecological transformation. In Annex 2, we list the framework of indicators that assesses the degree of expression of the FAO 10 Elements of Agroecology at a regional level. They take the FAO TAPE tool as a basis and are adopted to the purpose of the present study.

**Table 1: Methodological assessment of the FAO 10 Elements of Agroecology**

Components	Triangulation of methods
<b>Step 1: Context description</b>	
<ul style="list-style-type: none"> <li>▪ Farming system</li> <li>▪ General description</li> <li>▪ Historic and current developments regarding numbers of farms, average farm size, cropping systems, main products, regional characteristics</li> </ul>	<ul style="list-style-type: none"> <li>▪ Semi-structured interviews (farming sector)</li> <li>▪ Transect walks</li> <li>▪ Secondary literature</li> </ul>
<ul style="list-style-type: none"> <li>▪ Policy frameworks shaping farming / rural development</li> <li>▪ State-level policies</li> <li>▪ District-level policies</li> <li>▪ Informal modes of governance</li> </ul>	<ul style="list-style-type: none"> <li>▪ Semi-structured interviews (governance and administration)</li> <li>▪ Secondary literature</li> </ul>
<ul style="list-style-type: none"> <li>▪ Agroecological transformation and rural development</li> <li>▪ Identification and description of non-farm sectors</li> <li>▪ Interconnections between farming and non-farm sectors for rural development</li> </ul>	<ul style="list-style-type: none"> <li>▪ Semi-structured interviews (non-farm sectors)</li> <li>▪ Transect walks</li> </ul>
<ul style="list-style-type: none"> <li>▪ Key actors promoting agroecology / rural development</li> <li>▪ Description of key actors</li> <li>▪ Interconnections of key actors and resulting dynamics for the region</li> </ul>	<ul style="list-style-type: none"> <li>▪ Semi-structured interviews (all levels)</li> <li>▪ Actor mapping</li> </ul>
<b>Step 2: Agroecological transformation</b>	
<ul style="list-style-type: none"> <li>▪ Characterisation of the agroecological transformation (detailed description see Annex 2)</li> <li>▪ Diversity</li> <li>▪ Co-creation and sharing of knowledge</li> <li>▪ Synergies</li> <li>▪ Efficiency</li> <li>▪ Recycling</li> <li>▪ Resilience</li> <li>▪ Human and social values</li> <li>▪ Culture and food traditions</li> <li>▪ Responsible governance</li> <li>▪ Circular and solidarity economy</li> </ul>	<ul style="list-style-type: none"> <li>▪ Outcomes of step 1</li> <li>▪ Agroecological assessment (self-assessment, cards)</li> <li>▪ Secondary literature</li> </ul>

## 5.4 Research methods

Following a case study approach, field research was carried out in four study areas in rural Germany and Austria. The key criteria in the selection of the case study regions were

- a. a well-established structure of agroecological initiatives beyond mere agroecological practices at the farm level,
- b. the existence of other innovative sustainable rural development initiatives at the municipality/district level,
- c. initiatives actively seeking North-South collaboration and joint learning,
- d. diversity of the regions in terms of their framework conditions (geography, culture, average income).

A selection process produced four case study regions: Barnim, Wendland, Upper Allgäu, and Großes Walsertal. The information used in the selection process was based on literature and online research, informal conversations with informed individuals knowledgeable in rural development and agroecology, and team members' own experience and insights.

The initial plan to conduct case studies in countries across Europe was not realised due to the dynamic surges in COVID-19 incidence across European countries heightening the risks of cross-border movement restrictions, lockdowns, and quarantine requirements.

This is not a comparative case study. In line with the nature of pilot studies, insights gained in the first two study regions, specifically those on field research methods, have been used in the work in regions subsequently visited, advancing the application of research methods.

An overview of the field study implementation is depicted in **Table 2** below. The duration of the field research in each of the four case study regions was 18 days. Two regions were covered in parallel by the two research teams, each mixed-gender, mixed-nationality team being composed of five researchers with adequate research expertise in combination. The Wendland and Barnim regions were visited between 22 August and 8 September 2021 and the Upper Allgäu and Vorarlberg regions were visited between 8 and 26 September 2021. Following the field-work phase, the entire research team gathered to analyse data and compose results at a retreat between 26 September and 9 October 2021.

**Table 2: Research time schedule, team composition, and locations**

What?	Who?	Where?	KW																																																			
			June				July				August				September				October				November				December																											
			07-13	14-20	21-27	28-04	05-11	12-18	19-25	26-01	02-08	09-15	16-22	23-29	30-05	06-12	13-19	20-26	27-03	04-10	11-17	18-24	25-31	01-07	08-14	15-21	22-28	29-05	06-12	13-19	20-26																							
Preparation of study design	SLE	Berlin	Orange																																																			
Exploratory interviews	SLE	Online	Orange																																																			
Preparation of field research	all	Berlin	Green																																																			
Field research region A	Team A	Barnim	Green																																																			
Field research region B	Team B	Wendland	Green																																																			
Field research region C	Team C	Upper Allgäu	Green																																																			
Field research region D	Team D	Großes Walsertal	Green																																																			
Writing retreat	all	Brandenburg	Green																																																			
Field research EU level	Team E	Brussels	Green																																																			
Report writing	SLE	Berlin	Orange																																																			
Presentation	all	Online	Green																																																			

Orange: SLE team; Green: complete research team. Source: Own illustration.

**Table 3** summarises the methods that were applied during qualitative data collection in the field research phase.

**Table 3: Field research methods used**

Method	Purpose
Semi-structured key informant interviews	<ul style="list-style-type: none"> <li>Identify agroecological transformation processes</li> <li>Understand driving factors for agroecological transformation and sustainable rural development</li> </ul>
Assessment of the FAO 10 Elements of Agroecology	<ul style="list-style-type: none"> <li>Understand perceptions and practical implementation of FAO 10 agroecology elements</li> </ul>
Actor mapping	<ul style="list-style-type: none"> <li>Gain insights into agroecological transformation and sustainable rural development key stakeholders' roles, functions, and relationships</li> </ul>
Transect walk with mental mapping	<ul style="list-style-type: none"> <li>Collect impressions of the landscape characteristics</li> <li>Link socio-economic and socio-political aspects with geographical realities</li> <li>Contextualise research findings</li> </ul>

### 5.4.1 Semi-structured key informant interviews

#### Exploratory interviews prior to and at the end of field research

Exploratory interviews prior to the field research phase enabled a more detailed understanding of the most current issues and concerns, such as insights into the state of implementation of agroecological activities in rural areas, the applied science of telecoupling, and methods for agroecological monitoring. In total, eleven stakeholders from the fields of governance and administration, science, and civil society were interviewed via Zoom (**Table 4**).

At the end of the field research phase, eleven interviews with key informants from the EU administration, the policy level, and civil society were conducted both in Brussels and via Zoom. These interviews followed individually adapted guidelines and served to contextualise the findings from the case study regions regarding their political implications (**Table 4**).

#### Semi-structured interviews in field study regions

In each of the four study regions, between 18 to 28 semi-structured interviews were conducted with key stakeholders in the fields of rural development and agroecology (see **Table A5** List of interviewees). The interviews served to identify agroecological transformation processes within the prevalent farming systems and their interconnections with other sectors and the policy and governance environments. The objective of the interviews was to gain a deeper understanding of the driving factors initiating and sustaining agroecological transformation processes and on identifying local approaches for anchoring agroecological practices in regional development plans. Furthermore, awareness of and motivations for North–South learning and international knowledge sharing regarding these topics was addressed. In this context, the awareness of telecoupling effects and responsibility for global problems (“trilemma issues”) were queried. Of particular interest was the participants’ own innovative approaches and initial motivations for sustainable actions. While undertaking the research, examples of “low hanging fruits” that hold potential for transfer to other regions were documented. Three interview guidelines were used, each adopted to the respective interviewee’s role and context.

- Stakeholders in the farming sector: The influence of the farming sector in promoting agroecological transitions and contributing to sustainable regional development was addressed. To this purpose, mainly small-scale and organic farmers were interviewed (N = 30).



- Stakeholders in non-farm sectors closely linked to farming: The specific linkages to farming and agroecological transitions at the local and regional level were addressed. Important sectors identified within this study have been forestry, nature and landscape protection, renewable energy, and tourism (N = 42); food processing, research, and education were included, when relevant.
- Stakeholders in governance and administration: Key actors in local and regional governance and administration were interviewed to gain an understanding of the policy context shaping agroecological transformation processes (N = 25).

Type / Place	Specification	Number	Total
Barnim	Farming sector Non-farm sectors Governance and administration	6 14 4	24
Upper Allgäu	Farming sector Non-farm sectors Governance and administration	5 5 8	18
Vorarlberg	Farming sector Non-farm sectors Governance and administration	6 13 8	27
Wendland	Farming sector Non-farm sectors Governance and administration	7 16 5	28
Exploratory expert interviews	Governance and administration Science Civil society	3 5 3	11
Brussels	EU Administration Policy making Civil society	4 5 2	11
Total			119
Source: own data			

### 5.4.2 Assessment of the FAO 10 Elements of Agroecology

The 10 FAO Elements of Agroecology were assessed in two ways. An indirect assessment by the researchers through cross-references while conducting semi-structured key informant interviews took place. Despite most of the interviewees being unfamiliar to the approach of agroecology,<sup>11</sup> an attentive ear could identify references to the 10 Elements of Agroecology throughout the interviews with farmers, stakeholders in non-farm sectors, and stakeholders at the policy and administration levels alike. Additionally, a direct assessment of the 10 Elements of Agroecology was done by the participants themselves via one of two participatory tools. Firstly, a questionnaire with brief explanations of the 10 Elements of Agroecology was given to the interviewees asking them to rate their organisation for each element of agroecology on a scale from one (not important) to five (very important). Secondly, the symbols for the 10 Elements of Agroecology were displayed on small cards and shown to the interviewees. They were asked to assemble them according to how central they deemed each element of agroecology for their organisation and to which other elements of agroecology it is closely related. Either one or the other tool was used.

### 5.4.3 Actor mapping

Actor or stakeholder mapping is a participatory appraisal tool to gain insights into key actors, their roles, and functions as well as their relationships (Eidgenössische Technische Hochschule Zürich, 2013). For the purpose of this study, informants with a broad knowledge base of the area, such as regional managers, environmental programme coordinators, or people engaging in civil society organisations were asked to identify key stakeholders relevant to agroecological transformation and rural development in the regions. While identifying the actors and their roles, participants visualised linkages between actors with coloured pens on white posters. Participants were not instructed on how to create the actor maps and they employed a variety of approaches to convey their points as a result.

For each research region, we layered the actor maps, prioritised key stakeholders, and described the quality of their relations in separate actor maps. These were then complemented with additional findings from interviews and observa-

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<sup>11</sup> A finding of the field surveys is that local farming practitioners lack knowledge and information about agroecology's concept and approach. This is a disconnect between the policy level, where agroecology is frequently referred to, and the local level, where this is not the case.

tions (as per Bourne & Weaver, 2010). Sector maps were also developed to show how sectors that are closely related to farming (i.e., forestry, nature and landscape conservation, renewable energy, and tourism) interlink and contribute to sustainable rural development in each research region. These are provided in [Chapter 6](#).

### 5.4.4 Transect walk with mental mapping

The transect walk method, a participatory exercise to observe and visualise characteristics along a designated walkway in the study area (Mukherjee, 2003), was carried out in each region to collect landscape characteristics. The tool links socio-economic and socio-political aspects with geographical realities and presents one perspective into local practices and associated structures (Mukherjee, 2003; Newing et al., 2011). Upon arrival, the research groups undertook unguided 5-km observation walks with limited prior knowledge of the area. The central observation targets were identification of land-use patterns, agroecological characteristics, and general landmarks. These were recorded by each team member in a mental map and explored in a group discussion.

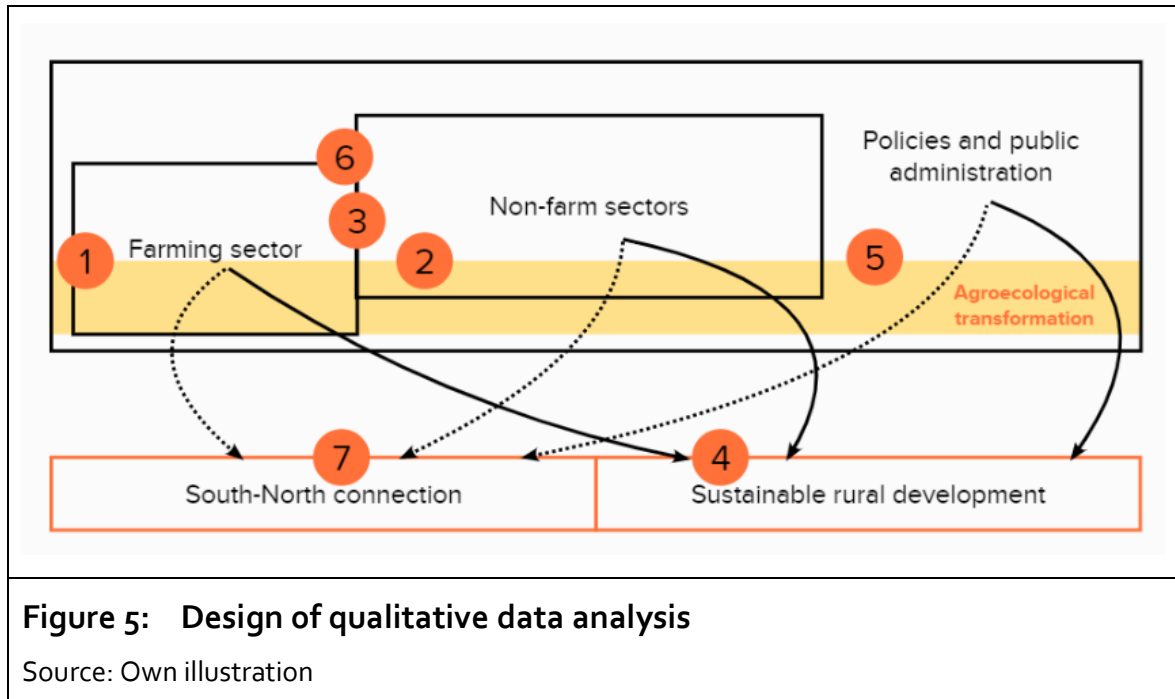
The transect walks helped the research teams communicate their individual perspectives on their observations such as visible farming characteristics, agroforestry integration, biodiversity, and human activity making it possible to identify important differences in the perceptions of African and German team members. The process revealed perceptions and cultural biases that could be explored and constructively used in line with the research objectives.

## 5.5 Qualitative data analysis

Most data were collected in the form of transcribed notes from the 97 semi-structured interviews. Photo documentation was compiled for the outcomes of the assessment of the FAO 10 Elements of Agroecology, actor mappings, transect walks, and visits to farms, manufacturers, fields, and other sites. **Figure 5** shows three clusters of interviewed actors, the three research subjects (agroecological transformation, sustainable rural development, and perceptions of North–South connections) and the two types of linkages that we focussed on in the qualitative data analysis (shown in dotted lines). They were coded with MAXQDA software to obtain information about the strength and quality of their linkages.

The qualitative data analysis was carried out separately for each of the four case study regions and, where indicated, also for the specific actor groups across

the regions). The following seven clusters of elements and linkages between agroecology, farming, and rural development as summarised in **Table 5** below, have been analysed:



1. *Agroecological transformation and agroecological farming practices:* For an analysis of the nature of agroecological transformation and related practices in the agricultural sector, only interviews conducted with farmers were taken into consideration. A separate data analysis was carried out for each study area. The coding guideline is based on the definitions of the FAO 10 elements of agroecology.
2. *Key rural development sectors and their linkages to agroecological transformation:* Key informant information from stakeholders involved in sectors linked to farming (forestry, nature and landscape conservation, renewable energy, and tourism) were analysed to describe the role and value they perceive in the principles of agroecology. Actor groups were further subdivided by specific sector. To systematically process relevant information, the FAO 10 Elements of Agroecology were used as the basis for the coding guidelines for each actor group in each respective region.
3. *Key rural development sectors and their linkages to farming:* The same subdivision of actor groups of key sectors linked to farming is taken. Agricultural sector linkages were systematically explored by code with the aim of identifying the nature of connections, collaborations, or overlapping interests

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and whether these are influenced by agroecological transformation in each region. Open coding for every sector allowed for more thorough results.

4. *The role of specific groups of actors (by sector) for sustainable rural development*: The contributions of above defined groups of actors in the respective regions that are relevant for sustainable rural development are analysed, combining all actor groups including farmers. References are the regions' development goals derived from the respective development programmes.
5. *Policy-level perspectives on agroecological transformation processes*: Interviews with actors working in politics and administration are analysed for actions supporting agroecological transformation. The FAO Elements of Agroecology serves as the basis for codification.
6. *Social organisation, civil society engagement, and values locally associated with sustainable development*: Identification of social organisation and values actors associate with rural sustainable development. The analysis identifies locally specific norms and informal institutions, some of which are related to locally adapted decision-making processes. This strives to recognise the multiple social realities that shape the context and contribute to the success of projects or regional planning processes.
7. *Awareness of specific local linkages to the Global South*: North–South linkages are systematised across interviews. Thematic codes were identified after retrieving data on North–South connections and special consideration is given in the analysis to telecoupling and direct and indirect flows between geographically distant linked places.

**Table 5: Structure and codification of data using MAXQDA**

Cluster	Actor group	Code	Guiding questions
1	Farm level	FAO 10 elements (deductive)	What impacts do agroecological transformation processes have on farming in the study regions? Which linkages exist between actors from agriculture and other related sectors in every region?
2	Non-farm sectors	FAO 10 elements (deductive)	Which actions or supporting measures are undertaken to support agroecological transformation processes?
3	Non-farm sectors	Linkage to farming sector (inductive)	What kind of connection, collaboration, or overlapping of interests exist between the farming sector and closely related sectors in the regions? How / through which measures do sectors closely related to agriculture influence agroecological transformations in the case study regions?
4	Farm level and non-farm sectors	Contribution to sustainable rural development (inductive)	What contributions to sustainable rural development do individual groups of actors make in the respective regions make?
5	Policy and administration	FAO 10 elements (deductive)	Which actions or supporting measures are undertaken on the policy and administrative level to support agroecological transformation processes?
6	All	Governance	Which norms and informal institutions regulate decision-making processes in the regions?
7	All	North–South relations	Which linkages beyond the regional level exist and in which areas?

Employing the study methodology in our four case study regions provides a better understanding of agroecological transformation processes and their interaction with sustainable rural development outcomes. A focus is placed on sustainable agricultural practices, biodiversity conservation, and food system integration. The following chapter presents the findings from the field study assessment.



## 6 Case studies

We conducted the four case studies in 1) Barnim district (Brandenburg), 2) the Wendland (Lower Saxony), 3) Upper Allgäu (Bavaria), and 4) Großes Walsertal (Vorarlberg) to identify enabling factors and options for strengthening agroecology as an approach for agri-food system transformation and sustainable rural development in the Global North. At the same time, we observed and evaluated existing linkages and potential distance effects of these activities on sustainable development in the Global South. The regions where agroecology principles and practice are more evident are those where small-scale farming is more dominant.

In the following, we introduce the study regions by describing their geographical and socio-economic environments and farming system characteristics. The local governance context is introduced by presenting relevant policy frameworks at the county, district, and (where appropriate) municipal level. Following the landscape approach, we included relevant non-farm sectors linked to agriculture in the locations (forestry, nature and landscape conservation, renewable energy, and tourism) in our study. We identified key actors in agroecology and sustainable rural development and their interrelations. Finally, we summarised our observations about the awareness of connections to the Global South and presented initiatives for agroecological transition and sustainable rural development.

Regions with strong actor networks exhibit more initiative and innovation in shaping the regional socio-economic and policy environment to their livelihood advantage and are more successful in forging sustainable transformation solutions. Integrated policy frameworks and participatory governance structures are key in shaping agroecological transitions. Agroecological elements that address the social architecture of a landscape are important and should be given more consideration.

### 6.1 Case study 1: Barnim—Berlin's rural neighbour

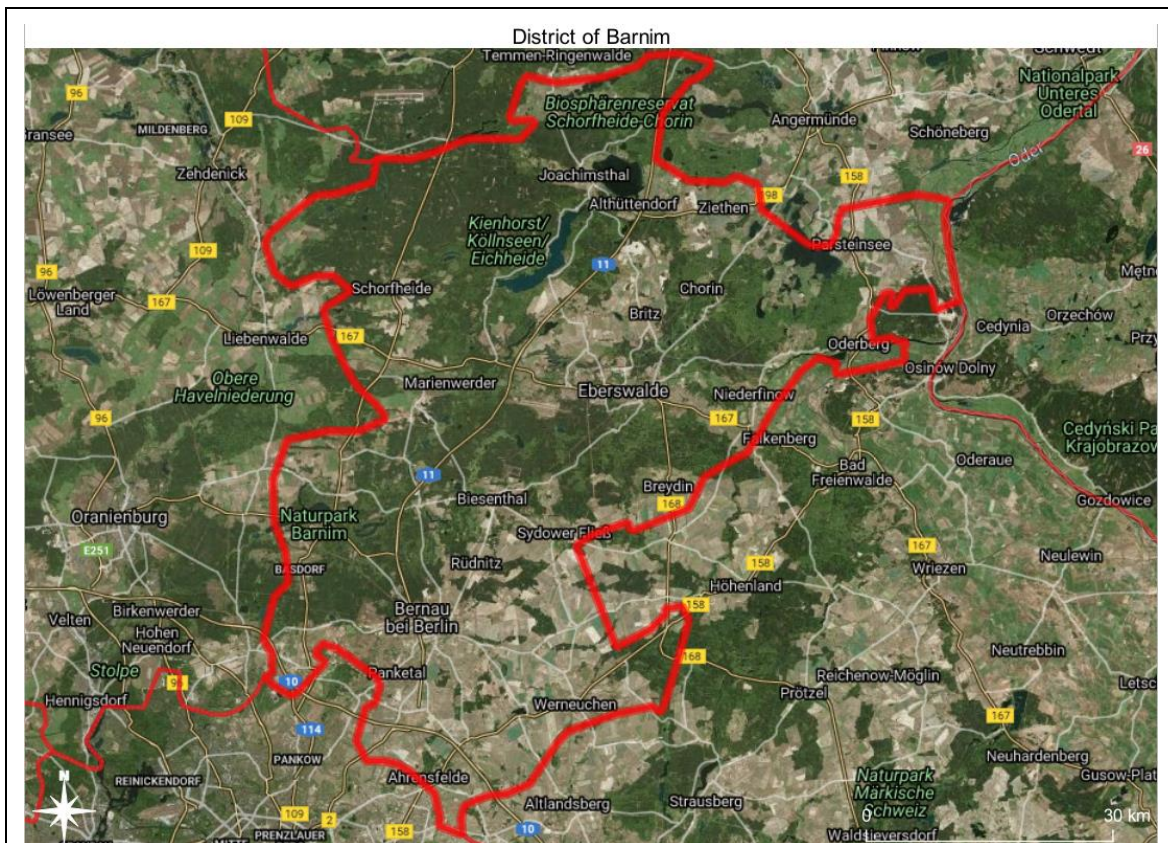
#### 6.1.1 Barnim district

Barnim is a district of the German federal state of Brandenburg, located to the north of the capital Berlin (depicted in **Figure 6**). Its name emerged first in the 13<sup>th</sup> century describing a large forest used for hunting situated east of the river Havel and north of the river Spree. The present-day district of Barnim was created after the German reunification in the year 1993 and covers a land size of about



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1,480 km<sup>2</sup>. Typical for Brandenburg, Barnim district is strongly influenced by the last ice age, with individual sections of the glacial series shaping today's landscape. Its agricultural land exhibits a high share of low-quality sandy and sandy-loam soils which, paired with low rainfall (on average below 600 mm/year), limits the agricultural production potential (Gutzler et al., 2015).



**Figure 6: Map of the district of Barnim.**

Scale: 1:600,000

Own illustration, Sources: Bing Satellite, Google Labels, Moosmeier 2011: Verwaltungsgrenzen Deutschland (De, Länder, Rgbz, Kreise).

Barnim has a population of 187,343 (Statistical Offices of the German States, 2020) that grew steadily from just below 150,000 in the year 1993. Before the German reunification, the economic strongholds of the region were agriculture and steel. Today, the service sector is the biggest employer (employing 75.7 % of the population), followed by industry and construction (22.3 %), and agriculture (2 %) (Eurostat, 2020). However, agriculture is still a key economic sector, closely linked to the renewable energy. The latter has gained economic importance through the ongoing shift toward wind and solar energy and the production of biofuels.

Barnim's unemployment rate of about 5.0 % reflects the slow economic structural changes that remain a challenge for the region (Arbeitsagentur, 2021). The proximity to Berlin allows people to commute to work in the capital; as a result, the southern part of Barnim (bordering Berlin) is densely populated and more urban than its northern parts. Well-developed road, rail, and waterway infrastructures, including the inland ports of Eberswalde and Schwedt (district of Uckermark) and proximity to the urban centre of Berlin and the Polish industrial centre of Szczecin create favourable potential for intensified economic development.

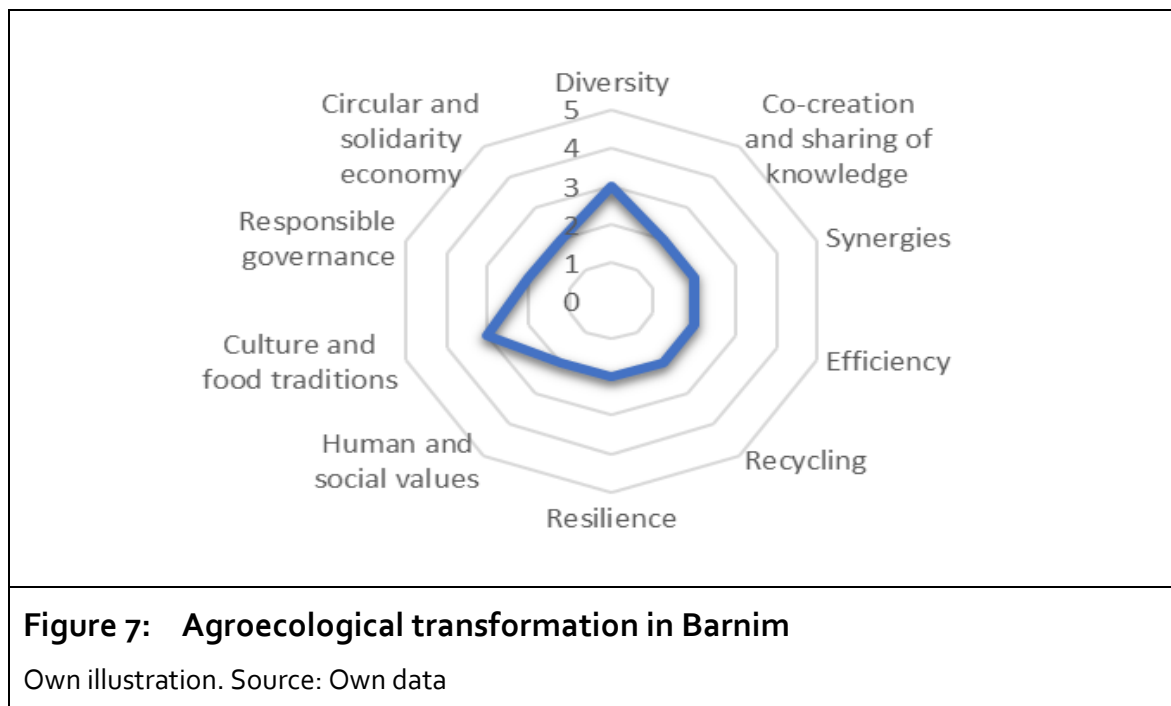
### 6.1.2 Farming system characteristics of Barnim

In the absence of other actions, such as nature restoration or natural landscape maintenance efforts, agroecological transformation in Barnim mainly finds expressions in the growing share of land under certified organic production and the rising number of farms converting to organic farming. Between the years 2016 and 2021 there was a marked increase from 664 farms to 912 organic certified farms in Brandenburg, most of them also producing livestock (Ländliche Entwicklung, Landwirtschaft und Forsten, 2021). According to the same source, in 2021, more than 14 % of the agricultural land of Brandenburg was under organic production (188,605 ha), which is a relatively high share compared to other federal states in Germany. In Barnim, 57 registered organic farms currently cultivate an area of about 10,109 ha (Amt für Statistik Berlin Brandenburg, 2021). The COVID-19 crisis had a marked positive impact on consumer demand for organic produce in Barnim (B3 interview). Depicted in **Figure 7**, overall, a transition to agroecology, expressed by the 10 Elements of Agroecology, is still not pronounced. Most agricultural land in the district is under input-intensive industrial farming methods and affected by issues such as soil degradation, biodiversity loss, and water contamination (B3 interview).

In Barnim, there are two distinct, interrelated drivers for conversion to organic farming. One is that certified organic farming provides access to a niche market, especially in Berlin. This concerns predominantly family farmers who market their products mostly directly through regional markets, at farmgate, or in organic and delicatessen shops within the region (interview B3). The proximity to Berlin enables many producers to market their products directly in Berlin. Well known are, for example, the vegetable boxes, whose sales rose sharply during the pandemic, and community-based agriculture schemes marketed in Berlin. According to one interviewee (B7), another important driver for conversion to organic farming methods is the increasingly felt effects of climate change. Higher likelihood of droughts and erratic rainfall patterns necessitate resilient, climate-adapted farm-

ing practices for long-term stable yields under difficult natural production conditions. The Lobetal enterprise (see below) observed improvements in soil quality and yields since the conversion to organic farming in 2008/09 (interview B7).

The two largest organic producers in Barnim are Ökodorf Brodowin GmbH and Lobetaler Landwirtschaft (incorporated in the Bethel Foundation). Both examples highlight that ecological initiatives often go hand in hand with initiatives targeting social benefits, such as (in these cases) employment creation for youth, especially disadvantaged youth. Lobetal farms 459 ha of agricultural land, of which 371 ha is crop land and 88 ha is grassland (interview B7). It raises about 320 dairy cows and uses agricultural land almost exclusively to produce livestock feed: winter rye, winter wheat, oats, corn, alfalfa, and clover, for instance. The dairy produces dairy products packaged in sustainable containers for the Berlin and East German market (interview B7). Ökodorf Brodowin farms over 2,400 ha of agricultural land, producing meat and dairy products (cow and goat), honey, vegetables, juices, and cooking oil under biodynamic Demeter certification. Lobetal and Brodowin are both best known for their dairy products beyond the Barnim region, particularly by customers in Berlin. Lobetaler Landwirtschaft includes Hoffnungstaler Werkstätten gGmbH certified under the “Lobetaler Bio” label. The entire value chain, from milk production to processing and packaging, takes place in vertically integrated operations.



Depicted in **Figure 7**, the FAO 10 Elements of Agroecology do not show significant progress. However, at the farm level, the elements of diversity, synergies, efficiency, and recycling have improved due to the ongoing expansion of organic farming. The Federal State of Brandenburg's goal of having 20 % of the total land mass under organic production is to be reached by the year 2024. The two important challenges in this regard are lack of regional value addition and processing capacities and lack of regional producer networks, knowledge generation, and collaboration (Ministerium für Landwirtschaft, Umwelt und Klimaschutz, 2021).

Organic farming has only started to build holistic, regional food value chains based on direct marketing concepts in Barnim district. The organic producer enterprises Brodowin and Lobetal play a significant role in this regard. However, they invested in their own food processing capacity, relying to a large extent on their supply of market outlets in Berlin. There are also smaller organic farmers who sell products through regional markets, farm and village stores, delicatessens, and organic food stores. A more diversified private sector for processing and value addition of organically produced raw agricultural products in Barnim is only sporadically visible. The only other actors in organic production (mostly uncertified) are the unknown number of community-based model farms operating on very small cultivation areas via a community of voluntary supporters.

The agroecological perspective emphasises ecological as well as social and economic benefits derived from a circular economy. However, for most farmers in Barnim, the key market is Berlin's growing consumer demand for organic produce while fewer efforts are made to stimulate local demand. However, at present, the demand for regionally processed organic products in the Berlin market cannot be met and organic food is imported to the city from other regions of Germany or Europe. Still, following agroecological principles, Barnim district needs balance market demand from Berlin with an expansion of a local market in Barnim itself.

### **6.1.3 Policy frameworks shaping farming and rural development in Barnim**

Agroecology in Barnim is promoted through organic farming. Organic farming has expanded remarkably in the district in recent years, primarily benefitting from Berlin's demand for organic produce. Barnim's agricultural sector is strongly influenced by restructuring of post-reunification Germany, favouring maintenance of large, corporate farms. Unlike other case study regions, Barnim's cultural landscape features are dominated by conventional farming practices akin to monocultures.

In Barnim, the EU-LEADER programme, financed through the second pillar EU CAP, was established to limit the negative effects of the land restructuring efforts described above, and to support social and economic development of rural areas. However, during the funding period of 2014 to 2020, the impact of the EU-LEADER programme was negligible (Interview B20). While the strategic objectives of the Regional Development Strategy of Barnim emphasises agriculture as a driver of rural development, farming appears to be an obstacle to rural development, with the urgent need for job creation in non-agricultural sectors. In this regard, the holistic approach of agroecology could serve to support novel regional development policies that aim to expand and strengthen the presently weak transformation capacities for value addition for farm produce. This requires competence-building measures such as knowledge transfer, advisory services, and skills development, as well as orientation to regional material cycles in renewable energies. However, the strategy lacks links to tourism, disjoining tourism from agriculture and disregarding the role of agriculture for maintenance and preservation of the natural landscape. Furthermore, we observed weak linkages between actors from different sectors, such as agriculture and, despite opportunities for networking within the LAG (EU-LEADER) framework, witnessed in other case study regions. Furthermore, a strong emphasis has been placed on developing tourism, but in complete isolation from other key sectors and without setting measurable targets.

The Cultural Landscape Programme (Kulturlandschaftsprogramm) of the Ministry of Agriculture of Brandenburg addresses the challenges associated with the EU CAP area-based funding policy that remains an incentive for intensive industrial farming methods. This programme is financed by the European Agricultural Fund for Rural Development and the development programme for rural areas in Brandenburg and Berlin. Support is provided for land conversion measures that particularly ensure and support the sustainable management of natural resources and climate protection. The aim is to contribute to the protection of the environment and the conservation of the rural habitat, the landscape, and its features, water resources, soils, and genetic diversity (Landesregierung Brandenburg, 2020b).

As part of its integrated economic strategy, Barnim district offers cross-community, structure-building projects that represent the district to the outside world. Eligible for funding are regional development projects in the core areas of water tourism, expansion of cycling paths, and emission reduction (Landkreis Barnim, 2021b). Although multifunctional agriculture is mentioned here as an area

of action in line with the promotion of renewable raw materials and renewable energies, its role in the sustainable development of the region remains unclear.

With regard to efficiency and the participation of citizens in Barnim, the campaign “Die Zukunft ist ERNEUER:BAR” (“the future is renewable”) is promoting renewable energies contributing to the zero-emission strategy. Already, renewable resources are sufficient to cover the energy needs of all private households in Barnim, or a quarter of the region's total energy consumption. Main energy sources are solar, wind, and biomass, competing for land with agriculture. However, the local renewable energy sector also provides important additional income and employment opportunities (Landkreis Barnim, 2021a).

The challenges of implementing existing strategies and policies consistently for sector integration are compounded by diverging interests of the urbanised southern part of Barnim district, located close to the capital of Berlin, and the Northern part of Barnim district, sparsely populated and bordering the Uckermark district (Interview B13). Particularly striking is the fact that despite the increasing weather extremes of heavy rains and hot, dry summers with its adverse impact on agricultural activities, the need for climate adaptation measures is still not widely recognised, especially from official representatives (Interview B05). This is reflected in vacant municipality positions for the charge of climate management, for which funds exist but are not utilised (Interview B05, Interview B13). We observed a reluctance to engage in cooperative work modes, particularly within the public administrative offices in Barnim, which might be a symptom of demographic and other socio-political challenges the region is facing, not the least since the German reunification.

#### **6.1.4 Agroecology and rural development in Barnim**

##### **Relevant non-farm sectors**

The district of Barnim is situated in an area of tension between southern urban areas on the outskirts of Berlin and northern areas which border on the Schorfheide-Chorin Biosphere Reserve. Since the western part of the district is characterised by large forest areas, while the (south-) eastern part is dominated by agricultural land, nature conservation plays a major role in the district. In addition to numerous civil society initiatives such as the “Local Agendas” or the local nature conservation associations of Naturschultzbund Deutschland and Bund für Umwelt und Naturschutz Deutschland (BUND e.V.), Barnim Nature Park seeks to make more impact in the vicinity of Berlin while the Schorfheide-Chorin Biosphere Re-

serve has a strong influence on nature conservation initiatives but only within its confines to the north of Barnim.

These forests' natural state is mixed stands of broad-leaved trees, yet pine was favoured by markets and foresters for their self-pruning quality, requiring little management. Wood from Brandenburg's forests is a sought-after raw material and provides livelihoods for around 15,000 people in the state. The construction industry's demand for small (35 – 45 cm diameter), fast-growing conifers has altered the forest composition and structure (Interview B18). The emergence of large forestry and construction companies has led to closures of small sawmills in the Barnim.

Barnim district has a more-than-180-year tradition of forestry teaching and research in Eberswalde with forests providing forest education, local recreation, water filtration, carbon dioxide reservoir, and erosion control. In fact, the forest in Barnim takes on 12 different functions: 10 ha of water protection forest; 77 ha of landscape protection forest; 16 ha of climate, noise, and emission protection forest; 2 ha of seed stock reserves; 85 ha of recreational forested areas; soil protection; forest development areas; peatland catchment areas; and others (Interview B18).

Barnim forests require attention to bolster tree stands' resilience to the effects of climate change. However, as the forests have different uses and owners, forest conservation and renewal are very complex. The municipality of Biesenthal in Barnim district has, therefore, launched a project in which citizens can jointly develop a forest utilisation strategy, academically supported by HNE Eberswalde.

Furthermore, the Oberförsterei Eberswalde, as a state body, manages about 74,400 ha of forest that covers nearly the whole district of Barnim.

While investments are made to maintain agricultural production of food crops and livestock in Barnim, not the least because it plays an important role in supplying urban consumers in Berlin, farming faces challenges. Extreme weather events and depletion of groundwater make farming riskier and there are several land-use conflicts related to significant land price surges. In this regard, the energy sector has significant linkages with the agriculture sector characterised by conflicts over land (Interview Bo2, Interview Bo7, Interview Bo9, Interview B23). Renewable energy companies are willing to pay almost 10 times more (2,500 Euros) to lease one hectare of land than farmers (200 – 450 Euros) because their profit margins are, in part, enhanced by German subsidies for renewable energy (Interview Bo7). This land-use conflict will continue and intensify, particularly as regional policies (mentioned above) aim to meet Barnim district's energy needs via renewable energy







promotes integrated approaches in the region, including participatory agroforestry research with farmers to enhance food production systems and biodiversity conservation for sustainable development in Barnim (Interview B10).

A second example of promotion of inter-sectoral linkages in Barnim is the linkages between farming, cultural landscape management, and tourism, promoted by the Naturpark Barnim and the Biosphere Reserve Schorfheide-Chorin. These programmes demonstrate how inter-sectoral interactions can improve biodiversity conservation and quality of life through employment creation and landscape management. The Barnim Nature Park promotes novel land-use concepts to reduce soil sealing resulting from the expansion of settlements accommodating the population influx from Berlin. Furthermore, agricultural enterprises are supported in their conversion to organic farming. In the last 15 years, for example, organic farming in the Barnim Nature Park rose from 7 % to 26 %. The park has also seen an increase in the number of farm shops selling regional products (Landesamt für Umwelt [LfU], 2021). The Schorfheide Chorin Biosphere Reserve is also committed to agroecological transformation. About 29 % (33,000 ha) of the area in the reserve is arable land, of which over 33 % is farmed organically. The reserve's management advises farms on conversion to sustainable cultivation methods through special support programmes. Large areas (approx. 16,000 ha) are also part of the Initiative Gentechnikfreie Region Uckermark-Barnim. All efforts maintain socio-economic sustainability, where a special focus is placed on employment creation.

### **6.1.5 Key actors promoting agroecology and rural development in Barnim**

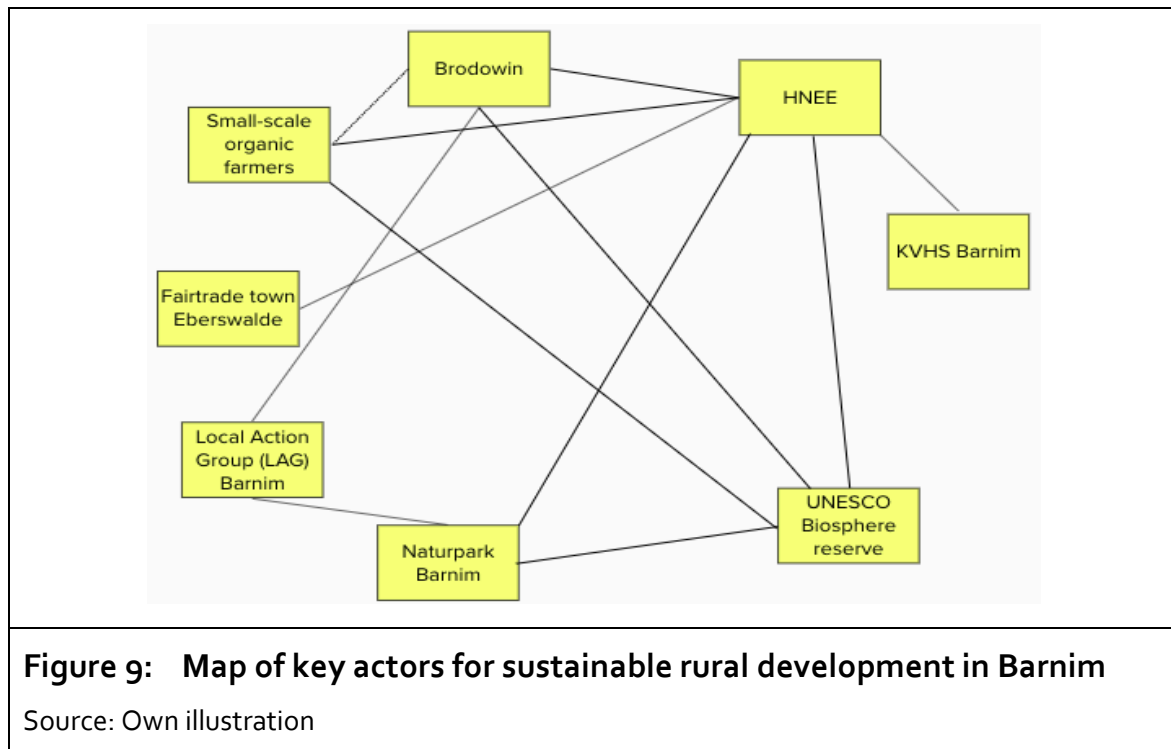
Barnim has a small number of key actors actively involved in activities contributing to agroecological transformation processes. These actors operate primarily in the social and ecological, and to lesser extent, the agricultural spheres (as shown in **Figure 9**). However, important connections exist between them that are consequential for sustainable rural development in Barnim. These actors also maintain relationships with other non-key actors, who may be small or relatively inactive in agroecology and sustainable rural development and are, therefore, not explicitly mentioned in this report. These key actors are:

- **Brodowin:** The organic farming company has operated with certification from Demeter since 1991. It is a mixed farm with beef cattle, dairy cows and goats, and poultry. Brodowin is a pioneer in large organic farming in the region, with important connections (especially with other key actors promot-

ing agroecological transition) through their location in the UNESCO biosphere reserve and their partnership with the HNEE (Interview B12).

- Naturpark Barnim: With an area of 750 km<sup>2</sup>, the park is a unique protection area traversing Berlin and Brandenburg. It was founded in 1998 and consists of both nature and landscape protection areas, including forests, farmlands, fields, and water bodies as well as settlements and roads. Efforts have been made to have the park recognised as biosphere reserve (Interview B11).
- Eberswalde University of Sustainable Development (HNEE) is a central actor for agroecological transition in the region through its own activities and through collaboration in the activities of other (key) actors. For instance, in its own agroforestry project, Ackerbau(m), it works in cooperation with farmers to test suitable tree species for inclusion in fledgling regional agroforestry practices (interview B10). With four faculties (Forest and Environment, Landscape Management and Nature Conservation, Wood Engineering, and Sustainable Business), the university is highly focused on sustainable development in the region and the Brandenburg state. It has 2,300 students and 370 staff involved in study and research in nature conservation, forestry, organic farming, climate change adaptation, sustainable business, timber construction, and sustainable tourism management (HNEE, 2021).
- UNESCO Biosphere Reserve Schorfheide-Chorin: The biosphere is a natural protected area, recognised and certified by UNESCO in 1990. At nearly 130,000 ha, the reserve is one of the largest conservation areas in Germany, consisting of 240 lakes, thousands of moors, vast forests, meadows, and fields (LfU, 2021). It contains 75 municipalities, and three small towns with a population of 35,000 inhabitants. The central concept and purpose of the reserve is to reconcile the cultural and natural protection duties with the development interests of its inhabitants. It does this through activities such as involving the inhabitants in its cultural protection projects, supporting farmers in their transition to ecological farming, and cooperating with the HNEE and other actors (Interview B21).
- Fairtrade Town Eberswalde: In June 2014, Eberswalde was officially recognised as a Fairtrade Town. The organisation galvanised cooperation between political, economic, and civil society actors to promote fair trade in Eberswalde. Most notable are the initiatives of a public breakfast made from fair, regional, organic products, held in cooperation with the HNEE,

regular educational campaigns in schools, as well as public awareness raising campaigns (Fairtrade Stadt Eberswalde, n. d.)



### 6.1.6 Awareness of connections to the Global South in Barnim

The awareness of global interdependencies appears to be low in the district. This is especially the case when it comes to taking responsibility for the effects on the Global South through consumption patterns (Interview B13). Thus, the district has few institutionalised connections with the Global South. However, key players carrying out awareness-raising projects and representing sustainable regional action are the Fairtrade Town of Eberswalde and the Palanca Association. The Fairtrade Town initiative maintains a direct link to agricultural production and consumer behaviour in the region. It functions as a hub for actors who share this mindset and are interested in spreading awareness among the population (Interview B04), in particular local organic producers and smaller processing companies. The flagship project of this cooperation are annual thematic breakfasts where problems and possible solutions are presented and discussed with participants. With 350 participants in 2019, the multiplier effect can be considered very high, especially considering the low population density in the district (Interview B04).

In the area of joint learning between Global North and Global South, the biosphere reserve's cooperation project with Myanmar is highlighted in the context

of international networks of biosphere reserves (Interview B21). Although this form of cooperation is isolated from the public, the effects of the shared knowledge and resulting actions in the biosphere reserves can be seen by visitors and residents.

## 6.2 Case study 2: The Wendland—a rural region at the fringes of Germany's centre

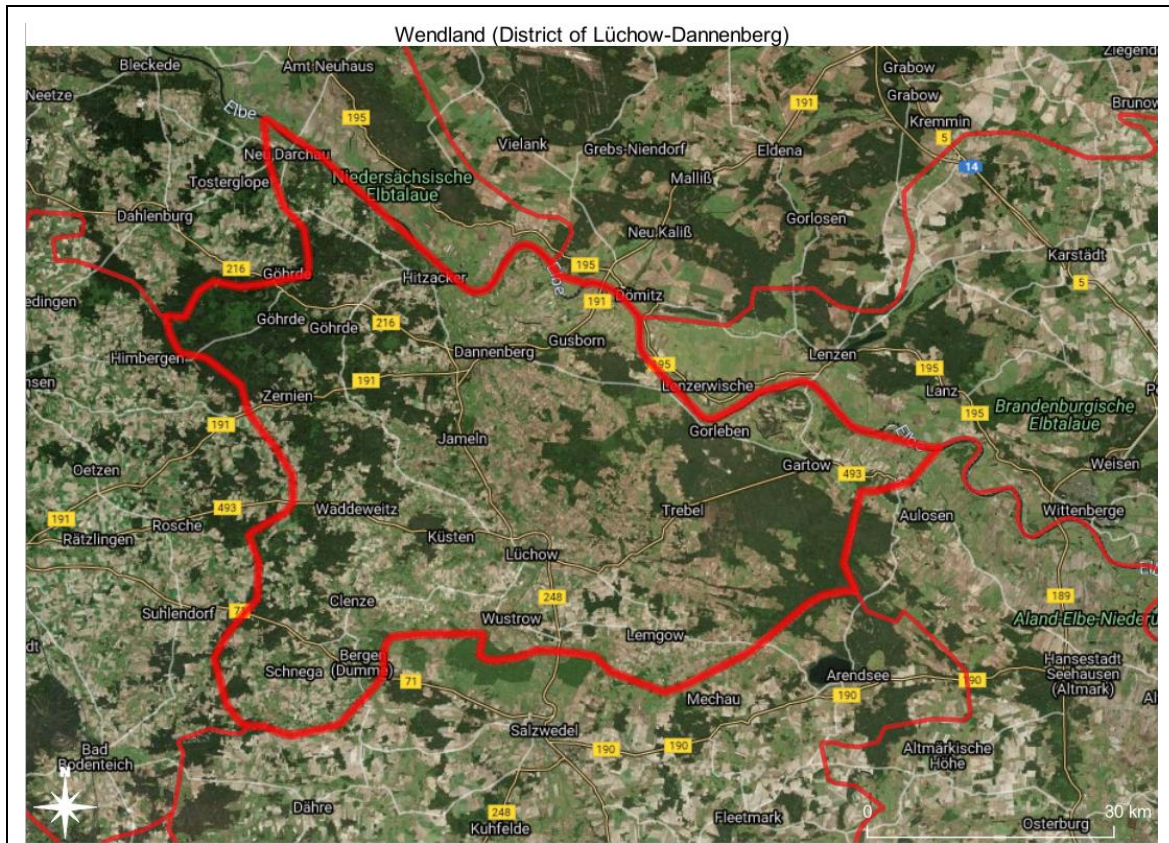
### 6.2.1 The Wendland

Located in eastern Lower Saxony and thus in the central north of Germany, the Wendland sits in the peripheral regions between the metropolises of Hamburg, Hanover, and Berlin (depicted in the map in **Figure 10** below). The Wendland is not a political entity but received its name from the Polabians, a Slavic population group, who settled in the region in the 16th and 17th centuries and were called "Wends" ("the others"). Those areas currently inhabited by Wends coincide almost identically with the area of the district of Lüchow-Dannenberg with a total population of 48,412 in 2019 (Statistisches Bundesamt [Destatis], 2021,). For this reason, the reference unit for various measured variables in this study will be the district of Lüchow-Dannenberg. Nowadays, the Wendland is well-known because of the anti-nuclear waste repository protests in Gorleben associated with the region and part of a socio-political movement of the 1970s.

With 40 inhabitants per km<sup>2</sup>, Lüchow-Dannenberg had the fifth lowest population density among German districts in 2019 (Statista, 2021a). Moreover, it also has the fewest number of enterprises (Statista, 2021b). Despite its central location, representing periphery is a recurring pattern in the region: The Wendland was the westernmost outpost where Slavs settled—their culture (e.g., names and architecture) is still preserved today. With the division of Germany into the German Democratic Republic and the Federal Republic of Germany, the Wendland once again found itself in a peripheral location at the edge of the border between the two Germanys, which meant that all relations and flows (including trade and mobility) between former neighbouring communities were terminated. With reunification, the focus was then on invigorating the new federal states, so that the region again found itself in a comparatively disadvantageous situation, unqualified for many funding programmes.

The Wendland has a very fragmented settlement structure. With many small villages (esp. Rundlingsdörfer) and only two mid-sized towns, local public service

access is a challenge. The average distance to the nearest supermarket, for example, is 2.96 kilometres (in Upper Allgäu, for example, it is only 1.2 kilometres) (SDG-Portal, 2021).



**Figure 10: Map of the district of Lüchow-Dannenberg. 1:600.000**

Scale: 1:600,000

Own illustration. Sources: Bing Satellite, Google Labels, Moosmeier 2011: Verwaltungsgrenzen Deutschland (De, Länder, Rgbz, Kreise).

Automotive suppliers and machining companies make up the Wendland's industrial sector. This is due to the proximity to the Volkswagen headquarters in Wolfsburg (Interview Wo6). Along with industry, public administration, the care sector and the service sector are the major employers in the area (Interview Wo6). The gross income per inhabitant is comparatively low at 26,204.40 Euros per year (for comparison, the gross income for residents of district of Upper Allgäu is 32,448.70 Euros per year) (SDG-Portal, 2021). Farming is comparatively important for the district of Lüchow-Dannenberg where the share of agriculture and forestry in gross value added is significantly higher than it is in the whole of Lower Saxony. Lüchow-Dannenberg also has a higher percentage of manufacturing sector em-

ployees working in agriculture and forestry (Landwirtschaftskammer Niedersachsen, 2020a).

### 6.2.2 Farming system characteristics of the Wendland

The Wendland landscape is shaped by glacier deposits from the last two ice ages, with predominantly sandy soils and few, moderate slopes. This enables large-scale mechanised agriculture (Interviews W13, W16, W17). A mixed crop-livestock system dominates. The region is an important producer of pigs, dairy, and especially poultry in Germany. Main crops are winter wheat, winter barley and rye, maize, rapeseed, sugar beet, and potatoes (70% of which is for industrial use) (Landwirtschaftskammer Niedersachsen, 2020b). Different from regions like the Allgäu described in the [sections 6.3.](#) below, despite the significant size of the livestock industry, animals are not very visible in the landscape because they are reared indoors year-round.

The average farm size in the Wendland is above 100 ha, which is comparatively large for a western German location. The Lüchow-Dannenberg district had a total of 736 farms in the year 2020. While there are some large agricultural enterprises operating in the region, most farms are still family owned. These families typically have some off-farm income as well.

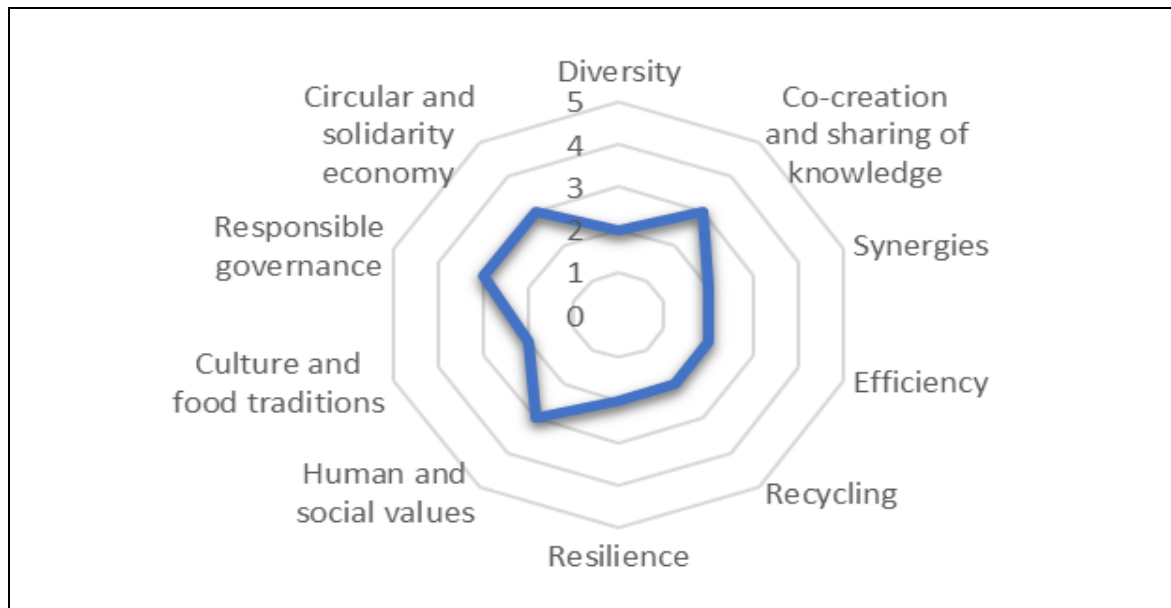
#### Agroecological transformation of the farming system in the Wendland

The share of agricultural land under organic production in Lüchow-Dannenberg district is 19.1 % (Kompetenzzentrum Ökolandbau Niedersachsen, 2021) while for the Federal State of Lower Saxony it is 4.8 % (Landesamt für Statistik Niedersachsen, 2020). Many of the ecologically producing farms were not inherited as family farms, but started by entrepreneurs who envisioned sustainable production in the region. Many of the initiatives visited by the research team had a stronger social-value orientation than profit orientation. Depicted in **Figure 12**, agroecology elements expressing the socio-economic dimension of sustainability are, therefore, more prominent in the agri-food system transformation process.

Persistent farming externalities in the Wendland are the negative impact on ground water quality due to excessive use of fertilisers and pesticides, decrease of soil quality due to soil compaction and nutrient depletion, destruction of the landscape, and loss of biodiversity (Niedersächsisches Ministerium für Ernährung, Landwirtschaft und Verbraucherschutz, 2021). Land prices for farmland have tripled since 2008 (Grau et al., 2018). Some of the reasons given for this increase are investor speculation despite legal prohibitions on this practice; the legal system is



criticised as being too weak in this regard and thus overrun by the EU principle for free capital movement (Interview W13).



**Figure 11: Agroecological transformation in the Wendland**

Own illustration. Source: Own data, see **Table A2** in Annex 2

In the Wendland, there are between eight and eleven (varying information according to interviewees) small-scale farms practising community-supported agriculture (CSA). They promote permaculture and practise other sustainable farming methods. The CSAs have different membership models allowing payment via a fixed monthly membership fee, flexible contributions, or food-for-work arrangements (Interview w14) in exchange for a weekly food package. In some CSAs, members receive pre-packaged produce bundles; whereas, in others, members come with their baskets and pick what they need. Mutual support was observed in many areas in the Wendland, especially in the form of barter trade in sharing resources (like machinery, labour, etc.) and outputs (produce).

Large-scale, industrial agriculture faces growing criticism for its environmental impacts (Niedersächsisches Ministerium für Ernährung Landwirtschaft und Verbraucherschutz, 2021; Interview W09). One informant put this dynamic into a broader context:

*Here the farmers are told, you are producing the food to nurture not only Germany but also the world... only incentive that farmers have on their farmland is producing as much as they can. But farm land does a lot more, it is our nature here... If we want to tackle climate change and bi-*

*odiversity loss, we need to think about how we treat farmland differently* (Interview W19).

In the Wendland, many organic farmers show how different land management practices work: intercropping, crop rotation, green strips, gradual mowing, organic fertilisers, etc. Yet, most of these actors, especially small-scale ones, are not getting paid for the services they provide for the commons and, thus, others lack financial incentives to act alike (Interviews W04, W09, W14, W20).

### **6.2.3 Policy frameworks shaping farming and rural development in the Wendland**

According to several interviewees, the bottom-up principle of the LEADER programme makes the work of the LAG Elbtalau the best-known development strategy in the Wendland region. National and state development strategies create favourable framework conditions for LEADER funding. The thematic focus of the LAG Elbtalau is coherent but not congruent with the Rural Development Programme of Lower Saxony and Bremen (2014 – 2020). In contrast to LEADER, the interviewees did not make significant reference to the latter despite its visibility in the Local Development Strategy (LES) of the LAG Elbtalau. Although not identified as agroecology in the LES, the three main themes the 2014 – 2020 programme cover agroecological elements: demographic diversity between youth and the elderly (FAO element: human and social values), the economy between tradition and innovation (FAO elements: culture and food traditions, circular and solidarity economy, and efficiency), and the landscape between protection and utilisation (FAO elements: synergies and responsible governance) (Niedersächsische Landgesellschaft mbH, 2014).

#### **Lower Saxony**

At the state level, a striking feature is the strong focus on biodiversity protection. This is particularly evident in the *Sustainability Strategy of Lower Saxony* (Niedersächsisches Ministerium für Umwelt, Energie, Bauen und Klimaschutz, 2018), the *Lower Saxony Way* (Land Niedersachsen, 2020) and especially in the *Strategy for Arable Farming and Grassland* (Niedersächsisches Ministerium für Ernährung, Landwirtschaft und Verbraucherschutz (2021). In all of them, however, other agroecological elements can also be identified, although they are not referred to as such. In the former strategy, the interplay and mutual dependence of different sectors is emphasised, so that the economic, social, and ecological dimensions of sustainability are reflected in an integrated way. Agriculture is thus included as an essential component for sustainable development: “All changes in



agriculture have a direct impact on the socio-economic environment. These include agricultural trade, breeding, agricultural machinery technology, construction, services or the food industry. In the opposite direction, the dependencies are just as present" (Niedersächsisches Ministerium für Umwelt, Energie, Bauen und Klimaschutz, 2018, p. 40). The *Lower Saxony Way* illustrates the implementation of the FAO element "responsible governance". The state government, the Lower Saxony Chamber of Agriculture, the Lower Saxony farmers organisation (Landvolk), as well as nature and environmental organisations commit themselves to efforts for nature and species conservation, biodiversity protection, and responsible natural resource management (Land Niedersachsen, 2020). The *Strategy for Arable Farming and Grassland (2021)* picks up the *Lower Saxony Way's* commitment to climate- and biodiversity-friendly management. In Lower Saxony, issues such as the increasing loss of biodiversity (largely attributed to agriculture), use of chemical fertilisers and emission pollution, as well as the growing size of farms and the associated destruction of landscape characteristics are among the factors that reduce the social acceptance of agriculture. Reference to these processes and dwindling social acceptance for conventional farming was made by interviewees. In addition, agricultural subsidies and water use for irrigating fields are viewed negatively. Diversification of cultivation, animal welfare, and organic farming are on the agenda for promotion in agriculture (Niedersächsisches Ministerium für Ernährung Landwirtschaft und Verbraucherschutz, 2021).

### **Lüchow-Dannenberg**

The Lüchow-Dannenberg District Administration and Council have elaborated the guiding principles of a vision for the region. Much emphasis is placed on people-centred actions, conserving the cultural landscape, strengthening the economic sector of the county, refraining from any form of nuclear planning, and working toward achieving climate goals (Lüchow-Dannenberg, 2017a). Agricultural transformation and rural development sit at the intersection of these principles. Field study interviews identified active civil society, increased share of food processing in the county, and measures for climate protection and biodiversity conservation, as the most important concerns of local agents of change (especially Interview W03, Interview W05, Interview W09, Interview W14, Interview W28).

In addition to the set of principles, two additional regional strategies are particularly relevant for an agroecological transition and sustainable rural development in Lüchow-Dannenberg. First, *Regiobranding* (Leibniz Universität Hannover, 2018), a landscape-based approach for fostering processes toward sustainable cross-regional development with neighbouring regions drafting a common vision

for 2050 which is to be realised by putting emphasis on three focus areas, namely 1) culture, history and heritage, 2) branding, 3) nature, environment and agriculture. The Rundlinge<sup>12</sup> are in the process of being recognised by the UNESCO as world heritage sites (Interview Wo1), regional marketing of local products from agriculture strengthens regional economic cycles (Interview W26, Interview W27), and biodiversity conservation is seen as one of the key priorities for the next decade (Interview Wo4, Interview W20, Interview W25, Interview W28).

The other strategy is the *Masterplan for 100% Climate Protection* (Lüchow-Dannenberg, 2017b). Therewith, 41 participating municipalities developed a guideline for civic climate protection and named targets for lowering energy consumption by 50 % and greenhouse gas emissions by 95 % by 2050, compared to 2015 levels. These ambitious goals shall be reached in the core action areas of heating, electricity, and mobility. The energy sector is highly relevant for and closely connected to the farming system in the Wendland (Lüchow-Dannenberg, 2017b). *Regiobranding* and the *Masterplan for 100% Climate Protection* promoted many valuable activities in the past, yet their funding period is complete and they, therefore, do not seem to be of major importance to current regional planning and development (Interview Wo5, Interview Wo6, Interview W19). During a panel discussion with the candidates in the district council election, it was those issues that are recorded in the Lokale Entwicklungsstrategie (Local Development Strategy [LES]) as most pressing for rural development by both citizens and local politicians.

In a region where significant sustainability initiative is rooted in individual and civil society engagement, funding accessibility for private entities is a key obstacle to the implementation of locally devised development objectives. Bureaucratic and political hurdles must be overcome by committed citizens. As a possible solution, local budgets administered by the county were suggested, facilitating access to funding for civilian applicants engaged in sustainable rural development, and thus enabling direct action adapted to local contexts (Interview Wo6).

#### 6.2.4 Agroecology and rural development in the Wendland

##### Relevant non-farm sectors

Of Lower Saxony's land area, 55.6 % (corresponding to 2,809,985 ha) is under some form of nature conservation. Since most of these areas are not used exclu-

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<sup>12</sup> A specific local form of housing and village structure dating back to the Middle Ages.

## 64 Case studies

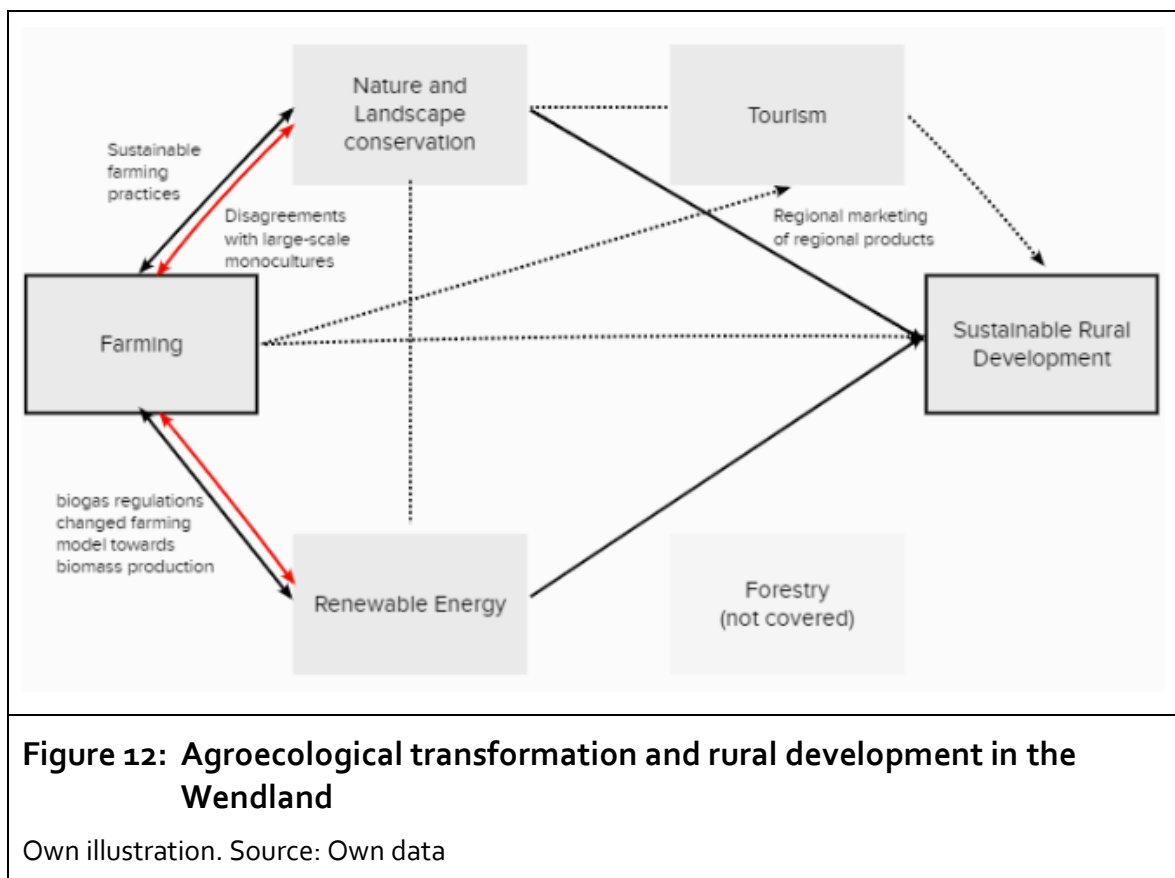
sively for nature conservation, they are key sites for sustainable rural development (Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz, 2021). Three large, protected areas have been designated by the European Nature Conservation Programme Natura 2000: the Harz National Park, the Lower Saxony Wadden Sea National Park, and the Biosphere Reserve Lower Saxony Elbe Valley (Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz, 2021). The latter sits in the northeastern part of Lüchow-Dannenberg and incorporates the Green Belt. Initially, the biosphere reserve was designated as a national park; however, there was strong opposition from locals who disagreed with land expropriations and bush encroachment, especially in light of recurring floods. As a result, it was designated as a biosphere in 1997 and now focuses on regional development (Interview W28). The biosphere works with farmers by setting up biodiversity conservation and sustainable resource management programmes. It promotes multi-actor partnerships to strengthen biodiversity in recognition that biodiversity is good for the environment and agriculture (Interviews W15, W25, W28).

Lüchow-Dannenberg district generates about 300 million kWh of energy for electricity, heating, and transport annually (Lüchow-Dannenberg, n. d.). A total of 15 MW is generated by 24 biogas facilities (34 % of the district's energy production). Lüchow-Dannenberg's 71 wind turbines produce a total of 108 MW (63 % of its energy production). The remaining 3 % comes from 630 solar PV systems, totalling 10 MW (Lüchow-Dannenberg, n. d.; 100Percent.org, 2020). The district reached its target of 100 % renewable electricity consumption in 2011 (Schaarschmidt, 2011) due to the installation of biogas plants—a highly disputed issue (Niedersächsische Landgesellschaft, 2014) explained in detail in the next subchapter.

With an estimated 400,000 overnight stays per year, tourism is not currently a key economic sector in the Wendland. Yet, our interviewees referenced its potential for the Wendland's rural development. Tourists visit the Wendland for the protest culture emerging from the anti-nuclear movement, the environmentally conscious lifestyles embraced in the region, the landscape, and the distinct small town and rural architecture (Interview W23). Public administration promotes regional food marketing, despite the Wendland's lack of distinct culinary culture capable of enhancing attachment to the destination as a choice for tourists (Interview W26).

### 6.2.5 Agroecological transformation and rural development in the Wendland

The contributions that farming in the Wendland offer to sustainable rural development are made through a web of interconnected sectors. **Figure 12** depicts multiple connections between agroecological transformation processes, farming, and key sectors related to sustainable rural development. In the following, we address three of these connections: bioenergy, regional processing and marketing of food, and awareness raising about food choices.



For over a decade, biogas production has been promoted in the Wendland and it is now regarded as a model biogas producer. Large areas of maize monocultures serve as biofuels for many biogas plants (Interview W18, Interview W24). The sustainability of biomass production is questionable as it places the energy and food sectors in competition for arable land. The financial incentives offered by the energy sector and presence of solar and photovoltaic systems on land make it difficult for smallholder farmers to access land (Interview Wo8B, Interview W18).

A second strong connection between farming and sustainable rural development in the Wendland is regional processing and food marketing, with regionality

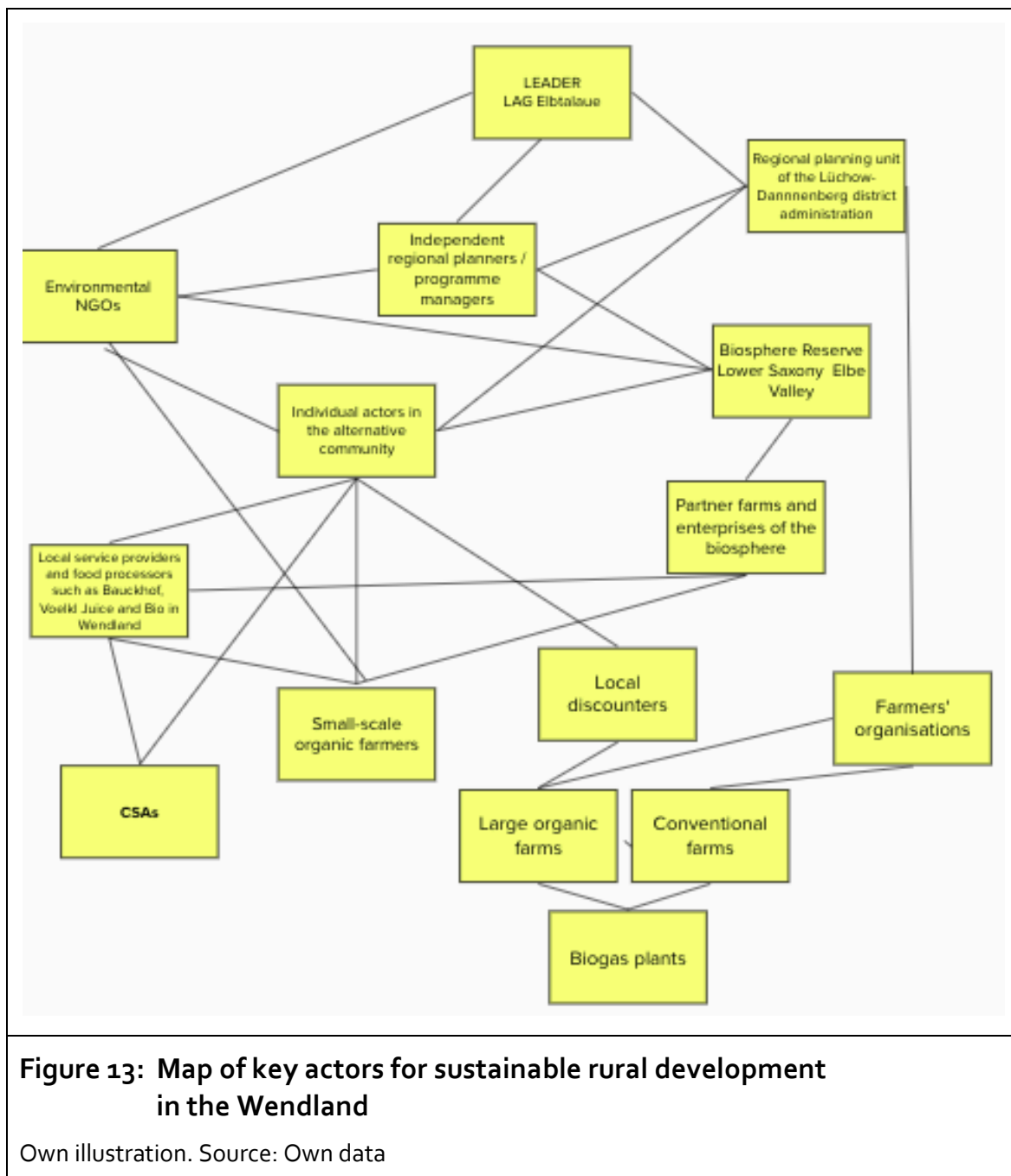
and circular economy recognised as important for organic farming promotion. Drivers for conversion from conventional to organic farming in the region include local demand for regional products from organic farming and demand from urban markets outside the region (Hamburg, Hannover) that seek suppliers with organic certification (Interview W22). Thus, the two large processing companies in the region, Bauckhof and Voelkl Juice, have contributed and continue to actively contribute to agroecological transformation processes. However, this only applies to food production methods that are fully eco-certified. The processing companies are selling nationwide and are not directly dependent on the comparatively few customers in the Wendland. The Wendland's low population density is a challenge for local producers because regional demand is limited (Interview Wo8B). Small farms and service providers therefore offer individualised product packages such as CSAs, private food transportation services, and home-kitchen food processing to exploit the regional market potential. Importantly, these initiatives operate at the intersection of farming and nature conservation and are not motivated primarily by economic returns. Practising organic agriculture, beyond the production of food, is valued as an expression of culture, community, and lifestyle (Interview W10, Interview W11, Interview W14, Interview W26, Interview W27).

In fact, many interviewees alluded to the importance of mindset shift as a necessary precursor to and clear link between good agroecological practice and sustainable rural development in the Wendland (Interview Wo1, Interview Wo4, Interview Wo9, Interview W11, Interview W19). One interviewee from a CSA mentioned that "many people come and they realise that they get actual cucumbers here. Not simply painted water what they offer in the large discounters" (Interview Wo4). The implication of this opinion is the assumption that consumers must be more willing and able to purchase organic products and pay a higher price for them. Other interviewees suggested institutional food outlets for organic and high-quality regional food, such as canteens in schools and companies, could positively influence consumption habits and attitudes to food. However, EU procurement law for supply contracts for public institutions complicates regional sourcing (Interview Wo6, Interview W19).

### **6.2.6 Key actors promoting agroecology and rural development in the Wendland**

A unique feature in the Wendland farming and rural development are the numerous grassroots and independent sustainability initiatives that are interconnected mainly through personal networks. Many stakeholders are aware of this richness in social fabric (interview Wo1, interview Wo5, interview Wo6, interview

W11, interview W14, interview W20, interview W28). The following description is depicted in the Actor Map (Figure 13) below.



CSA refers to formal linking programmes which bring local consumers and farmers together: consumers pay a fixed monthly or annual amount for regular deliveries of the harvest, which allows producers to plan. CSAs are organised as associations, cooperatives, or companies (Interviews W04, Interview W10, Interview W17, Interview W20). A unique feature of the 8 – 11 CSAs in the Wendland is that they market food directly in the Lüchow-Dannenberg district without being

dependent on a larger metropolitan region (Interview W19). CSAs also facilitates networking of actors in the region and allows consumers to have a direct connection to their food. Through this, CSAs convey the multiple values of food (Interview W20).

Sustainable farming practices and rural development are mainly driven by individual actors who are active in several networks and know each other personally. Some felt they were very small cogs in a larger wheel and wondered, "What if we just stopped? The small land would probably be bought up by one of the bigger farmers and that's it" (Interview Wo4). In other words, CSAs' strong efforts are perceived as drops in the ocean, which collectively make a difference.

Networks and citizen initiatives play a central role in regional development in the Wendland. For example, the Grüne Werkstatt Wendland (Green Workshop) is a multi-actor platform that connects stakeholders from different sectors to projects on sustainability and creativity (Interview Wo6). Additionally, NGOs engage the public in the Wendland; for example, Kulturland facilitates land access to those who want to farm organically. NGOs are also implementing partners for projects funded by larger institutions, such as the LEADER programme.

The regional planning unit of the Lüchow-Dannenberg district is very well connected to civil society and the economy. It fulfils an incubator function: various development projects are strategically initiated, making the regional planning department a liaison between financial resources and idea generators (Interview Wo6).

The Lower Saxony Biosphere Reserve Elbtalaue is an actor that sustainably shapes the "model region" within the biosphere boundaries through cooperation with civil society organisations and partners. Their core task is to implement effective nature conservation while maintaining motivation and willingness to cooperate with local farmers and citizens in development planning (Interview W28).

The regional planning unit of the Lüchow-Dannenberg district administration, the Biosphere Reserve Lower Saxony Elbe Valley, the LEADER LAG Elbtalaue, and independent regional planners/project managers are key stakeholders who have eased access to funding and initiated, supported, and collaborated with network funding platforms such as the Green Workshop and Region Aktiv.

Local food processors buy agricultural produce and create and maintain value addition in the region. According to key informants, the number of medium and large processors can be expanded (Interview Wo8, Interview Wo3). Smaller processors market their products through alternative outlets such as the market hall

in Dannenberg, directly on their farm, or through service providers who distribute the goods to sales outlets in the region (Interviews W14, W26, W27).

### 6.2.7 Awareness of connection to the Global South

Dating back to the anti-nuclear protests of the 1970s, the region has a relatively strong ecological awareness (local and global); this was apparent in the interviews (e. g. Interview Wo4, Wo5). It was the "Bäuerliche Notgemeinschaft" (peasant emergency community) that initiated the first protest on March 25, 1979 (Norddeutscher Rundfunk, 2019) and served as a springboard for measures taken at that time, and today. In addition to the resident anti-nuclear protesters, other people involved in the movement settled in the Wendland and experimented with ways of doing business and living with a strictly ecological mindset (Interview Wo4). CSAs emerged as well as vanguards of sustainable agriculture in general (Interview Wo4, Wo8). Although the market demand for organic products was lower at that time than it is today and they were accordingly sold mainly in the nearest metropolitan core region of Hamburg (Interview Wo8), their actions are based on the awareness that global environmental threats do not know borders. Awareness raising on sustainability activism in isolated environments in the Global South is occasionally offered through educational formats by people engaged in this field, who are considered multipliers for South–North learning processes (Interview Wo9, W20).

Beyond that, evidence of joint learning and knowledge production with the Global South, however, was not given. One exception is mushroom cultivation, where the Western world is massively behind (especially compared to eastern Asia and China) presenting an opportunity for knowledge exchange. Since knowledge in this area is not recorded in German, there is an extraordinarily low diversity of mushroom species cultivated in the German-speaking countries (Interview W10).

Due to the low soil quality (marginal land) in the Wendland, organic farming methods offer a reliable long-term option for land management over conventional methods (Interview Wo8).<sup>13</sup> Many interviewees mentioned the effects of climate change, especially drought and water scarcity (Interview Wo4, Wo8, W18, W22), demonstrating their ability to identify global problems; however, their adaptation and mitigation strategies are developed independent of knowledge from the Global South. One reason why knowledge from the Global South is not ac-

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<sup>13</sup> Ecological farming on marginal land can achieve higher land economic productivity due to price premium for organic products and the conversion bonus that farmers receive.



cepted through direct cooperation is the language barrier (Interview W05). This isolates actors in the Wendland from outside inputs. Interaction with or experiences from the Global South are made on an individual level, not through institutionalised programmes (Interview W05).

Although farmers are aware of the effects of global problems, especially drought and water scarcity, as well as the existing wealth of experience in adaptation strategies in the Global South, they see little room to change their farming practices due to the CAP subsidy system, for example, the reorientation to heavily subsidised maize cultivation for biogas production (Interview W24). CAP, with its per-hectare subsidies, continues to offer more stable income security than conversion to organic farming, which has far fewer or weaker far-distance effects than the former (Interview W18).

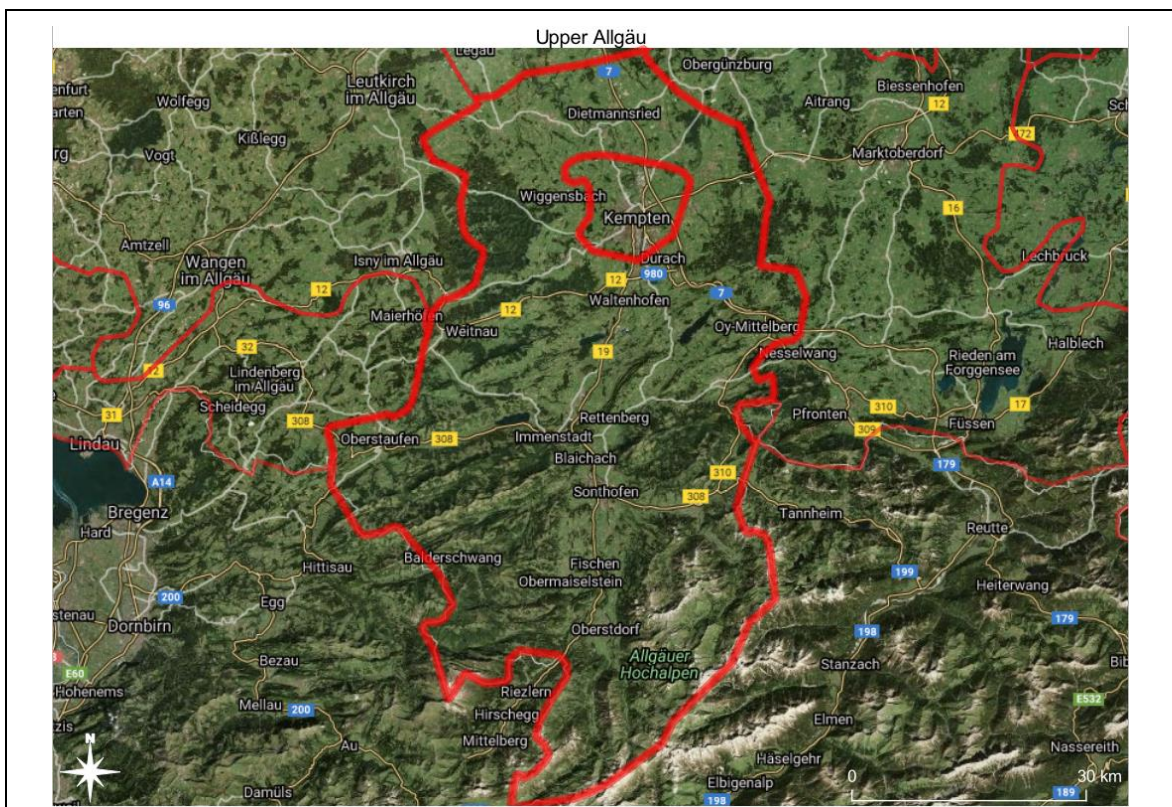
A commitment to sustainable production practises in agriculture in the Global South, Global North, and the region is displayed by the Wendland-based food processing company, Voelkel Juice. Adhering to their own sustainability standards to meet certification requirements, they initiate training and education on sustainable production and certification at the production sites in the Global South (Interview W05, W22). In addition, their input supply chain, including actors in the Global South, is audited and developed to ensure the highest possible level of sustainability, with the aim of avoiding adverse environmental effects in production areas. Their ecological awareness and commitment can be traced to certification standards and the will of the company's decisionmakers (Interview W22). With the sale of certain products, the Voelkl Foundation supports environmental protection and community development projects in partner countries in cooperation with Plan International. This is primarily for promotional purposes as a demonstration of social commitment in the Global South (Interview W22). The company adheres to Demeter guidelines abroad and, thus, sets a standard for global responsibility in environmentally appropriate, sustainable action. This example is extended to the public through sponsorship of charitable campaigns.

### 6.3 Case study 3: Upper Allgäu at the foothill of the Alps

#### 6.3.1 The Upper Allgäu district

Upper Allgäu is in southwestern Bavaria, bordered by the districts of Unterallgäu and Ostallgäu, the Austrian states of Tyrol and Vorarlberg, and the state of Baden-Württemberg (see **Figure 15**). Upper Allgäu has two towns and 26 municipalities. In 2020, Upper Allgäu had a population of 156,029 inhabitants (Landkreis

Oberallgäu, 2020) or 102 persons per square kilometre. Characterised by its alpine and pre-alpine landscapes, it was regarded as a peripheral region with settlement fragmented by topographical conditions. The economic development of the region was influenced by mining and metal processing, later by the salt trade, and, in the post-war period, by the emergence of tourism (Interview UA02). In more recent times, connections to metropolitan regions such as Stuttgart and Munich have been expedited by well-developed road and rail infrastructure.



**Figure 14: Map of Upper Allgäu**

Scale: 1:600,000

Own illustration. Sources: Bing Satellite, Google Labels, Moosmeier 2011: Verwaltungsgrenzen Deutschland (De, Länder, Rgbz, Kreise).

The region is best known for its alpine dairy farming and an important national and international tourism destination. However, the gross value addition of agriculture, forestry, and fishing only accounts for 1.9 % of the total economic output of Upper Allgäu (IHK-Schwaben, 2021). In comparison, manufacturing (excluding construction) accounts for 27.1 % and financial, insurance, and business services accounts for 23.6 %, both of which are the strongest economic sectors in the region (IHK-Schwaben, 2021). Upper Allgäu's labour force is distributed among the

sectors of agriculture and forestry (3.7 %), industry (31.6 %), and services (64.6 %) (Destatis, 2010). The GDP per annum per inhabitant is 32,488.7 Euro, which is below the national Germany average of 37,000 Euro (SDG-Portal, 2021).

### 6.3.2 Farming system characteristics of Upper Allgäu

Relative to the rest of Bavaria, Upper Allgäu is a disadvantaged agricultural production zone. Except for a few parts in the north, the district's mountainous areas are unsuitable for mechanised farming and can often only be grazed or farmed by hand (Amt für Ernährung, Landwirtschaft und Forsten Kempten [Allgäu], 2021). The land is almost exclusively permanent grassland and dairy farming is the dominant production system. In the southern district of Upper Allgäu, two thirds of the land is mountainous. There are about 3,540 agricultural holdings in Upper Allgäu, utilising 87,887 hectares of agricultural land (Amt für Ernährung, Landwirtschaft und Forsten Kempten (Allgäu, date unknown).

In southern Allgäu, the alpine economy plays an important role in livestock farming. According to Bayerische Staatsministerium für Ernährung, Landwirtschaft und Forsten (Ministry of Food, Agriculture and Forestry [StMELF] [2020]), during the warmer summer months, more than 24,000 cattle, sheep, and horses are driven to about 623 recognised alps to spend their summer on grassland patches. Thus, the importance of livestock farming here lies not only in the local production of milk but is also important for landscape preservation, which in turn has become essential for the tourism sector. About 22 % of the farms in the Upper Allgäu district produce under organic certifications.

Where farms constitute the farm owner's principle source of income, this can be attributed to labour-intensive dairy practices. There is also an important share of farmers with additional off-farm income located in the southern part of the district, in the alpine regions. These farms often create an important additional income by offering holiday accommodation or by employment in the tourism services sector.

In the region, the municipality of Bad Hindelang stands out with its integrated tourism and nature conservation strategy. It covers an area of about 140 km<sup>2</sup> at an altitude of 850 – 2500 meters above sea level. There are six villages and about 5,200 inhabitants in the community. Up to 85 % of the area is protected to maintain the very high biodiversity of the landscape. In the 1960s, there were over 200 farmers in the municipality of Bad Hindelang, yet, today there are 64 farms producing on 1,565 ha of permanent grassland. Almost all farmers own cattle and keep, on average, 17 dairy cows (the average in Bavaria is 41 dairy cows per farm).

One third of the farms are certified organic producers (31.3 %) (Interview UA03). In 1992, the farmers formed an association called "Nature and Culture" ("Natur and Kultur") to maintain extensive dairy production as a contribution to the landscape that is valued for its natural and cultural heritage. The association sets criteria for the protection of cultivated land. Herd size is restricted to one adult cow per hectare and 90 % of the fodder must be produced in the municipality itself. The use of artificial nitrogen fertilisers must be avoided. In return, it is financially supported by the municipality and receives compensation payments which are insufficient to cover the association's costs but serve as an important symbolic contribution to landscape protection, including maintenance of cross-country skiing trails and paths (Interview UA13).

### **Agroecological transformation of the farming system in Upper Allgäu**

At present, about 22 % of all farms (approximately 385,000 hectares) in the Upper Allgäu district produce under organic certification (Interview UA04). In addition, there are around 9,200 organic food processing companies in Bavaria and these numbers continue to rise. The most significant certifiers are the Bioland and Naturland labels (StMELF, 2020). In fact, half of Germany's organically produced milk is produced in Bavaria (StMELE (2021d)). Organic farming is promoted by the BioRegio 2030 program which aims at organic production on 30 % of agricultural lands by the year 2030 while also promoting local demand for organic food (StMELE (2021d)). Measures comprising education, extension, and research are implemented to achieve these objectives, including specific support to the eco-model regions, such as the one in Upper Allgäu, as well as strengthening organic processing and marketing structures (StMELF, 2020).

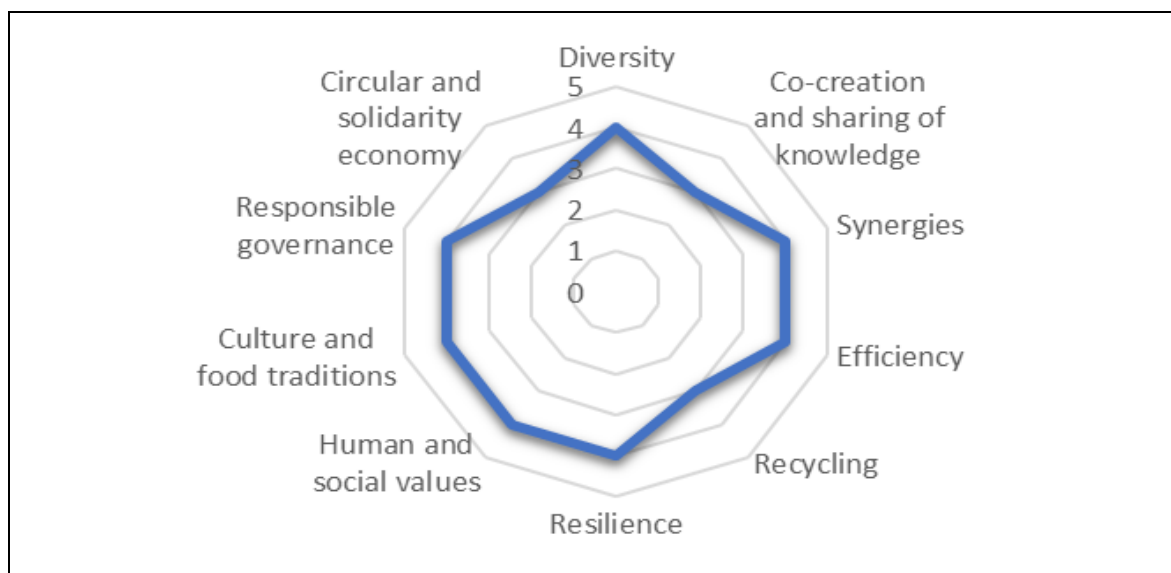
Promoting agroecology and maintaining the cultural landscape of extensive grasslands is very important in Allgäu. It matters for tourism, conserves biodiversity, and secures settlements from the risk of avalanches. Biodiversity on these alpine grasslands is very high and is, therefore, considered highly important for protection. Many farmers in Upper Allgäu participate in the Bavarian Mountain Farming Programme, which preserves and develops alpine pasture and alpine farming. Besides renovation and maintenance of light pasture areas and investments in alpine buildings, the support programme establishes infrastructural facilities for pasture management, access roads and driveways, and special machinery (StMELF, 2021).

In addition to the state support programme, there are local initiatives to maintain traditional knowledge to protect the natural environment and local dairy and

mountain cheese production processes (consumed predominantly in the region). An example is the Nature and Culture farmers association of Bad Hindelang.

Food traditions are maintained by the local population of Upper Allgäu for various reasons: first, the connection to the region and producers is rated as the most important. This illustrates consumers' strong appreciation for the social connection between producers and processors. The agroecology principle of human and social values, thus, goes beyond the farming system since even in the farming dominated Upper Allgäu, the number of consumers by far outweighs the number of producers.

The agroecology elements and their expression as part of an agroecological transformation described above are depicted in **Figure 15** (and **Table A3** in Annex 2). Agroecological transition in Upper Allgäu is characterised by close links to other sectors, such as local food processing, nature preservation, and arts and crafts connected to tourism. However, there are also negative externalities carried into other regions outside Upper Allgäu and beyond Germany. The high dairy output and profit margins on milk are only possible because bull calves are sold into intensive cattle fattening schemes for conventional beef production across Europe.<sup>14</sup>



**Figure 15: Agroecological transformation in Upper Allgäu**

Own illustration. Source: own data, see **Table A3** in Annex 2

<sup>14</sup> Notably, none of the organic certification schemes condemns this practice. Because raising calves on milk substitutes is forbidden, organic dairy farms prefer to sell surplus calves as early as possible.

### 6.3.3 Policy frameworks shaping farming and rural development in Upper Allgäu

There are three aspects that stand out in the policy framework for the development of rural areas and sustainable transformation of agriculture in Bavaria.

First, civil society plays an important role in shaping policy outcomes. At the same time, local governance and administration has a strong voice in federal state policy processes. Via the referendum "Biodiversity and Natural Beauty in Bavaria" the Bavarian state government passed biodiversity conservation into law (in short: Species Protection Act) in July 2019 and fixed targets for expansion of organic farming for Bavaria (Bayerische Staatsministerium für Umwelt und Verbraucherschutz, 2021). This goes back to a civil society-led initiative advocating for sustainable landscape management.

These bottom-up demands were initially integrated into the BioRegio 2020 programme, strengthening organic farming besides others. The goals of the follow-up programme BioRegio 2030 also entered in the 2021 integrated development strategy *Klimaland Bayern*. Local measures for integrated sustainable development with a clear focus on food systems are expected to contribute to the higher-level goals of the *Klimaland* strategy, such as the promotion of the Bavarian Organic Label. These measures are: improved exchange between all actors in the organic market, support of the organic model regions, increased use of regional organic foods in food catering, shifts to organic farming methods, establishment of a practical research farm network for organic agriculture, teaching organic agriculture in the training of green professions and food and nutrition jobs, expansion of education on organic agriculture at agricultural schools, organic plant breeding at the Bavarian State Institute for Agriculture, establishment of a market platform (Eco-Board Bavaria) for organic produce "Bio aus Bayern" (Organics from Bavaria), and expansion of the Bavarian "Ökopakt" (STMELF, 2021a). Although the term "organic farming" is used, the measures correspond to a sustainable transformation in the sense of agroecology.

This is particularly evident in the Bavarian "Ökopakt", where the Bavarian state government, various agricultural and consumer associations, and private-sector companies have joined forces. The aim is to jointly promote organic farming in Bavaria so that the existing demand on the market can be met with more organic food from local production. Likewise, the Bavarian Ministry of Agriculture's catalogue of measures to shape local agriculture includes elements that promote agroecology, including enhanced animal welfare, natural resource protection, strengthening biodiversity, addressing climate change, promoting digitalisation,

the promotion of locally grown produce, organic farming in Bavaria, diversification, and connecting farms (STMELF, 2021b).

Second, the state-level policies shaping agriculture and rural development in Bavaria are closely aligned with national and EU objectives. The *Klimaland Bayern* strategy is oriented along the European Green Deal. Rural development and the transformation of the agricultural sector are housed by the Bavarian government through the Offices for Rural Development (Interview UA16). These also integrate the "Improvement of the agricultural structure and coastal protection" strategy of the Federal Ministry for Food and Agriculture.

Third, approaches to the development of rural areas are highly participatory. This increases the coherence of the measures implemented and achieves greater legitimacy among those affected. Stakeholder dialogues and genuine participatory decision making on development measures are generally practised at the local level and are widely embraced in Upper Allgäu due to strong its civil society commitment (Interview UA16).

The three aspects mentioned above shape the federal state policy level and are reflected in the key regional development strategies. There is, thus, recognition of the role of vertical policy coherence, which is demonstrated in the effectiveness of the measures take at the local level. In Upper Allgäu, this is considered particularly important in the case of agricultural development, where farmers traditionally follow Bavarian state policy very closely and base their decision making on it (Interview UA08).

The *eco-model region Upper Allgäu-Kempton* (a part of *Bio.Regio.2020*) is regarded as essential for the sustainable development of the region, especially the agri-food sector (Interview UA08). Several agroecological elements are finding expression in its lines of action, not the least, networking, knowledge, and information exchange; the valuation of regional products and specialities; local value chain and direct marketing, and the promotion of product diversity. The Allgäu GmbH is the agency commissioned to promote the regional brand "Allgäu" beyond the district borders.

Within the framework of LEADER, the LES of the LAG Upper Allgäu has practised participatory co-creation of development processes since 2014. The component of regionality is particularly present. Circular regional value chains in agriculture, forestry, and tourism are the core objectives for strengthening a regional economy, in showcasing the Allgäu region and attracting a skilled workforce. In parallel, another line of action specifically dedicated to nature conservation and the strengthening of social structures is pursued. The connection to and identifica-

tion with the region as a factor essential for rural development was also put forward by the majority of the interviewees in the region, further supporting the widespread acceptance of and commitment to the objectives of the LES.

The municipality of Bad Hindelang is a particularly positive example of the above-mentioned cohesion between federal state and local-level engagement in policy processes. Through a participatory process for the drafting of the integrated community development strategy “Lebensraum” (living spaces concept), objectives were formulated by the local population. Cultural landscape management crystallised as the core element in ensuring the social, economic, and ecological development of Bad Hindelang. A local farmers' association is actively supported by the municipality in integrating tasks of cultural landscape management into their farming practices. The agroecological principle of responsible governance is practised in the municipality and demonstrates some aspects of success in the implementation of an integrated local development policy.

### 6.3.4 Agroecology and rural development in Upper Allgäu

#### Relevant non-farm sectors

The characteristic Alpine landscape significantly depends on healthy forest systems. Forests are essential to prevent and to protect from the devastating effects of mudslides and avalanches that otherwise constitute a permanent danger in the Alpine terrain. In addition, these forests offer a habitat for numerous animal and plant species, as well as local recreation and timber production. Around 33 % of the Bavarian area is covered by forests, equivalent to 2.5 million hectares (STMELF, 2021). This makes Bavaria the largest forest state in Germany and one of the two biggest forests in Europe. There is a regional market for the timber in the forests: 70 % of the felled spruce goes to the construction sector. Due to ongoing climate change and the effects on forests, forest conversion is being planned and is already underway. In terms of silviculture, this is a major issue. The Bavarian policy specifies the moor renaturation until 2030. In the current system, one must always think of the forest function in social and economic terms at the same time and bring the functions together (Interview UA12).

In Upper Allgäu, nature and landscape conservation are supported by key stakeholders in agriculture, forestry, and tourism, as well as by the population at large. The district is known for its relatively high species and ecosystem diversity because of the highly heterogeneous landscape with different types of forests, bogs, marshes and wetlands, ponds, lakes, grasslands, and alpine ecosystems. About half of the Allgäu region is classified by the German Federal Agency for Na-



ture Conservation as an area which should receive protection because it has a high proportion of protected areas as well as endangered species and special biotopes (Landkreis Oberallgäu, 2021). In the Upper Allgäu district, over 60 % of the area is designated to some form of nature protection: nature reserves, protection areas, and the like (Landkreis Oberallgäu, 2021).

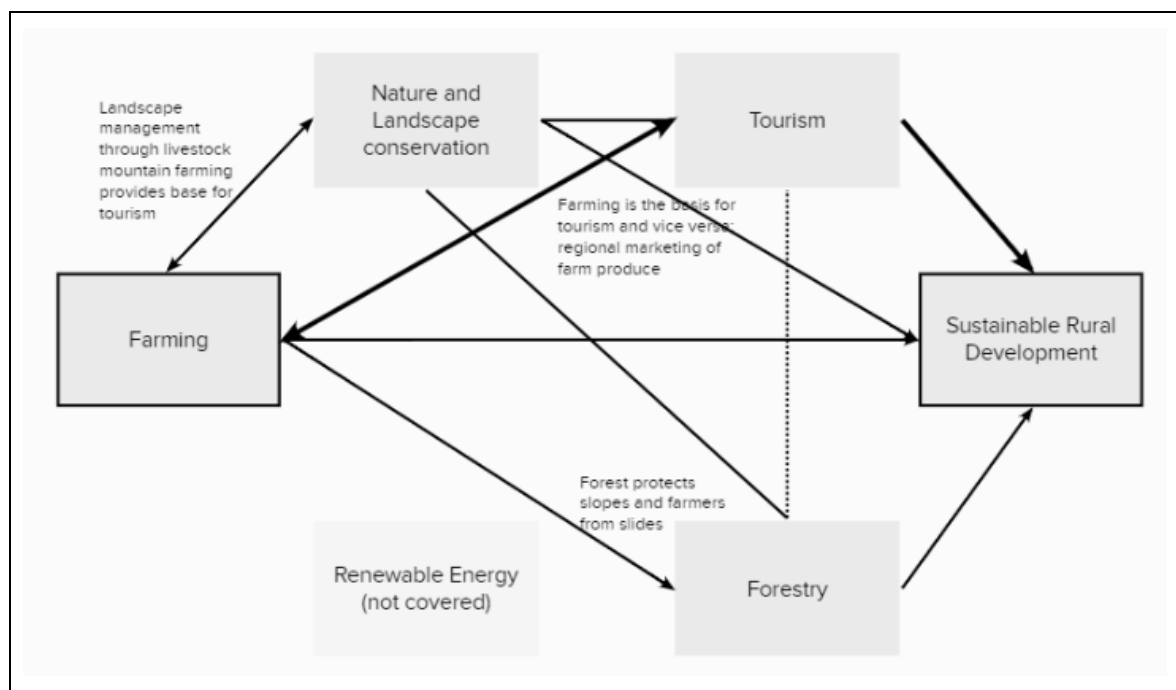
With about 1.1 million annual overnight stays, Bad Hindelang derives 80 % of its GDP from tourism (Interview UA02). Basically, it can be said that tourism in the region, and in Bad Hindelang in particular, is based on the preservation of the cultural landscape, which is achieved through sustainable agricultural methods. Since agricultural products also create a regional identity that has a positive effect on tourism, sustainably managed tourism contributes strongly to the agroecological preservation of regional production and value-added methods in the food sector. This is certainly an extreme case compared to other municipalities in Upper Allgäu, yet it displays that the sector is, without question, central to the economic vitality of the region. The rapid growth of the tourism sector over the last decade led to challenges (for example, environmental unsustainability of individual mobility, the sealing of land surfaces, and vacancy of many holiday homes for large parts of the year) (Interview UA02). Due to growing concerns and discontentment with the development of the tourism sector in Bad Hindelang, efforts for the participatory elaboration of a new tourism strategy were undertaken in 2020. This strategy is embedded in a wider strategy of development objectives for the municipality as a living space in the “Our Bad Hindelang 2030” strategy.

### **Agroecological transformation and rural development in Upper Allgäu**

In Upper Allgäu and Bad Hindelang particularly, agriculture (specifically alpine dairy farming) is key for sustainable rural development. The local development strategy perceives it as part of a larger rural development process, where several FAO elements of agroecology are emphasised. **Figure 16** displays how the sectors introduced above are interconnected and contribute to sustainable rural development.

Tourism is most central to these interconnections. It is dependent on farming and vice versa. Whilst farmers are the custodians of the cultural landscape, which remains the main tourist attraction in Upper Allgäu, tourism is also a major contributor to income diversification for farming households. On-farm guest accommodation is very common and an additional attraction for many tourists in Upper Allgäu. In addition, demand by tourists for local products, including but not limited to mountain cheese and other dairy products, offers opportunities for direct marketing strategies (Interview UA02, Interview UA03). Besides the strong farm-

ing–tourism nexus, the district of Upper Allgäu is characterised by its regionally integrated value chain in the dairy sector as well as partly in the meat sector, with many small- to medium-sized food processing enterprises producing for local and regional markets. Farmers often supply cooperatively managed dairies with milk, where it is turned into high-quality cheese, which is renowned even beyond Bavaria. This is one example of how small-scale locally embedded practices are refined on-the-spot and sent outside the region. One of the challenges that local dairy producers and mountain farmers encounter is that professional training in agricultural schools and training centres is more and more standardised, which raises the potential for loss of local knowledge.



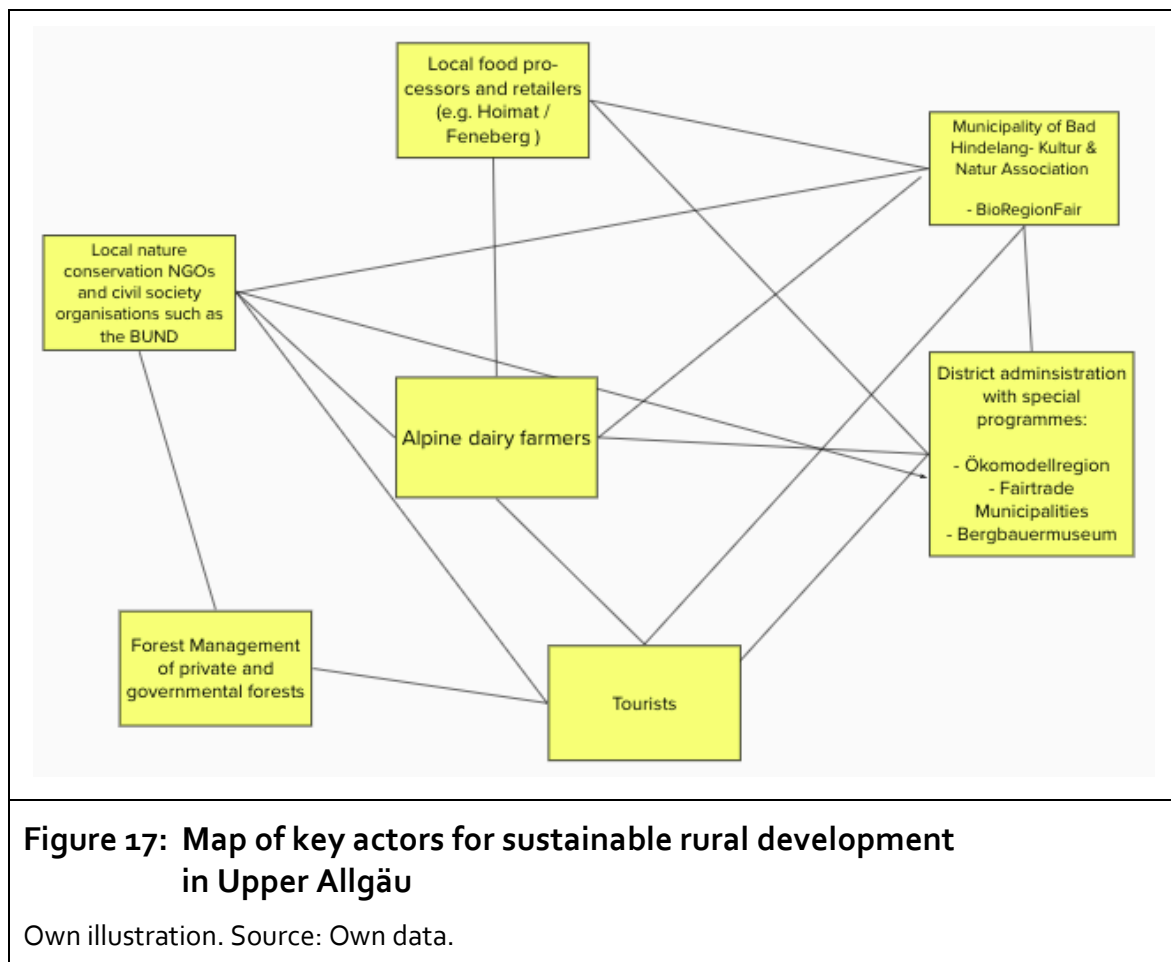
**Figure 16: Agroecological transformation and rural development in Upper Allgäu**

Own illustration. Source: Own data.

### 6.3.5 Key actors promoting agroecology and rural development in Upper Allgäu

Rural development in Upper Allgäu district is characterised by the preservation of the cultural landscape through alpine dairy farming. Alpine dairy farmers play a central role in the region, as depicted in **Figure 17**. Most of the products are processed by local food processors and retailers, with food handicraft (for example, the cheese start-up “Hoimat”) and regional marketing (for example, the supermarket chain Feneberg which offers its own certification for organic and regional

products)<sup>15</sup> playing roles. The maintenance of traditional, small-scale agriculture is crucial for the tourism sector; at the same time, tourists are significant consumers of local food crafts. In turn, food processors and retailers, farmers, and tourists are supported and influenced by the district administration which promotes certain programmes such as the eco-model region and the Museum of Alpine Farming (Bergbauernmuseum Immenstadt) as a knowledge centre. These are further complemented by administration at the community level, which influence local agriculture and thus the preservation of the cultural landscape as the basis of rural development. In the municipality of Bad Hindelang, for example, the Natur & Kultur association actively promotes agriculture, as it is seen as a cornerstone for rural development. Other programmes such as the Bad Hindelang campaign Bio.Fair.Regio also promote the preservation of local food crafts, tourism sector sustainability, and tourism training.



<sup>15</sup> Since regionality is not a firmly defined term, Feneberg—which works with about 600 organic farmers from the region (beyond the borders of the Upper Allgäu district)—has defined regionality by a radius of 100 km around the company headquarters in Kempten.

Private and public forest management also preserve the cultural landscape. Referred to as “protection forests”, the majority forests in Upper Allgäu are maintained to reduce the risks of landslides and avalanches and support local tourism.

Local nature conservation NGOs such as the BUND and other civil society organisations contribute to the preservation of alpine agriculture and the cultural landscape through civil society engagement. These organisations advocate for sustainable tourism promotion in harmony with the cultural landscape.

Since integrated approaches to the development of rural areas are provided for in the various programmes of Bavarian state policy, sectoral networking, especially within the agricultural sector, is a given. Food system transformation starting from the farm level is not a core component of state policies, but an approach linked to other policies; for example, agroecological goals (e.g., short economic cycles, less pesticide use) are clearly articulated in the BioRegio 2020 and BioRegio 2030 plans due to NGO pressure on political district and state decisionmakers (Interview UA08). With the “Ökopakt” (STMELF, 2021c), actors from politics, business, and civil society also committed themselves to individual and joint efforts to shape an agroecological transformation in their areas of influence. In the case of Upper Allgäu, the regional aspect is particularly valued, from which small-sized farms acting according to ecological principles benefit in particular.

Appreciation of the cultural landscape is nearly universal among the people of Upper Allgäu and defines a central element of sustainable rural development. Farmers entrusted with (cultural) landscape management are involved in governance systems that pursue an integrated approach to sustainable rural development (Interview UA03, Interview UA05, Interview UA13). As a basis for tourism, attractiveness, and marketing of the region, farmers ensure that other sectors benefit in the long term from the cultural landscape. Regionality is, therefore, seen as a quality feature on various levels in Upper Allgäu. Agricultural products and product processing form part of the cultural identity for Upper Allgäu. As such, local farms are considered the basis of sustainable rural development (Interview UA02).

The role of small-scale farmers for rural development is valued highly by civil society and local politicians for the range of indirect contributions promoting sustainability and sustainable land use beyond direct economic contributions to society (Interview UA05). The core issues of agroecological transformation (especially biodiversity, social and human values, small economic cycles, and tradition) in the alpine farms of Upper Allgäu reinforce the development goals of actors in nature

and landscape conservation, regional planning, and tourism (Interview UA02, Interview UA03, Interview UA05, Interview UA06, Interview UA12, Interview UA13).

### 6.3.6 Awareness of connections to the Global South in Upper Allgäu

Interviewees consistently showed awareness of their position within globally connected systems, especially in terms of environmental concerns such as global warming (Interview UA03, UA04, UA05, UA06, UA10, UA11, UA12). International knowledge-exchange and knowledge-cogeneration programmes for South–North cooperation do not yet exist but are planned. However, there are accredited Fair Trade cities and municipalities and One World shops in the region that proactively undertake advocacy and action for fair trade. They are directly involved in raising awareness about production and trade in institutionalised structures and push fair trade products in key private sectors in the region, such as restaurants and hotels.

In general, it is the connection with their own local habitat and region that drives local inhabitants' responsibility for global concerns and engagement with or for the Global South. An example of this is the Bio.Regio.Fair programme which aims to link the three dimensions of organic production (bio), regional products (regio), and fair trade (fair) as a quality standard label, especially in the hospitality industry. It was adopted by the Bad Hindelang Fair Trade Steering Committee. The idea of the Bio-Regio-Fair is based on the "Eine-Welt-Netzwerk e.V." in Bavaria, a network of groups that educate consumers about the quality characteristics of "organic", "fair", and "regional". To become certified, restaurants or hotels must ensure a significant share of their products contain at least one of the three criteria (Interview UA05, UA06). The primary interest is to strengthen the region and its producers and processors. This should cause as little negative social and environmental impact as possible, locally as well as globally. Lobbying for this is done on a voluntary basis in the community. Direct connections to the Global South are not established although they are welcome. The reasons for this are the volunteers' time constraints and the lack of contacts in the Global South (Interview UA06).

State-supported initiatives with a connection to the Global South include the eco-model region, where local projects contribute to reducing negative long-distant effects. The Global South remains quasi-anonymous in this project and the actual distant impacts in the Global South are neither followed up nor measured.

The Bad Hindelang municipal administration's plan to establish an international centre for alpine pasture management reaches further (Interview UA05). The

publication of an international bibliography on alpine pasture management is the first effort in this regard. Under the leadership of a team of multinational, interdisciplinary researchers, the International Centre for Alpine Pasture Management will bring together local knowledge from mountain farmers across the world and facilitate their knowledge exchange and joint learning on managing climate change. It is inspired by the conviction that local knowledge and experience from other areas of the world on mountain farming may offer new solutions to local dairy farmers and vice versa (Interview UA05).

## 6.4 Case study 4: Großes Walsertal in the Vorarlberg in Austria

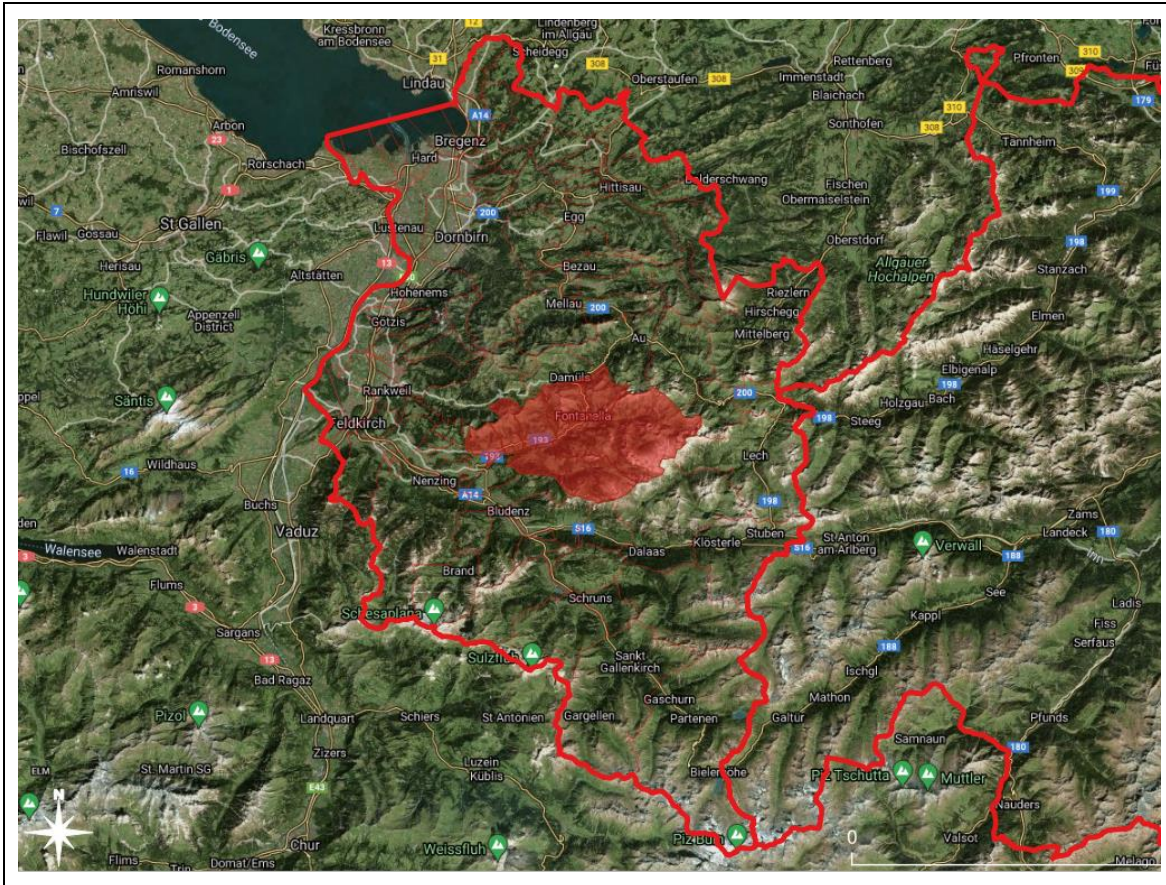
### 6.4.1 Großes Walsertal

Großes Walsertal is situated in Vorarlberg, a mountainous state in the westernmost part of Austria, bordered by Germany, Liechtenstein, and Switzerland (see **Figure 18**). Vorarlberg covers about 2,600 km<sup>2</sup> and is home to about 400,000 people (Amt der Vorarlberger Landesregierung [AVL], 2021b). The state is known for its Rhine valley, the alpine scenery, and its capital, Bregenz, located at Lake Constance. The majority of Vorarlberg's landscape, encompassing the valley area and the mountain regions, is shaped by small-scale family farming (AVL, 2020).

Großes Walsertal is a side valley of the Walgau lying in the district of Bludenz in the south of Vorarlberg, neighbouring Bregenzerwald and Lechquellengebirge. It encompasses the six municipalities of Thüringerberg, St. Gerold, Blons, Sonntag, Fontanella-Faschina, and Ragall-Marul. While the first five are on the sunny side of the mountains, the latter is on the western side of the valley. Großes Walsertal is almost 192 km<sup>2</sup>, which extends from 580 m to 2,704 m above sea level. With 3,400 inhabitants, the valley is very sparsely populated as only 18 people live on one km<sup>2</sup> (Biosphärenpark Großes Walsertal, n.d.-b).

The first settlers to the region, invited by the feudal cast of the area who needed agricultural labour, came in the 13<sup>th</sup> century from the Wallis in Switzerland, giving the area its name Großes Walsertal. They introduced the present form of scattered settlements (called "Streusiedlung") and brought with them customary knowledge of farming high altitudes and steep slopes using cattle in a three-tier system. The traditional form of building wood houses was replaced by massive brick construction after devastating avalanches in the 1950s. Cattle breeding and alpine dairy farming have remained the main livelihood in the steep mountains

(Arbeitsgemeinschaft, Lehrstuhl für Planen und Bauen im ländlichen Raum, München (TUM) / Vorarlberger Architektur Institut, 2007). Cattle grazing creates the typical cultural landscape of green, highly biodiverse meadows “Magerwiesen” that would return to woodland in absence of grazing (AVL, 2020).



**Figure 18: Map of Vorarlberg State**

Scale: 1:800,000. The shaded area is Großes Walsertal. The area around it is Vorarlberg.

Own illustration. Sources: Bing Satellite, Google Labels, SynerGIS Wien: Bundesländergrenzen 1:50.000 (Stand 2017).

Since 1999, the six municipalities of Großes Walsertal have been united in their successful creation a biosphere reserve. The formation of the Biosphere Reserve Großes Walsertal is an important driver for regional development. It accommodates the tourism sector, attracting visitors for skiing vacations in the winter and hiking or biking in the summer. Of the population in the biosphere reserve, 11 % commute to jobs outside the valley (Grünes Handwerk & Georaum, 2020). After years of outmigration, young families are now returning to the valley. Rising demand for housing is becoming a growing challenge for the protected area.



### 6.4.2 Farming system characteristics of Großes Walsertal

Austrian agriculture is generally characterised by smallscale structures, often in mountainous environments where farming is difficult or at least uncompetitive. 87 % of Austrian farm holdings are located in mountain areas and areas facing natural or other specific constraints and therefore need support (European Commission, 2020b). Alpine dairy farming is labour intensive but is of great economic importance to the farmers and the cheese is internationally valued for its good quality (AVL, 2020).

The Vorarlberg farming system is structurally dominated by the dairy industry and smallscale production units. There are currently around 3,500 farms in the state with organic-certified farms accounting for around 16 % of them. There are 1,400 milk suppliers and 30 alpine dairies, producing 165 million kg total production, with an average of 7,200 kg milk per farm annually (AVL, 2021a). Yogurt and cheese, specifically, are important dairy products. A special feature in Vorarlberg is the high number of dairy cows and alpine dairy farms; three quarters of the alps is organised as agricultural communities with a particularly high degree of self-governance.

There are 205 farms in Großes Walsertal, 60 % of which rely on agriculture as their main income generating activity and the remaining 40 % generate additional off-farm income (Grünes Handwerk & Georaum, 2020). While the number of farms in Vorarlberg decreased between 2013 and 2019, it remained constant in Großes Walsertal. The average farm holding in Großes Walsertal is 17 ha, of which 15 ha is grassland. The largest farm in the area is 40 ha and the smallest 3 ha. Over half of the farms raise cattle only and use regional dairy cattle breeds adapted to extensive alpine farming conditions; however, 13 % also keep sheep and goats, some keep pigs, and very few (2 %) have horses. For 63 % of the farms, milk is the main agricultural product, and for 23 %, it is meat. Milk production increased by 18 % between 2013 and 2019 and is mainly distributed to alpine dairies producing butter and cheese. Direct marketing of milk and other distribution channels are less important (Grünes Handwerk & Georaum, 2020). There are three cooperatives in Großes Walsertal, two of which work with large processing companies.

Alpine dairy farming developed out of a tradition of herds and people migrating together to take advantage of seasonal changes across altitudes. In the winter, herds stay close to the homestead in the valley (Heimgut), move to an intermediate alp in spring (Maisäß), then move to a high alp in the summer where, traditionally, both people and animals (used to) stay (Biosphärenpark Großes Walsertal, n. d.-b). There are 67 alps in Großes Walsertal, 20 of which directly process

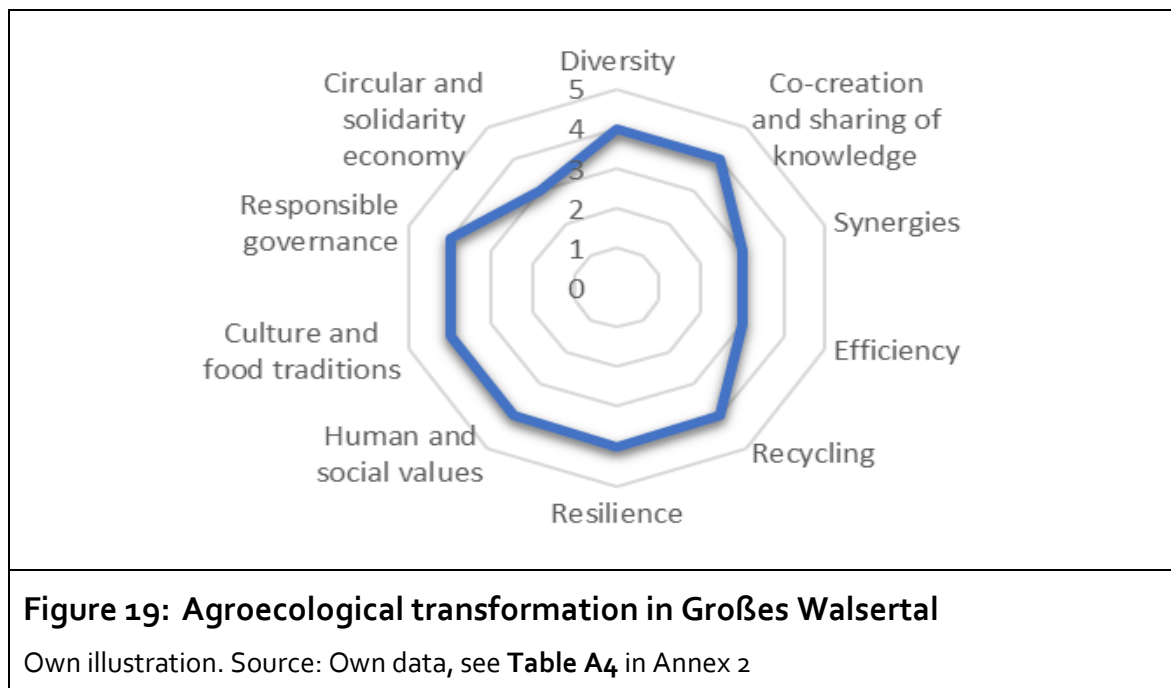


their food (Interview V2A). Vegetable crops are grown for family consumption because the valley is unsuitable for crop production. The women in the region engage in beekeeping and herb production (Interview V14).

Climate change is perceived by parts of the population as having the positive effect of longer harvest periods and the negative effect of more extreme weather events.

### Agroecological transformation of the farming system in Großes Walsertal

As depicted in **Figure 19** (and **Table A4** in Annex 2), a similar alpine farming situation as Upper Allgäu is in place in Großes Walsertal, producing similar results in agroecological transformation mapping. Supported locally by socio-political framework conditions that incentivise environmentally and socially sustainable farming methods, agroecological transformation is well-established even in the absence of organic farming certification schemes in Großes Walsertal, although these exist as well. Regional markets are strong with consumers willing to pay price premiums in support of a local, circular economy. This circular economy is enabled by existing well-developed food transformation and value-adding capacities in the region, and strong intersectoral linkages to tourism, nature conservation, and manufacturing such as timber processing for construction and furniture.



### 6.4.3 Policy frameworks shaping farming and rural development of Großes Walsertal

The current provincial government's working agreement, *Our Vorarlberg - Rich in opportunities and sustainable* (2019-2024) (Land Vorarlberg, 2019), emphasises the importance of interdepartmental cooperation to address current challenges against the backdrop of climate change, the ageing population, and the need for digitalisation, which will bring about changes in the labour market. Agricultural production is recognised as a unique regional asset. Mountain farmers in the Großes Walsertal are supported with special state funds, specifically valuing their role in maintaining the cultural landscape. This can also be seen as compensation for the difficult conditions of agricultural practice in Vorarlberg, in general, and the Großes Walsertal in particular. Politically, efforts are being made to retain the mountain farmers of Vorarlberg and to actively integrate them as drivers of rural development (Interview W05). In relevant state and local policy frameworks as well as in our interviews, numerous cross-references to other sectors, such as tourism or energy, were made which indicates the strong territorial thinking present in policymaking.

The priorities of agriculture in Vorarlberg are set in the agricultural strategy *Farmer.creates.life* (2020). Here, special emphasis is placed on the dialogue between farmers and the non-farming population. As in the working agreement *Our Vorarlberg*, the integrated approach to thinking and acting territorially is evident.

From 2007 – 2014, a large part of Vorarlberg's territory was covered by a LAG which implemented projects under the EU-LEADER programme. Since the 2014 – 2020 funding period, the LAG split into REGIO-Vorarlberg (REGIO-V) covering the eastern part of the state and REGIO Vorderland-Walgau-Bludenz (REGIO-VWB) covering the midwestern part of the state. The two LAGs separated due to different socio-economic characteristics and needs. Context-related measures are, thus, guaranteed to be offered in more homogeneous programmes than through the old structure. While the area of the REGIO-VWB has 353 inhabitants/km<sup>2</sup>, the LEADER area of the REGIO-V has 43 inhabitants/km<sup>2</sup>. In addition to the Großes Walsertal, the REGIO-V area includes the Leiblachtal, the Bregenzerwald, the Kleinwalsertal, the Klostertal, the Brandnertal, and the Montafon. The development priorities are set in the Local Development Strategy REGIO-V *LES2020 Living Villages* (REGIO-V, 2019) and comprise the three areas of economy, environ-

ment, and social affairs.<sup>16</sup> The preservation of the cultural landscape is the primary goal for the region's sustainable development. In addition to the areas of action mentioned in the core objectives of *LES2020 Living Villages*, agroecology elements stand out as core aspects of the sustainable development strategy of the REGIO-V region, particularly human and social values, responsible governance, synergies, and circular and solidarity economy.

The appreciation for cultural landscape conservation measures is particularly evident in Großes Walsertal Biosphere Reserve's vision, which recognises the protection of nature as the basis of all development in the valley. Its strategy is to support this through projects initiated by citizens. Agriculture occupies a prominent position in this context. The role of family farms in maintaining livelihoods is recognised and valued. In addition, the goals of diversification of the product range and income opportunities are in focus (Biosphärenpark Großes Walsertal, 2019).

In 2019, the six municipalities that comprise the Großes Walsertal adopted a new regional spatial development concept for the Großes Walsertal through a participatory development process. This concept concretises Biosphere Reserve's vision and sets the basis for spatial development plans that each municipality formulates independently to take context-specific measures (Interview V17). Policy coherence is ensured through an electoral decision-making process. Besides written policy frameworks and action plans, direct democratic processes and measures play a central role in Vorarlberg and have been included in Article 1 (4) of the state constitution in 2013. Many of the participatory measures undertaken served to create a "culture of participation" that shapes policymaking. Importantly, through a citizen council on the future of agriculture in 2019, farming in Vorarlberg was discussed among citizens and their suggestions were passed on to politicians (Interview V21). This shows that the agroecological element of responsible governance receives particular attention in Vorarlberg.

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<sup>16</sup> "1. Intensify regional economic cycles (food industry, crafts, services) and strengthen existing corporations, 2. Make local natural and cultural assets tangible for preservation and creatively use old building fabric in the villages, 3. Create good framework conditions for all groups of people especially for immigrants and young families and mobilise for social engagement" (REGIO-V Regionalentwicklung Vorarlberg, 2019, p. 23).

#### 6.4.4 Agroecology and rural development in Großes Walsertal

##### Relevant non-farm sectors

Forests are an integral part of the alpine farming system and are of significant ecological value because of their high faunal and floral biodiversity and slope stabilisation (avalanche and landslide risk reduction). The timber industry is an important employer in Großes Walsertal, offering additional income source to farming households. An innovative business model combines several timber and wood-work companies in an association headquartered in Großes Walsertal, promoting socially and environmentally sustainable use of local forest resources. It incorporates 20 small- and medium-sized enterprises that collaborate in the entire value chain of wood processing, furniture making, and construction (Interview V20).

Integrated nature protection and landscape conservation is important to the region and enables diverse groups of local stakeholders, not the least of agriculture and forestry, to cooperate and to generate synergies through sustainable natural resource use practices. The whole of Großes Walsertal is a UNESCO biosphere reserve for conservation of the biodiversity of the cultural landscape.<sup>17</sup> The integrated landscape management approach enhances other regional planning initiatives. Foremost, the integration of nature-compatible expansion of tourism secures important revenue streams in the valley.

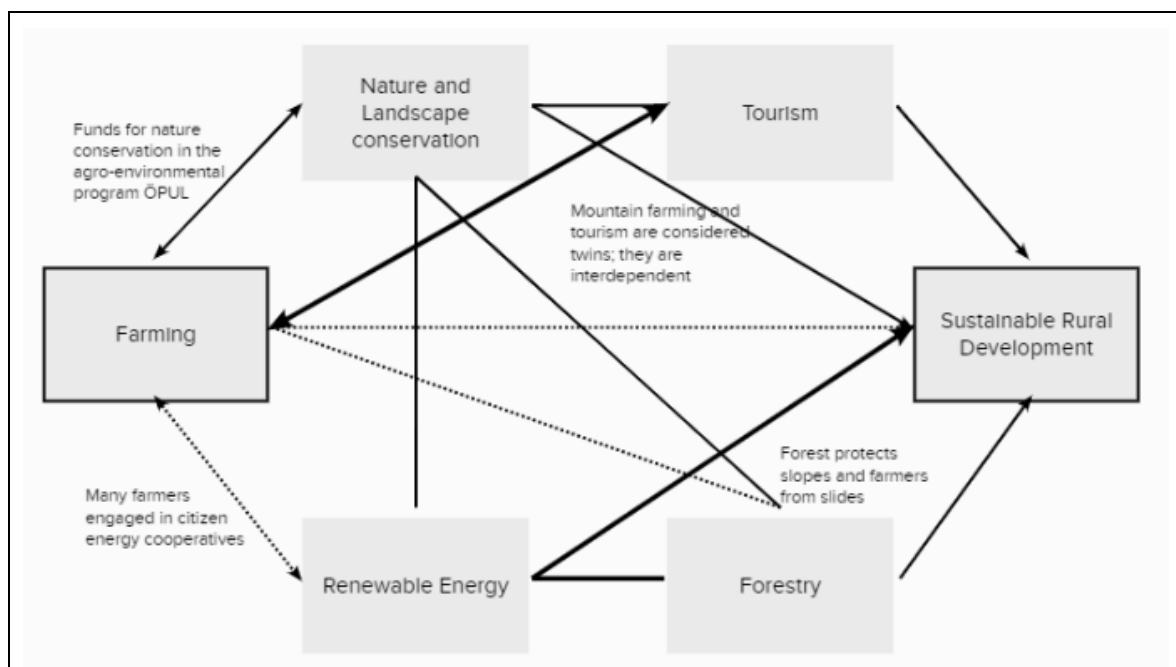
Großes Walsertal is the first energy-efficient region in Austria and has been extensively active in promoting renewable energy policy nationwide since 2002 (Interview V07). Since 2009, the region has been an Austrian climate and energy model region (Interview V07; Rinderer, 2010). Two goals contribute to the sustainable development of the energy sector in Großes Walsertal. One is the reduction of energy consumption to at least 60 % by 2050 and the other is to increase the production of renewable energy (Interview V07). Production of renewable energy is becoming an increasingly important income and economic development source as hydroelectric power plants, biomass plants, and photovoltaic plants are owned by individuals and consortia of the valley (Interview 08). Voralberg, and Großes Walsertal specifically, is one of the regions in Europe where more *renewable energy* is

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<sup>17</sup> To fulfil multiple functions, biosphere parks are divided into zones. In the core zone (20 % of Großes Walsertal's biosphere park), there is (almost) no human influence and ecosystems develop on their own. In the buffer zone (65 % of the area), environmentally compatible utilisation of land such as pasture on meadows is possible. In the transition zone, economic and leisure activities take place, encompassing the entire permanent settlement area of Großes Walsertal (Biosphärenpark Großes Walsertal, n. d.-a)

produced than consumed. Its green electricity is exported to other Austrian provinces and neighbouring countries, particularly Germany (AVL, 2016; Interview V07).

Finally, the tourism sector remains important to the region and is closely connected to agriculture. After a boom in the 1950s, figures from 2015 show that around 11 % of Vorarlberg's total workforce is employed in tourism. Nature-based tourism and nature-based products play an important part in growing tourism in the region (Interview V02A). The region is better known as a winter destination for tourism, with Großes Walsertal being recipient of approximately 180,000 overnight stays per year, significantly fewer than other places like Bludenz (VLA, 2020). Agroecological transformation and rural development in Großes Walsertal.



**Figure 20: Agroecological transformation and rural development in Großes Walsertal**

Source: Own illustration.

The common notion in the valley is that there is no alternative to small-scale dairy farming, which is strongly interlinked with other sectors, foremost local and regional dairy processing, forest, tourism, and compensation for nature conservation services (see **Figure 20**). The alternative to the adapted alpine farming system would be not to farm at all with the consequence that the slopes require afforestation. Dairy farming enables the use of grasslands at the highest altitudes. Absence of suitable machinery makes farming labour intensive and thus not competitive on

international markets. "The world market is not our friend. That's why we have to try to distinguish ourselves in other areas, and for us that's quality." (Interview V16). Alpine dairy farming and cheese production are common (Interview V16, Interview V22). Meat processing, particularly sausage production, in the region is very small scale (Interview V12, Interview V15). In Vorarlberg in general and in Großes Walsertal specifically, farming is a part-time activity for many households, supported by employment in other sectors in the region. Großes Walsertal is accustomed to an integrated and thus inter-sectoral approach to many economic activities. The biosphere reserve further shapes many projects in the region that foster networks and cross-sectoral linkages, such as an enterprise of women marketing herbal products, a local wood processor, and sustainable tourism projects.

The linkage between tourism and agriculture is very significant; interviewees considered the two sectors to be "twins". On one hand, in Großes Walsertal, tourists connect with a landscape that is maintained by and through agriculture and tourism thrives because of the agriculture in the region. On the other hand, tourism is an opportunity for agriculture to sell products and generate income. "It is not five-star hotels that tourists are looking for, but farm vacations" (Interview Vo2A). More than 6,000 km of hiking trails and over 1,300 km of mountain bike trails have been established in the region, running mainly along paths formerly used for agriculture. Thus, it is possible to trail build without using 'untouched' landscapes. This change of use is initiated and legally secured by the state. As the linkages between tourism and agriculture become clearer, the administration of the two sectors as one unit is common and are now treated as one sector under the Landesrat (AVL, 2020).

Großes Walsertal makes maximum use of its knowledge sector, going to great length to share local knowledge with visitors. However, the nearest higher education institution in the region is the Vorarlberg University of Applied Sciences based in Dornbirn, outside the valley. Interviewees attach great relevance to the education sector, perceiving it as instrumental to addressing the region's challenges, including the climate and energy goals. The younger generation, both through the formal and informal education, is increasingly aware of sustainability issues (Interview Vo8, Interview V17). The Biosphere Reserve offers tours to orient people to the history of the region, the current state of affairs in the region, and future trajectories (Interview Vo2A). It has become a focal point, where a lot of

awareness and knowledge about the region is stored as well as disseminated.<sup>18</sup> The biosphere reserve uses a practise-oriented education and knowledge dissemination.

#### 6.4.5 Key actors promoting agroecology and rural development in Großes Walsertal

*The Biosphere Reserve of Großes Walsertal*, established in 2000, is a dominant and central actor for rural development and agroecology in the region. Its approach of living in harmony with nature and protecting natural resources while making them available for human use while remaining in consideration of future generations' needs has been developed in cooperation with local communities. To ensure regional development, the biosphere reserve promotes sustainable practice and the integration of key sectors, such as forestry, agriculture, housing, tourism, energy, and education. Strong, direct working relationships exist with alpine dairy farmers and tourism to assure immediate mutual benefits and avert conflict. Tourists are actively introduced to the history of the region, to the direct marketing of agricultural produce, and the relevance of farming for the region.

The biosphere park also serves as a key linkage between the Vorarlberg Energy Institute and the *Energy and Climate Model Region Program*. The biosphere park is a stakeholder in any sustainability agenda, has easy access to the network of other relevant actors and geo-special information and research, and is thus a vital support for Energy and Climate Model Region Program managers. They collaborate with partners implementing the renewable energy agenda through energy consumption reduction, sustainable building, mobility, agriculture, and awareness raising.

There are very close connections between *tourists* and alpine dairy *farmers*, especially due to the cultural landscape shaped by the agriculture practices. The local population's desire to live in harmony with nature favours the creation of *cooperatives and associations*.

A strong sense of identity with the valley and connectedness in the valley found expression in the interviews through the phrases "us" and "we" and activities of mutual support and social cohesion. Among these were numerous volun-

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<sup>18</sup> One interviewee stated, "In and of itself, not much has changed, the activities have just become more visible... To the outside world, we have shown what we are doing. Others come here for vacation and learn. We want to show people what we have in our hands and that it is valuable. That can be consciously brought across to the people who are interested" (Interview V14).

tary organisations, *cooperatives, and associations* for social and economic benefit. Alpine dairies and cheese production are predominately cooperatives, for example, the *Marul Dairy Cooperative*. Additionally, local cooperatives run a communal heating system, promote water conservation, and produce medicinal plants and herbal products (*Alchemilla Herbal Women*). All of them are driving sustainable practices in the region based on a shared valuation of connectedness with the natural environment. Regularly, different cheese producers come together to exchange knowledge among each other. Coupled with competitive prices for quality produce, this has helped to produce high-quality cheese, awarded with medals and contracts.

There are very strong connections between three key actors: *REGIO Großes Walsertal, Biosphere Park Management, and the six municipalities of Großes Walsertal*. They are the key drivers of regional development. This becomes apparent through the multiple connections converging at the biosphere.

*The State of Vorarlberg Unit for Agriculture and Rural Areas* as well as the *Austrian Chamber of Agriculture* are two other actors influencing Großes Walsertal's rural development.

#### **6.4.6 Awareness of connections to the Global South in Großes Walsertal**

In Vorarlberg and particularly in Großes Walsertal, interviewees were generally aware of global interconnections. However, this awareness does not seem to influence their decisions or actions which focus on sustainability outcomes locally in the valley (Interview Vo2A, Interview Vo2B, Interview Vo4, Interview Vo8, Interview V14, Interview V16, Interview V19, Interview V22, Interview V24). Nevertheless, the supply of raw materials by the Biosphere Park and the *Alchemilla Women's* association, is primarily locally sourced. Any alternatives must come through fair trade channels. Some products are never replaced but alternatives, but consumers have to do without if unavailable: "...customers want honey. But now there is no honey, so we don't sell any. We do not buy from outside, we are regional. We must remain honest" (Interview V14).

Großes Walsertal would like to be a model "living laboratory" for social pilot projects and share their experiences with other regions in Austria and the world (Interview V17). The e5 energy-efficiency program for communities is a case in point. This state programme supports municipalities' climate protection efforts through sustainable energy strategies. The vivid exchange between e5 regions



can be introduced to international partners through the Biosphere Reserve networks, e. g. with Colombia (Interview V02B, Interview V07)

Südwind is a Vorarlberg-based civil society organisation promoting global citizenship education. It raises public awareness on far distant effects of local actions not directly linked to regional development yet relevant in terms of global concerns such as (but not limited to) climate justice, sustainable clothing, and use of energy. They acknowledge that awareness is only the first step and does not always transform into action (Interview V19).

In sum, Großes Walsertal shows how an institutionalised change-maker, i. e. the Biosphere Reserve, was created by people committed to the sustainable development of their region. It is dominated by participatory processes, build on and strengthened the practice of collaboration, and provided new impulses for the development of the region. These governance aspects, promoting synergies between sectors relevant for farming, and the sense of local identity (not to be misunderstood as seclusion from the rest of the world) are factors driving the agroecological transformation processes and shape sustainable rural development in Großes Walsertal.

## **6.5 Summary of key findings**

This section first summarises the research findings, describing principal agroecology characteristics using the FAO 10 Elements of Agroecology. It follows a broader analysis of these findings linked to interactions between agroecology and sustainable rural development.

### **6.5.1 Elements of agroecological transformation in the research regions**

While the FAO 10 Elements of Agroecology may not be known or followed per definition, they are observed and enacted in the research regions and key characteristics of these actions summarized below. While there were no deliberate initiatives specifically implementing agroecology as a strategic transformative approach, agroecology principles are part of other sustainability agendas and programmes linked to agriculture and other sectors.

**Agroecology Element 1: Diversity**

*Definition: Diversity of species (crops, animals, trees, etc.), ecological functions, knowledge, activities, or livelihood options within food systems.*

Among small-scale and organic farmers and non-farmers in all four regions, we observed a high degree of awareness about the vital need for biodiversity and its role in healthy ecosystems. At the farm level, efforts to maintain and enhance biodiversity are mostly incentivised by organic certification schemes and by the market. In Barnim and the Wendland, agrobiodiversity is achieved through the combination of livestock, crops, crop rotations, and forest areas in some instances. Alpine dairy farming in Upper Allgäu and Großes Walsertal is, at first glance, less diverse because of the regions' a singular focus on alpine dairy farming. However, the farming practices allow exceptionally high levels of grassland and forest biodiversity. Finally, diversity in terms of diversity of economic activities and livelihood options was paramount as a requirement allowing for agroecological transformation to take shape thus linking agroecology and rural development in a fundamental way. Income diversification into tourism, other services sectors, or handicraft, is not only a livelihood strategy at the farm level but also creates vital connections to other sectors with positive feedback loops for agriculture, not the least enhancing resilience of the agri-food system as a whole.

**Agroecology Element 2: Co-creation and sharing of knowledge**

*Definition: Local traditional, indigenous, and global scientific knowledge; transdisciplinary engagement; processes of mutual learning.*

Functioning community networks exist in the Wendland, Upper Allgäu and Vorarlberg. These take the forms of specialised networks for organic producers and smaller interest groups such CSAs, and local and regional associations for direct farmer-to-farmer support, all of which are supported by key actors in farming as well as other sectors. They provide links to agricultural knowledge and information, most importantly to market information and regulatory frameworks. In Barnim, actor networks are generally weak, but there are important collaborative ties between the forest and ecosphere sectors where the Eberswalde University of Sustainable Development plays an important role in attracting and connecting the actors driving, for example, agroforestry.

**Agroecology Element 3: Synergies**

*Definition: Greater-than-additive interactions between components at the field level, farm level, and landscape level.*

Neither farmers nor policymakers mentioned proactive pursuit of synergies in their interviews, across all regions. Silo-thinking” is dominant even within group of actors promoting ecological approaches to farming and landscape management. Awareness about the need for and benefits of synergies are most present in the alpine regions, where individuals expressed values connected to collaboration and social integration. This could be attributed to the special characteristics of the mountainous terrain where inhabitants would have, historically, faced forced isolation from the rest of the world. In Barnim, efforts to bring actors together might be a first necessary step toward exploring options for synergies.

**Agroecology Element 4: Efficiency**

*Definition: Resource efficiency connected to a move away from (chemical) input-intensive systems toward optimisation of the use of external inputs.*

From an agroecological perspective, general system efficiency in Barnim and the Wendland is low due to high external input use on conventional farms (causing groundwater pollution). Efficiency is markedly improved on organically farmed land. In the alpine regions under study, the majority of farms are characterised by low external input use mainly due to reliance on natural pasture and low stocking rates. Mountain cheese making does not allow the use of feed concentrate. However, there are also alpine dairy farms maximising milk output while relying on external inputs, purchasing imported soy feed and silage from adjacent regions. This in turn incentivises intensive feed production leading to groundwater pollution in some of the alpine lowlands. It was suggested that this practice could be reduced by a more stringent labelling of consumer products, indicating where the fodder comes from (Interview V12).

**Agroecology Element 5: Recycling**

*Definition: Recycling biomass, nutrients, inorganic materials, and water, while reducing external inputs, at the farm and landscape levels.*

Especially at farm level, all organic certification schemes place emphasis on composting for soil conservation, the key feature of biomass recycling in the regions. This practice is not limited to organic farms. It can, however, cause problems, particularly in conventional agriculture and sometimes bio-EU organic certified farms. Barnim and Lüchow-Dannenberg, in specific, have above-legally permitted nitrate infiltration in groundwaters linked to, among other things, excessive spreading of liquid manure on farmland. This is the result of industrial intensification and overstocking. There are few examples of on-farm water and waste material recycling in the region and few direct connections between agriculture and other sectors which might capitalise on biomass flows for the purpose of recycling. Food waste remains a particular blind spot.

### **Agroecology Element 6: Resilience**



*Definition: Closely linked to diversity, resilience is the capacity to absorb shocks and includes in the concept people, communities, and ecosystems.*

Barnim and the Wendland's conventional agriculture systems are low in both the ecological and economic dimensions of resilience in farming systems. Farmers struggle with depleted soils and extreme weather events. A strategic orientation to resilience is, despite the increasingly negative impacts of climate change, not a strategic priority in policymaking. However, study interviewees confirmed higher farm-level resilience generated through organic farming methods. For example, organic farmers confirmed improved soil conditions, improved soil water retention, and higher overall biodiversity. For farmers in the alpine regions, resilience is an intergenerational value rooted in living on very difficult terrains and in partial isolation from other communities.

### **Agroecology Element 7: Human and Social Values**




*Definition: Emphasis on human values such as dignity, equity, inclusion, justice, linked to gender and youth, decent jobs and empowerment.*

Human and social values appear to be particularly strong in the alpine regions as ecological values and social traditions have been actively maintained, connected, and adjusted to new situations and challenges. While gender roles have remained somewhat traditional, there is a sense of individual empowerment regardless, and emphasis on service to the community and social cohesion. In Barnim,


the social fabric appeared less robust. Reoccurring shocks and social convulsions with deep uprooting changes in the farming system (shift to large scale collectivising under Soviet system and then rapid shift to private, capital-intensive farming after the reunification) might be a cause. The practice of alternative lifestyles since the socio-environmental protests of the 70s in the Wendland consciously fosters human and social values.

### ***Agroecology Element 8: Culture and Food Traditions***

	<p><i>Definition: Expression of human heritage, local or traditional identity, maintenance of genetic resources, linked to nutrition and healthy diets.</i></p>
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A connection between an appreciation of local identity, traditions, diets, and culture was observed, specifically in Upper Allgäu and Großes Walsertal. It finds expression in the identification with a locally rooted culture, appreciation for the farming landscape and related food traditions, and identification with human and social values that foster these, such as, for example, a strong sense of community. “Giving back to the community” is a priority in business and voluntary initiatives, for example. The desire to maintain social cohesion is seen in Bad Hindelang (promotion of economic equity rather than individual profiteering through tourism). Sustained culture and food traditions are more visible in the mountain regions, focusing on dairy and cheese production and small-scale farming that conserves natural landscapes.


### ***Agroecology Element 9: Responsible Governance***

	<p><i>Definition: Transparent, accountable, inclusive governance; producer participation; creation of innovative policies, institutions, and markets.</i></p>
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Responsible governance as a force that supports ecological systems serving diverse social, economic, and environmental needs is more pronounced where there is stronger agency at the community level and where functioning networks between formal and informal institutions exist, as is the case in Upper Allgäu and Großes Walsertal. In both regions, local governance is inclusive and open to participation. The management of the biosphere reserve for example, promotes sector integration, creates opportunities for synergies, and showcases collaborative successes. In the Wendland, where new forms of social living and farming exist, participation in politics, social organisations, cross-sectoral collaboration, and bot-

tom-up initiatives are common as is. These features are only rudimentarily developed in Barnim.

### ***Agroecology Element 10: Circular and Solidarity Economy***

	<p><i>Definition: Products and services marketed locally, local food system, reconnecting producers and consumers</i></p>
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Circular and solidarity economy is a visible objective in all study regions to some extent. In Barnim, products are sold on farms. Other regional market structures are not well developed. Berlin is a more important outlet that distracts the focus away from local markets. The same goes for the Wendland, where Hamburg is a key outlet and local demand insufficient. Nevertheless, concrete efforts are in place to prioritise marketing of agricultural at the community level. In the Alpine regions, local markets (facilitated by tourism) are well developed, especially for signature products such as cheese, other dairy products, and timber. Notably, lack of local processing capacities is the largest obstacle to a vibrant circular and solidarity economy, specifically in Barnim, but also in the Wendland.

#### **6.5.2 Interactions between agroecology and sustainable rural development in the research regions**

We applied the integrated landscape approach to shed light on the interactions between agroecology and sustainable rural development and identify relevant actors, actor networks, non-farm sectors, and policy frameworks. These interactions are characterised by considerable complexity, of which we discuss only the most salient features. **Table A5** below summarises key observations describing important factors that link agroecology and sustainable rural development in the four case study regions.

Agroecology transformation is driven by organic farming under certification labels in the Wendland and Barnim. However, while some farmers opt for certification schemes in the Alpine regions, agroecological principles are strongly supported by small-scale farmers and other actors outside the schemes. One reason for this is that price premiums for regional sustainable produce are independent of organic certification labels in alpine regions. New models for solidarity or community-supported agriculture (CSA) are an important driver for agroecology in the Wendland and a growing actor network in Barmin.

The characteristics of underlying social organisation among actors and actor networks supporting agroecology concepts are highly distinct in all four regions.

In the alpine regions, regional cooperation linked to local identity play a key role but also governance structures are more inclusive allowing for broad citizen participation. Correspondingly, the alpine regions show stronger integration of diverse sectors utilising land and the highest levels of intersectoral synergies exist in Großes Walsertal. Sustainable rural development outcomes are characterised by the interplay of different sectors (tourism, forestry, nature conservation, renewable energy) with the farming sector in our research regions. It is here where agroecology principles in their ecological, social, and economic dimensions are embraced by diverse actors within and outside of agriculture. We find agroecology to function as a framework that promotes integration of actors into regional processes that enable synergies derived from land-use by diverse sectors.

In our research regions, we identify tourism as a very relevant sector with the potential to support sustainable rural development beyond its mere economic benefits. There are important interdependencies with the farming sector, creating employment and income for farmers while farmers maintain cultural landscapes and produce locally sourced and processed signature food products, reconnecting an urban mindset with rural, farming realities. This is possible where tourism is managed in line with agroecology principles. However, challenges occur. These are typically connected to infrastructure development such as roads and housing, harming nature and landscape conservation (Interview W23). Tourists are attracted by the cultural landscape, in particular in the Allgäu and the Wendland, preserved by farmers who are, sometimes, the tourist attraction themselves. Furthermore, agriculture and tourism can be linked through local gastronomy and farm visits as done in Vorarlberg or by offering rooms on farms as done in the Wendland and both being done in Allgäu. In Barnim, tourists are also attracted by the cultural landscape but even more by nature protection areas. In all our study areas, *nature and landscape conservation management* plays a big role, including that of facilitating important actor networks and cross-sectoral collaboration, all closely connected to sustainable rural development and to farming. Agroecology here is not explicitly used as a framework. However, a common understanding and motivation to work toward strengthening its principles is already a connecting factor.

Another important sector in our research regions is the *renewable energy* sector, creating additional income for some farmers and industry, providing regional electricity, and contributing to regional sustainability agendas with goals to reduce CO<sub>2</sub> emissions. However, the relationship to agriculture is conflictual since, in the absence of strategies for multifunctional land-use options, presently both sectors are competing for land. Moreover, in Barnim but also in the Wendland,

discontent is rising as renewable energy subsidies are driving up the price of land, pushing people out of farming. However, alternative integrative approaches to land use exist and urgently need to find consideration in policymaking (WBGU, 2020). The relationship to farming can also be more direct via biogas production, which plays into the “food or fuel discussion” but can also make use of agricultural waste. Innovative ideas combine renewable energy production, in particular solar panels, directly with farming.

Forestry is a key sector traditionally closely linked to sustainable rural development for its multidimensional benefits to ecology, society, and economy. In the Wendland and Barnim, the obstacle to better integration of forestry with farming—agroforestry as a climate adaptation and mitigation measure—is the longstanding institutional separation of both sectors. We observed important conflicts, particularly between hunting interests and initiatives for multiple use and better climate adaptation of forests in all regions.

The ways in which agriculture is interconnected with other sectors importantly influences sustainable rural development and with it, the role and leverage opportunities of agroecology. Important differences have been observed between the regions. In Barnim, the connections between different sectors as well as actor networks were very weak in general. However, education, especially the HNE university, is a key driver for agroecological transformation, generating new actor networks and connecting sectors in this district. In the Wendland, individual citizen initiatives and collective social action contribute to sustainable rural development in different sectors and driving agroecology and sustainability innovation generally. For example, cooperatives make use of old building structures (farmhouses) which are capital intensive to maintain. However, as a group, they make use of the building structures and land collectively. Also, in Vorarlberg models for collective private and public ventures at the municipality level are very present, providing sustainable services such as water and electricity to the community. Here, the biosphere reserve management is the main driver for intersectoral collaboration and the realisation of agroecological initiatives. In Allgäu the different sectors are quite well linked due to public efforts at the municipality level, focusing on creating regional value chains (circular economy). Private and commercial actors are actively involved in politics, contributing to sustainable rural development.



**Table 6: Linkages between agroecology and sustainable rural development in the research regions**

	Wendland	Barnim	Upper Allgäu	Großes Walsertal
Key agriculture actors	Organic farmers, small-scale farmers, CSAs	Large-scale organic farmers	Small-scale dairy farmers and cheese processors	Small-scale dairy farmers, artisanal processors including cheese makers
Important actor networks	Sustainability actors of various sectors are well connected	A small number of civil society organisations, not well connected	Regional marketing initiatives; local artisanal food processing and marketing; all well networked	Strong networks across sectors driven by identification with the region, history, and landscape
Social organisation among key actors	Solidarity and bottom-up governance practised beyond the farm level	Competitive, market driven	Locally cooperative, regionally competitive; united by a strong local culture	Diverse local networks united by a sense of community, landscape, and local culture
Key drivers of agroecology transition	CSAs as a bridge between individual change makers and the larger population	Large organic farms and the HNE attract new change agents to the region	Small-scale dairy farmers, eco-model region, supported by policymakers	Many local initiatives supported by the biosphere reserve management
Local food products symbolic of identity/tradition	Not strong Potatoes and livestock	Not strong Regional products from large organic farms	Strong reflection of local farming Allgäu Cheese	Strong reflection of local farming Mountain cheese, "Walserstolz"
Sectors positively linked to agroecology transition	Weak connections to and across other sectors; higher education institution	Very weak connections to other sectors and across sectors	Tourism, food processing; strong links promoted by communal governance	Forests and timber, tourism, renewable energy; strong links promoted by bioserve
Most important land-use conflicts	Biogas production and large-scale photovoltaic installations	Biogas production and large-scale photovoltaic installations	Housing and infrastructure needs, in part for tourism	Emphasis on synergies, but housing most urgent need
Intersectoral linkages positively affecting agroecology transition	Not strong, shaped by mindset valuing farming/landscape maintenance	Not strong but potential exists in connecting nature protection, tourism, and farming	Diverse connections between tourism and farming	Close connection between tourism, landscape conservation, and farming

Source: Own findings

## 7 Discussion of field study findings

### 7.1 Key characteristics of agroecology transition in the research regions

The study identified certain characteristics that shape agroecology transitions in the research regions in Germany and Austria in distinct ways. We summarise and discuss these in the following five statements.

#### 1) Agroecological transformation goes beyond sustainable farming practices.

The dynamics shaping agroecological transitions toward more sustainable agri-food systems in the research regions are diverse. The expansion of organically farmed land is one important driver of agroecology in Germany and Austria. However, a holistic transformation of agri-food systems is a complex change process, shaped by the unique local economic, social, political, and environmental realities in each region. It involves the whole range of agroecology principles, applied in our research as the FAO 10 Elements of Agroecology.

In the study regions, competition for agricultural land by non-farm actors, especially renewable energy corporations, and transport and housing infrastructure needs, is pervasive. In the case of land used for bio-mass production, important in the Wendland and Barnim, it is farmers themselves who have shifted from food to fuel production. However, this shows that actors outside agriculture also have important influence, positive as well as negative, on agroecological transformation dynamics. Notably, non-farm sectors can function as important allies for agroecology. We have seen this in the potential of some forms of tourism, nature protection, forestry, and communal renewable energy models.

#### 2) Agroecological transition is taking place in all research regions, each following its own pathway.

In Barnim, agroecological transformation was limited to the actions of local pioneers building their own vertical supply chains to access regional markets and connect to Berlin. In addition, important sustainability dynamics have been created through the engagement of the Eberswalde University of Sustainable Development. In the Wendland, agroecology is driven by small-scale agents of change including innovative community-supported agriculture (CSA) models, some of them building regional networks across sectors united by their common social and environmental aspirations. They are seen to shape agroecological transformation

within the local context and independent from conventional market forces. In Upper Allgäu, agroecological transformation is promoted by numerous small-scale farmers and the identification of the population with the cultural landscape, embedded in locally determined policy frameworks and strategies promoting sector linkages. In Großes Walsertal, agroecological transformation processes resemble those observed in Upper Allgäu. However, the integrated landscape management of the biosphere reserve accomplishes still stronger integration of different sectors, strategically fostering synergies for the region and harnessing existing participatory processes and actor networks.

### **3) The principles of agroecology are applied while agroecology as a framework is not well-known by practitioners.**

With few exceptions the FAO 10 Elements of Agroecology have been identified and their actual application and benefits explained by the farmers, many but not all of whom are organic farmers. Moreover, key actors in the non-farm sectors and in governance and administration also identified several agroecology principles as vital for realising sustainable rural development outcomes.

### **4) Agroecological transformation is influenced by communal governance structures and actors outside of agriculture.**

In our research regions, strong communal governance institutions promoting locally determined, participatory processes are associated with more tangible agroecology transition supported by the collaborative actions of multiple actors and non-farm sectors. Outcomes may include fit-for-purpose ecosystem services remuneration for small-scale farmers, more synergies in land-use systems, local employment through regional value addition, and stronger civil society engagement. Policy frameworks in the regions as well as actor networks play an important role. The biosphere reserve in Großes Walsertal promotes the local sustainability strategy and manages sector linkages between tourism, farming, and renewable energy.

### **5) Three important ways in which agroecology contributes to sustainable rural development**

There are several important mutually reinforcing dynamics between agroecology and sustainable rural development and some factors through which agroecology specifically contributes to sustainable rural development. The environmental benefits of sustainable cultivation methods may include increasing biodiversity, increasing agroforestry, and improving the value of the landscape to make it more attractive for visitors and tourism. This generates opportunities through employ-

ment and income diversification. The circular economy principle adds to this, increasing local value addition and linkages to food processing sectors. The appreciation of the value of food and reconnection of the urban population to rural spaces and farming is strengthened, which increases the willingness to pay a higher price for sustainably produced, healthy food.

## **7.2 An enabling environment for agroecology and sustainable rural development**

Climate change, biodiversity loss, and unsustainable food systems put increasingly high pressures on land and the people who live in rural areas. Whilst many factors push people out of rural areas, there are factors that promote the prosperity and attractiveness of these spaces. We have been able to identify factors that foster an enabling environment for agroecological transformation and sustainable rural development. These make rural areas attractive, providing important incentives for people to maintain their livelihood in these regions, create recreational value for tourists and visitors, and generate the will to actively promote these values, including among urban populations who are willing to price premiums on regional sustainable food and related ecosystem services.

### **1) Linking people to food: The role of regional identity and branding**

This aspect is particularly strong in the alpine regions but also in the Wendland. In Vorarlberg and Allgäu, the mountain location plays a big role in the feeling of connectedness with nature and people. For many visitors, the accessibility of small-scale farms and characteristics of traditional farming practices play a role in this regard. Many people who grew up in these regions prefer to stay there or to return after receiving their post-secondary education and professional experience elsewhere. Local voluntary organisations promote local traditions, such as arts and crafts, music, and storytelling. Regional identity as linked to history and farming that shaped the cultural landscape is fostered by institutions in both regions. Biosphere reserve management is obliged to do so, as in Vorarlberg and Wendland, as does the eco-model region in Allgäu. For example, in Vorarlberg, the biosphere reserve management organises a contest that makes farmers' biodiversity conservation efforts visible (Interview Vo2B). In the Wendland, where many people attracted by alternative lifestyles moved from outside the area, there is a strong identification with the region and its cultural landscape (Interview Wo1, Interview Wo9, Interview W10, Interview W11, Interview W19, Interview W20). In Barnim, regional identity is less pronounced. However, the larger, suc-

successful organic farms created regional branding which is important for their customers in the adjacent Berlin metropole.

Local identity and environmental engagement are related. Forsyth et al. (2015), for example, found that individuals who identify strongly with their community are more likely to engage in water protection. This is in line with the more general social identity theory which states that the protection of natural resources by individuals is favoured by their strong identification within a group (Tajfel & Turner, 1986). In our study regions, we observed that a sound regional identity is reflected associations with regional food systems and iconic food products. Where this is used for regional branding of food products,<sup>19</sup> the appreciation for farmers and their role in maintaining the natural landscape is increased (Interview Vo2A, Interview Vo3, Interview Wo6). These observations align with a global trend away from “food from nowhere” toward labelling that certifies a traceable origin of food, enabling purchase of regional products (Hull & Liu, 2018).

These dynamics are part of and contribute to an agroecological transformation, specifically recognised in the FAO agroecology element of *culture and food traditions*: “Cultural identity and sense of place are often closely tied to landscapes and food systems. As people and ecosystems have evolved together, cultural practices and indigenous and traditional knowledge offer a wealth of experience that can inspire agroecological solutions” (FAO, 2018, p.10). Our research confirms these findings with positive examples in Upper Allgäu and Großes Walsertal. In Barnim and other regions where regional identity is weak, regional identification with landscape and food systems could be enhanced by promoting local traditions. As seen by the example of the Wendland, these do not always have to be rooted in older intergenerational practices, but signify social values and society. According to our findings, regional brands for food products promoted outside of purely profit-oriented private-sector marketing objectives offer a mechanism to broadcast and mainstream these aspects of identity.

## **2) Local agency through civil society engagement and local pioneers**

While adequate state institution and policy frameworks are required to enable and promote agroecological transformation are imperative, our research identifies local initiatives promoting a multitude of activities connected to farming, food processing, and landscape conservation who are presently the drivers of agroeco-

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<sup>19</sup> The term “branding” in this context is not as such a private-sector profit-oriented marketing scheme, but an institutionalised effort by several stakeholders in a region to promote an aspect of food culture.

logical transformation pathways. Civil society engagement was strong in the Wendland where a history of resistance against nuclear waste disposal continues to attract activists and shapes society open to alternative ideas, aspirations, and lifestyles. People seem to be cut off from “the outside” and have the feeling they can express themselves freely (Interviews W01, W10, W11, W14, W20). In Barnim, HNEE attracts young people who are willing to stay in the region and who introduce and promote sustainable living models (Interview B10). In the alpine regions, citizen participation is formalised through local, inclusive governance processes such as “My Bad Hindelang” in Upper Allgäu and the biosphere reserve in Großes Walsertal. The very participatory management employed aims at fostering inherent characters of community and engagement for the social good (Interview UA05, Interviews V02B, V21). While there is no model initiative or governance in favour of agroecological transformation, local forms of agency resulting from culture, institutions, and policy exist. In the Wendland, it is civil society engagement, established networks, and especially local pioneers who drive agroecology. In Barnim, due to incoherent policy implementation and weak actor linkages, it is private-sector-driven and individual initiatives that engage in activities favourable to agroecology. In Upper Allgäu, local institutions promoting policy frameworks and transparent, participatory governance mechanisms provide a highly conducive environment for agroecological transformation. In Voralberg, this environment is fostered by the strong sense of community, citizen governance, and the management of the biosphere reserve. Strengthening governance, participation, and individual agency in support of agroecological transformation should, thus, not follow a prescribed model, but build on existing processes and capacities.

Schnyder (2021, p. 3) emphasises that “socially shared rules, norms, and existing practices can influence the perceived importance of agroecology”. Additionally, social factors and key stakeholders’ collective action can result in the formalisation of informal rules, for example in locally adapted Participatory Guarantee Systems.<sup>20</sup> The concept of agroecology itself fosters participation and decen-

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20 “Participatory Guarantee Systems (PGS) refers to locally focused quality assurance mechanisms that certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange... While external professionals base third-party organic certification on a review of applications and inspections, PGS endorse interactions among farmers and other stakeholders and use different mechanisms to build credibility. The whole process is based on social networks where all stakeholders – producers, small processing industries, retailers and consumers – share responsibility and active involvement to assure the quality of products. The collaborative governance helps to empower farmers and is also founded on solidarity and transparent connections” (HLPE, 2019, p.157).

tralised governance as principles<sup>21</sup> enshrined in the social movement aspect of agroecology (HLPE, 2019).

### **3) Farm and non-farm sector linkages and regional value addition**

In all study areas, intersectoral linkages play a crucial role. Particularly in the alpine region, the relation between nature protection, tourism, and farming fosters sustainable rural development by supporting farmers and attracting people from outside. Strong personal networks between people who work in different geographical areas or professional fields play crucial roles in fostering regional value creation (Interview Vo6, Vo8, V17). Another supporting factor is integrated multi-level, multi-sectoral policies (Interview UA05, UA10, UA16). In the Wendland, Vorarlberg, and Allgäu well-integrated food processing and regional marketing strengthens the local economy and generates employment. In Barnim, the absence of local food processing capacities is making regional value creation more difficult.

Therefore, our findings align with the HLPE (2019) recommendations for developing local and regional markets, supporting policy coherence across sectors, and strengthening intersectoral collaboration, for example through committees, platforms, and technical advice.

### **4) Existing policy frameworks for agroecology and rural development**

The EU Common Agricultural Policy shapes the farming sectors in decisive ways. However, the ways in which the European policy framework affects farming locally is also shaped through communal agency where governance, citizen participation, and regional development strategies play key roles. Existing opportunities for agroecology are supported through the second pillar of the CAP: financing integrated rural development with important linkages to EU-LEADER programmes.

The EU Green Deal, through its Farm-to-Fork Strategy, and the newly agreed CAP do not explicitly promote agroecology as a holistic, multidimensional framework. The new, as also the former, CAP insist on per-hectare payments disproportionately favouring large, industrial type farms and does not provide sufficient incentives to participate in broader agroecology approaches. Agroecology is only be promoted through eco-scheme finance, accounting for 25 % of the direct pay-

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21 Participation: "Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems" (HLPE, 2019, p.41).

ments and, as we have seen in our research, it is indirectly supported by the budget for rural development. However, compared to the former CAP, the overall budget for rural development (the second pillar) has been significantly reduced.

At the national and state level, adjustments to the CAP are possible and necessary to foster enhanced agroecological transformation. Opportunities, now opening up through the national CAP strategic plans instrument, as we observed in our research regions, bear the potential for broader, holistic agroecology approaches. In Austria, the national environmental programme (ÖPUL) already makes use of rural development funds to strengthen environmentally sustainable farming further augmenting these with national funds. In Bavaria, 75 % of the rural development funds are used for agri–environment–climate measures implemented through a large number of diverse programmes devised locally, which are significantly better funded than in other states.

At the local level, rural development funds need to be applied for and implemented across sectors according to local requirements. Here, the ability to foster synergies between sectors in land use and regional value addition, organised through inclusive and participatory governance structures is a key factor for enhanced agroecological transformation.

### **7.3 Agroecology and the Global North acting with the Global South**

Local challenges have global ramifications and vice versa; the global environmental crises, not-the-least climate change, have local impacts. Looking at sustainability issues in one landscape means considering the impacts of sustainability actions in distant places. As such, international collaboration and South–North exchange need to be part of the solutions to these challenges (Liu et al., 2013).

#### **1) International collaboration and sustainable rural development in the Global North**

International collaboration seems to play a minor role in the regional development of our research regions. Many interviewees agreed that “the main interest of development lies within the region itself and does not make strong references to international linkages” (Interview Wo6). We identified two key reasons for the limited presence of visible international connections in rural areas. to varying degrees in all research regions, we identified measures that promote regionality as an element of rural development. Promoting and maintaining identity with one's own region, in this respect, is an inward-looking approach that is expected to unleash



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more motivation for action than awareness about international connections and distant effects. Examples are specific regional products such as the regional branding initiatives of organic producers in Barnim, the common history of resistance in the Wendland, the eco-model region in Upper Allgäu, and the *Walserstolz* cheese in Großes Walsertal.

Additionally, the limited connectedness and demographic constitution of rural areas play a key role. “Many elderly people live here in the countryside... Some have not even travelled to the next larger city, so how do you expect them to think about far-away places?” (Interview Wo5). Additionally, informants explained that the majority of rural residents do not speak a foreign language. One example that highlights the structural barriers of learning a foreign language are schools where “English teachers themselves do not speak the language properly as they have little practise... This then pervades the rest of society” (Interview Wo5). There is a vicious circle: weak international exposure decreases the incentives for being interested in and learning about “outside places”. Conversely, where there is little information accessible about far-away people and places, people tend to have fewer connections.

### 2) Distance effects of agroecological transition and sustainable rural development

Through telecouplings (distance effects), agroecology and rural development in the Global North are linked to people and environments in the Global South.

First, international trade of goods and services underlines the role of businesses that take responsibility for socially and environmentally sustainable production and trade of agricultural produce. Large enterprises tend to have wider networks than smaller ones and, as such, many rural areas without big industry lack these business relations in other countries and regions (Interview B13). Larger agricultural certifiers, such as Naturland or Demeter, rely on global exchange for setting internationally recognised standards (Interview B13). In terms of international trade of products, there is the awareness that there is no such thing as a purely domestic market: “If we in Europe say, why doesn't milk cost 50 cents more, we would get much international competition. If there is a drought in Australia, it affects the price of milk in Großes Walsertal, even though we produce so regionally. That is strange and reassuring at the same time” (Interview V22).

Second, the importance of learning from non-European regions is recognised by some stakeholders in all four case study regions since “the Global North does not know it all” (Interview UA05). Yet, established forms of knowledge exchange and co-creation of knowledge between the actors interviewed and those in the

Global South on sustainable rural development or the mitigation of the causes of the negative effects of the Global North's actions do not exist. The exceptions dispose of internationally established formats that were not installed by them, but in which they participate, in part, on a mandatory basis. These take place under the umbrella of UNESCO, for the case of biosphere reserves, or under working groups of EU thematic groups, such as forestry. In this context, one interviewee mentioned that Germany can learn from many countries of the Global South where tree species are resilient to drier and hotter climates in regions with similar characteristics (Interview UA12).

Although the emphasis on finding local solutions for local problems, which is a well-known approach in international development cooperation, was indirectly cited by most of the interviewees for the sustainable development of rural areas in the study regions, co-creation of knowledge and knowledge sharing are also seen as important measures in their planned projects (Interview UA05), in future necessary projects (Interview UA12), or desired projects (Interview W10). The same applies to the Bio.Regio.Fair initiative in a municipality in Upper Allgäu. The initiative would like to enter into direct partnerships in its "fair" component with contacts from the Global South (Interview UA06).

Third, we identified a general awareness about the distance effects of one's own actions on outside environments and people living elsewhere. Many interviewees identified mutual global problems such as biodiversity loss or rising temperatures. Thus, the awareness of how individual actions contribute to aggravating these problems drives initiative. It is stronger the more people relate to the people or environments that undergo the effects of these actions. In this way, biosphere reserves play a key role in connecting people, different forms of land use, and awareness of international conservation efforts across spaces. They are perceived as model areas for sustainable rural development and nature protection (Interview UA02), especially when it comes to allowing local residents and tourists to experience the global importance of the natural environments they care for. In line with that, global citizenship education has a central role to play in generating awareness that can ultimately translate into action.

### **3) Think global, act local or think local, act global**

Although global thinking is established and people are aware of the region's connections to the Global South, it is not the main driver for sustainable action in the case study regions. Interestingly, situating local action in the global landscape is understood differently; ne representative of an environmental NGO mentioned that they acted locally while thinking globally so that they can contribute to global

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impacts (Interview UA18). A regional manager in Vorarlberg, however, turned this statement upside down, saying one would have to think regionally in order to act globally. What is beneficial for the region in the long run, will also be good for the planet and any action that people take is automatically a global action due to global interconnectedness (Interview V24). While in the first statement awareness of global sustainability issues influences local action more directly, in the second the direct impacts of local or regional action are more pronounced. Hence, we conclude that local action and international connections go hand in hand. Rural areas require more support to allow them to tap into and benefit from international networks and collaboration. The agroecology framework offers a useful tool and entry point for such collaboration.

## 8 Suggestions for action in policy and practice

Here, we present existing sustainability initiatives and suggest how they can be scaled up to serve as “low hanging fruits” promoting agroecology and enhanced North–South collaboration. Finally, we present policy opportunities that support agroecological transformation processes for sustainable rural development.

### 8.1 Way forward: Opportunities to implement immediately effective agroecology initiatives

We propose the following initiatives as so called “low-hanging fruits” and as an output resulting from our research study. The measures are a further development of existing initiatives in the research regions. Based on our research understanding of the need to strengthen agroecology and the success factors of existing initiatives, we developed the four measures described below. These are designed to function as low-threshold, easily implementable, and fast-acting instruments promoting agroecology transition and sustainable rural development in the Global North that foster collaboration, learning, and the co-creation of knowledge with the Global South. They thus simultaneously achieve remote impacts in the Global South. Here, we provide a brief description of each initiative, make suggestions for further application, outline potential measures to be undertaken by international development actors (particularly the BMZ) to exploit these potentials, and describe the impacts each initiative could have in the Global North and Global South.

#### 8.1.1 Expand *Bio.Regio.Fair*. in Upper Allgäu and beyond

The small, recently initiated Bio.Regio.Fair of Bad Hindelang targets the local hospitality industry and promotes globally conscious, sustainable consumption of organically produced local products, augmented by imported produce purchased through recognised Fairtrade channels. It integrates a certain percentage of imported Fairtrade food commodities from the Global South into the “food basket” menu offered at local tourism venues. Restaurants and hotels meeting these targets are accredited in a marketing scheme promoted by the municipality, providing visibility to individual businesses and to the community as a Fairtrade town.

We propose an expansion of the initiative by identifying partner countries with existing Fairtrade-certified export food commodities and establishing and consolidating direct links to farmers via their organisations in these countries in the Global South. Using agroecology as a common framework for sustainability prin-

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principles offers multiple entry points for engagement between farmers from the Global South and alpine farmers, the hospitality industry, and consumers. This would expand their understanding about concerns and challenges that farmers and rural spaces face globally and about respective local solutions.

### **Existing organisation and actions to build upon**

Bio.Regio.Fair – an initiative by the Fairtrade town Bad Hindelang promoting the integration of at least two organic, regional, and fairtrade products per menu in outlets of the tourism and hospitality industry in the municipality.

### **Action areas for the BMZ<sup>22</sup>**

- Assist in establishing direct contact between local stakeholders in the Global North (organiser(s), participating outlets, and their customers in participating municipalities) and in the Global South (farmers and producers of the Fairtrade products – identifiable through certification institutions like World Fairtrade Organisation, Fairtrade International) through participation in global conferences, face-to-face meetings, joint agroecology trainings, and the production of informational materials promoting awareness about sustainable consumption.
- Expand the initiative in the region by providing additional financial support. Opportunities in cooperations with the BMEL, BMWi, and possibly BMU could be explored, to organise outreach initiatives targeting participating outlets beyond the tourism and hospitality industry, both within and beyond the region.
- Work with actors along the production value chain (farmers, producers, suppliers) in the Global South and offer incentives for the supply of Fairtrade products that are organically produced.

### **Impact in the Global North**

- Better understanding of local realities in distant places, and realities of an interconnected world where products are sourced through commodity supply chains often originating in the Global South

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<sup>22</sup> We link this to the BMZ first, since this identifies the opportunity specifically relevant for BMZ engagement. Still, there are additional opportunities and needs to cooperate with partners such as the BMEL, their Departments at State and District levels, farmers associations, and other key stakeholder groups.

- Promotion of sustainable consumption that is linked to sustainable production
- Strengthened regional markets and circular economy as principles of agroecology, resulting from enhanced consumer preference for regional products.

### **Impact in Global South**

- Promotion of organic production as part of agroecology frameworks, linked to Fairtrade marketing systems
- Fair prices and better working conditions for farmers and workers in food production value chains
- Shared learning within agroecology frameworks about sustainable rural development opportunities and principles

#### **8.1.2 Use agroecology to promote agroforestry and climate adaptation in Barnim**

This initiative promotes participatory agroforestry in rural areas in the Global North in collaboration with actors from the Global South. The initiative will use the agroecological principles to stimulate opportunities while learning with and from the Global South where climate adaptation research and policy is at an advanced stage, especially in arid regions. Collaboration between Northern and Southern research institutes (for example, with the Kenyan National Forestry Research Institute) could promote the application of agroecology in both regions.

#### **Existing organisation and actions to build upon**

Ackerbau(m) project of the university of Eberswalde (HNEE) is an agroforestry project in Brandenburg initiated and implemented by HNEE, involving young researchers from the university, with the participation and support of farmers, foresters, and landowners. Potential partner in the Global South is the National Forestry Research Institute in Garissa, Kenya.

#### **Action areas for the BMZ**

- Assist the HNEE and other agroforestry research institutions in Germany/Global North expand research linkages to research institutions in the Global South.
- Provide support structures to research exchange institutions such as the DAAD and AvH Foundation to facilitate joint agroforestry action-research

partnerships between institutions from the Global North and Global South (such as the Kenya Forest Research Institute).

### **Impact in the Global North**

- Enhanced agroforestry and integrated land use through agroforestry and related policy advisory services as outcomes from the research
- Dynamic knowledge and awareness exchange with Global Southern actors

### **Impact in the Global South**

- Creation of an entry point for co-research in the Global North
- Dynamic knowledge and awareness exchange with Global Northern actors

### **8.1.3 Promote local knowledge within the agroecology framework: The Großes Walsertal Biosphere example**

In the Großes Walsertal Biosphere Reserve several initiatives for biodiversity conservation and for maintaining local culture and social values are managed by women associations, such as the Alchemilla Women project. Their efforts have preserved and revitalised traditional knowledge within sustainable development efforts in the region. Within the international network of UNESCO biosphere reserve, the associations network with similar women initiatives globally, thereby strengthening the role of women in cultural and natural landscape conservation and promoting agroecology as a holistic approach to sustainable rural development.

#### **Existing organisation and actions to build upon**

The networking activities of the UNESCO Biosphere Reserve in Great Walser Valley towards improved landscape management, including its Alchemilla Women project preserving and promoting local knowledge on the dietary and medicinal use of local herbs naturally growing in the biosphere reserve.

#### **Action areas for the BMZ**

- Initiate and support the South–North collaboration of local rural women associations working on landscape conservation
- Facilitate actor collaboration for common ecosystem governance and agroecology approaches

**Impact in the Global North**

- Increased use and visibility of local, traditional knowledge in cultural landscape conservation
- Enhanced communal landscape and ecosystem governance through knowledge exchange

**Impact in the Global South**

- Promotion of agroecology and improved recognition of the role of women in landscape and ecosystem management; and enhanced utilization of traditional local knowledge in landscape conservation
- Knowledge exchange on integrated landscape conservation

**8.1.4 Build on CSA as an entry point for agroecological transformation**

Strengthen the role of CSA models in the Global North as drivers for agroecology and connections between urban consumers and farming in rural areas. Simultaneously, CSA associations and small farmer associations in the Global South can be linked for better understating of global interconnectedness, shared climate adaption issues, and North–South knowledge co-creation.

**Existing organisation and actions to build upon**

CSAs throughout Germany, and specifically those in the Wendland, may serve as entry points to this work. Specifically, collaboration should be sought with organisations where founders and participating members have elaborated a range of working models, for example, different forms of financial contributions promoting sustainable agricultural practices (membership fees, company shares, time shares) and different models for decision-making, work schemes, and marketing, all geared at reconnecting urban consumers to the land.

**Action areas for the BMZ**

- Expand farmer exchange programmes (such as IYFEP)<sup>23</sup> between the Global South and Global North by initiating contact between CSAs in the Global North and potential partners in the Global South

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<sup>23</sup> Several farmer exchange programmes exist. The BMZ already supports the International Young Farmers' Exchange Program (*IYFEP*) that we consider a fast learning, well-integrated initiative therefore mentioning it here as a potential real starting point.



- Incorporate trainings and platforms for knowledge exchange on agroecological approaches in the exchange programmes

#### **Impact in the Global North**

- Joint learning with Global South farmers
- Promotion of agroecology among CSAs in the Global North

#### **Impact in the Global South**

- Increased awareness of global interconnectedness
- Expanded networks for the promotion of agroecology among farmers from the Global South

## **8.2 Way forward: Opportunities for shaping agroecology policy frameworks**

As agroecology is not only increasingly gaining momentum in international forums, including the bodies of the United Nations system and national policies of EU-member states, and on top of many national agendas, there is considerable urgency for German policymakers to build on the Bundestag resolution "Nachhaltige Entwicklungsziele erreichen – Potenziale aus der Agrarökologie anerkennen und unterstützen" of June 2019 (Deutscher Bundestag, 2019c) to further promote and strengthen agroecology as a framework for sustainable agri-food system transformation. Beyond the low-threshold measures identified above, we propose policy approaches that will help mobilise and guide key actors from national networks and German international cooperation. Our recommendations are aligned with the framework already set out by the CFS in May 2021 (CFS, 2021).

- 1) Address the low visibility of and patchy understanding about agroecology as a concept and a framework for action promoting sustainable agriculture and rural development among practitioners in Germany and the Global South*

Create a German platform for agroecology that serves as a database, knowledge hub, and networking centre that can create more visibility for agroecological actions and projects, provides more clarity about the approach, and creates incentives attracting new practitioners. A specific focus within the platform would be on North–South collaboration within an agroecological framework, promoting co-creation of knowledge, and joint learning. Different to many other international development initiatives, the platform would enable much more North-South collaboration at eye level, enabling knowledge and information exchanges in both

directions supported by a shared conceptual agroecology framework and terminology.

Agroecology Europe has already started to create an interactive map of agroecological projects within the EU. German ministries at the federal and state level could coordinate to establish a database of agroecological projects in Germany emphasising all FAO 10 Elements of Agroecology. Existing projects in the Global South can be identified easily using the funding purposes with the keyword "agroecology". A web-based portrayal of these projects is intended not only to increase their visibility, but to create a platform that makes it possible to stimulate South–North exchange of knowledge allowing practitioners in Europe to learn from the experiences of countries of the Global South.

- 2) *Continue collaborating with organic producer networks and knowledge platforms as partners in agroecology without diminishing existing organic farming benchmarks*

Knowledge exchange is to be promoted by building existing knowledge networks by drawing in cooperating actors from the Global North and the Global South who have not yet directly participated or collaborated in the network. For this purpose, we recommend collaboration with the BMEL and with national farmers organisations (The German Farmers' Association [DBV], Arbeitsgemeinschaft bäuerliche Landwirtschaft [ABL], and Bund Ökologische Lebensmittelwirtschaft [BÖLW]) and those responsible for the global project Knowledge Centre for Organic Agriculture in Africa (KCOA) (BMZ, Biovision Africa Trust, Sustainability Institute, Enda Pronat, FENAB & Agrecol Afrique, SEKEM), to promote existing platforms/programmes for co-learning and sharing of knowledge in the field of agroecology. Beyond that, we encourage that the ABL and BÖLW partner with the BMZ to collaboratively develop the establishment of a regional knowledge hub on organic farming in Germany/Global North that encompasses the experiences of the five African knowledge hubs. More emphasis on agroecological approaches must be embedded here as well as exchange formats and programmes with the others installed.

- 3) *Ensure collaborative efforts between organic producers, organic producer organisations, and agroecology stakeholders for establishing more clarity of concept and language*

The conceptual and linguistic demarcations between agroecology and organic farming are not yet well established, leading to misunderstandings and false dichotomies. To assure collaborative efforts and the sustained support of organic producers in the agroecology agenda, we recommend consulting with organic

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farmers associations (ABL, BÖLW, IFOAM), agroecological networks (Agroecology Europe, Via Campesina), and research institutions on how to clearly formulate in a generally accepted terminology the differences and similarities in the idea, approach, content, and vision of both agroecology and organic farming.

### *4) Highlight the transformative, multidimensional nature of agroecology as a driver for sustainable rural development*

The BMZ, through the State Secretary, can highlight the role of agroecology in sustainable rural development and the resulting lower externalities in the State Secretaries' Committee on Sustainable Development to raise awareness across departments and stakeholder groups. The same applies to the BMZ's representation in the Sustainability Forum. To emphasise the role of agroecology as a holistic sustainable approach, we consider it particularly useful to refer to the indicators of the German Sustainable Development Strategy and the principle that actions in Germany should not lead to the detriment of third parties.

### *5) Highlight agroecology as an action area that helps reduce or transform negative distance effects in the Global South into positive ones*

The institutional architecture of the German Sustainable Development Strategy provides an entry point to raise public awareness about agroecology and its contributions to reducing or avoiding the negative distance effects of social and economic activities, specifically those linked to conventional farming and the related agri-food system, in the Global North. Ongoing collaborative North–South research agendas connected to citizen action can further demonstrate this and results could be highlighted in respective forums and information channels.

### *6) Lower barriers to access for funding for local agroecology initiatives in rural areas*

People with novel ideas on developing their environment and landscape were found in each case study region; however, bringing their ideas rarely come to fruition since access to funding often exceeds either their knowledge or capacities. Therefore, consultation (in collaboration with the BMZ) is suggested with states, districts, and municipalities on how to provide lower-threshold access to those actors. Regional budgets administered by rural development offices in Bavaria are seen as such a structure. Those offices serve as the first point of contact. We propose to involve the Regional Hubs for Sustainability Strategies (RENN) as well.

### *7) Establish local practitioners' North–South partnerships for learning about agroecology transition pathways using the experience of Engagement Global*

We see potential in commissioning Engagement Global, as a lead actor in international exchange, with a programme that helps to establish and support North–South partnerships for joint learning and co-creation of knowledge in promoting agroecological practises and approaches through actor networks in the Global South to the Global North and vice versa. This could be modelled around the existing experience of municipal partnerships. Agroecology approaches are conceptualised here as public–private multi-stakeholder efforts in a region.

*8) Financial and policy support for collaborative North–South research partnerships promoting integrated agroecological landscape approaches*

Agroecology transition requires the support of and committed, collaborative actions from non-farm sectors and broad regional stakeholder networks beyond immediate agri-food systems. We, therefore, suggest developing an action-research funding scheme together with the Federal Ministry of Education and Research (BMBF) that aims to expand the agroecological landscapes pilot study initiated with the present project, integrating the element of negative externalities in the Global North and the Global South. It is recommended to relate this to the indicators of the German Sustainable Development Strategy and to assure that knowledge and expertise from the Global South is explicitly integrated through novel North–South research partnerships.

*9) Leverage consumer behaviour change through targeted regional campaigns reconnecting urban and rural spaces through agroecology*

Strategic programs and campaigns are required to strengthen direct ties between agricultural producers and processors, on the one hand, and consumers, on the other, for increased awareness and appreciation of the role of sustainable farming as the producer of wholesome food and the provider of ecosystem services. In turn, this strengthens rural areas through stimulating local demand through changes in consumption behaviour. Agroecology approaches, where a focus is placed on its principles of circular economy, culture, and food traditions and local knowledge, addresses these transformative changes.

Stronger regional agri-food system integration will not replace international food supply chains. A heightened awareness of the consequences of imported or unsustainably produced “food from nowhere” in distant places—the Global South—is also necessary. Actors in international cooperation play an important role in actively shaping these campaigns at the policy level, preferably in cooperation with local partners in the Global South, by referencing individual responsibilities for equity in global development and stimulating solution-oriented action in the Global North. Consumers, the largest group of actors in the food system, hold

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a great leveraging potential for sustainable transformation processes. Policy frameworks as outlined above are required to initiate and maintain change processes among all relevant stakeholders and to make equitable contributions by all concerned possible.

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## 10 Annexes

### Annex 1: Fields of action and key objectives of the ASSD



## Annex 2: Characterisation of the agroecological transformation

For every FAO Element of Agroecology, we have two to four indicators based on the FAO TAPE tool. The indicators are pooled and together rated on a scale from one to five depending on their relative performance to the specific goals set via political frameworks and regional planning strategies in the regions. Thereby, it is possible to describe the individual agroecological transformation pathways without running the risk of linear comparison of regions that are structurally different. In short, we rate every region to its own set goals and thus can only compare the pathway of agroecological transformation at different points in time. Results are depicted in the tables below.

1 = very low, 2 = low, 3 = medium, 4 = high, 5 = very high.

1. Diversity: The diversification of biological and adoptive activities in different parts of the agricultural environments. For example, diversity of grown or reared species on the farm or heterogeneous knowledge held by different actors in relation to agriculture.
  - Different crop varieties, animal species with different breeds, and tree species that are integrated into the landscape.
  - Diversity of productive activities and several services in the region.
2. Co-creation and sharing of knowledge: The creation and sharing of knowledge among actors such as producers, processors, marketers, and traders. This knowledge sharing includes traditional awareness of agricultural biodiversity and management, global science, and international trade in the local context.
  - Platforms for the horizontal creation and transfer of knowledge and good practices are well established and widespread used by producers, processors, marketers, traders, and public administrators respectively.
  - Access to agroecological knowledge is secured and producers, public administration, and citizens have a genuine interest in agroecology.
  - Interconnectedness and participation of producers, public administration, and community members in agroecology in networks and grassroots organisations.
3. Synergies: The promotion of cooperation and partnerships between actors at the farm and the landscape level and respective sectors, overcoming potential

conflicts and promoting close interactions by tackling joint outcomes of various agricultural and food system approaches.

- Integration of crop–livestock–aquaculture, as well as trees on the farm and regional scale.
  - Soil is covered with residues or cover crops (farm level only).
  - Connectivity between different parts of the mosaic of a diversified landscape, with diverse elements between areas used for agriculture.
4. Efficiency: The usage of input-intensive natural (eco-efficiency) or human resources in increasing the productivity of smart agricultural and food production system practices while reducing external inputs and increasing net income (and production) over time.
- Inputs are produced within the agroecosystem or exchanged across regions.
  - Management of soil fertility, pests, and diseases through the absence of synthetic fertilizers and chemical pesticides and drugs (farm level only)
5. Recycling: The circulation of agricultural and food system resources by closing nutrient and energy cycles through reduction of wastes, costs and environmental harm and increment of farm productions with little dependency on external resources.
- Recycling of biomass and nutrients within the region. No waste is sent outside the region.
  - Equipment for water harvesting and saving limits water use by households, farms, and businesses.
  - Share of renewable energy produced and used by households, farms, and businesses.
6. Resilience: The ability to absorb and handle disturbances while undergoing shock from farm and natural ecosystem change. For example, the resilience to adapt to environmental hazards like flood, pest and disease outbreak, or the economic setbacks affected by the corona virus outbreak.
- Stable overall economic situation as well as the capacity to recover from perturbations.

- Mechanisms to reduce vulnerability, such as high social cohesion and multiple support structures are present.
7. Human and Social Values: The paradigm to contribute to self-determined, autonomous rural development through processes characterized by inclusion and equity. Promoting an enabling environment that supports human and social values such as gender equity, justice, and inclusion for everyone.
- Gender equality in all areas of social life, especially with regards to decision-making, participation, leadership, income, and access to resources.
  - Young people see themselves living in the region and having working opportunities, as well as a range of cultural offers.
  - Various activities of locally based businesses are integrated in regional supply chains where workers have decent working conditions, access to capital and decision-making processes. People fulfilling different activities along the respective supply chain are acquainted to each other.
  - Animal welfare is ensured. They do not suffer from stress, hunger, thirst, pain, or diseases, and are slaughtered in a way to avoid unnecessary pain.
8. Culture and Food Traditions: The maintenance of a healthy diet, food and nutrition security while supporting human and social values, culture and food traditions.
- Awareness about healthy nutritional diets and support structures in that regard.
  - Local or traditional identity is felt and protected. Traditions and rituals are respected.
  - Management of seeds and breeds takes place on a regional basis meaning that few seeds come from the outside. Old breeds are fostered, also institutionally. Traditional knowledge is used for food preparation.
9. Responsible Governance: The development of effective and innovative policies, institutions and markets that support food producers, ecosystem services and the agricultural system. For example, equitable access to land and natural resources.

- Workers' empowerment meaning people who work on farms, in adjacent sectors or in public administration have the capacity and means to improve their livelihoods and develop their skills.
  - People are organised at work and in their free-time in organisations and associations that allow for cooperation and exchange.
  - Effective participation of citizens in the governance of land and resources is fostered.
10. Circular and Solidarity Economy: The reconnection of producers and consumers through a circular economy, shorter food circuit, and transitions of local market and economic development.
- Products and services are marketed regionally to contribute to a regional food system. Strategic connections to outside the region exist.
  - Operational networks and strong relationships between producers, public administration, and consumers exist as well as the integration of intermediaries from different sectors.

The below tables summarise the findings. These are reproduced in [Chapter 6](#).

<b>Agroecology Elements</b>	<b>1-5</b>	<b>Description for Barnim</b>
1. Diversity	3	Mixed crop-livestock system, crop rotation to maintain soil health also practiced in conventional farming. Limited tree cover interspaced with large fields of seasonal monoculture; forests and nature protection in separate areas.
2. Co-creation and sharing of knowledge	2	Not strong, at least not in terms of agroecology, although some significant collaborative ties between sectors exist where the university of Eberswalde plays a key role in co-creation of knowledge
3. Synergies	2	Some strategies towards intersectoral synergies, and some on-farm synergies linked to mixed farming system. Limited collaboration between farms, actors are not well connected amongst each other.
4. Efficiency	2	Low on conventional farms as a lot of inputs are used; high on organically farmed land where less inputs are used. Subsidy system leaves little room for gradual transition away from conventional farming.
5. Recycling	2	Medium on conventional farms with generally the use of manure compost, higher on organic farms. On some farms, when markets are over-saturated, grains are used for biogas production.
6. Resilience	2	Significant negative drivers of climate, water and soil not being responded to by clear strategic orientation and monocultures increasing this problem. Higher resilience on organic farms.
7. Human and Social Values	2	Somewhat paradoxical in Barnim; depleted, with historical shocks to society not yet recovered. Some farms are run by families; large enterprises employ few workers; weak sense of community.
8. Culture and Food Traditions	3	Rather weak but there is pioneering regional brands such as Brodowin and Lobetal. Some farmers are selling their food directly on the farm and people are buying it. There is also demand for organic products from Berlin. However, increasing awareness and demand for regional food is hampered by lack of regional transformation and value adding capacities.
9. Responsible Governance	2	In place but no strong stakeholder networks in Barnim and limited focus on agriculture as driver for rural development. Farmers are discontent with the transition phase from conventional to organic farming having higher costs but not a higher income.
10. Circular and Solidarity Economy	2	Very marginally visible, only on integrated processing and marketing structures of single actors and on CBA, there are an increasing number of regional markets and farmers shops in Barnim, however many products are sold on markets in Berlin.

Source: own data

<b>Table A2: Agroecological transformation in the Wendland</b>		
<b>Agroecology Elements</b>	<b>1-5</b>	<b>Description for the Wendland</b>
1. Diversity	2	Mixed crop-livestock system, crop rotation to maintain soil health also in conventional farming, important tree cover although interspaced with large fields, seasonal monoculture.
2. Co-creation and sharing of knowledge	3	Relatively strong with a good network between key actors in farming and significant collaborative ties between sectors
3. Synergies	2	On-farm synergies strong in organic farms; strong synergies between renewable energy and agriculture sectors despite competition for land; limited strategies direction for generating more synergies
4. Efficiency	2	Low on conventional farms; high on organically farmed land, food vs. fuel dilemma: pressure on land through use of maize for biogas production, therefore: high level of high-input monoculture and resulting water pollution
5. Recycling	2	Medium on conventional farms with generally the use of manure compost, but restricted to the farming sector
6. Resilience	2	Significant negative drivers of climate, water and soil not being responded to by clear strategic orientation
7. Human and Social Values	3	Driven by recent history for alternative lifestyles; relatively strong and characteristic for the region
8. Culture and Food Traditions	2	See above, culture of experimentation with some local innovation: laboratory for new, unconventional ideas; but limited specific local food traditions
9. Responsible Governance	3	Very important with alternative local citizen governance models practised in the Wendland
10. Circular and Solidarity Economy	3	Visible in a number of civil society initiatives, models of sharing agricultural machinery, local big players offer fair/solidary contracts with organic farms

Source: own data



<b>Table A3: Agroecological transformation in Upper Allgäu</b>		
<b>Agroecology Elements</b>	<b>1-5</b>	<b>Description for Upper Allgäu</b>
1. Diversity	4	Alpine dairying maintains very high levels of grassland biodiversity. Forests are restored to improve forest biodiversity.
2. Co-creation and sharing of knowledge	3	Relatively strong with a good network between key actors in farming and important collaborative ties between sectors, knowledge for the production of high-quality niche products jeopardised by standardised vocational content
3. Synergies	4	Mostly in alpine farming with forest, dairying adapted to mountain terrain, landscape management by farmers in interest for tourism sector. Additionally on field synergies through grassland dairy production.
4. Efficiency	4	High even in conventional farms; very high on organically farmed land; low external input use
5. Recycling	3	High on conventional and organic farms using manure compost; some examples in food transformation.
6. Resilience	4	Build up over generations of trial and error coping with mountain terrain challenges, rather small variety of agricultural products, sound adaption to topographic/natural environment
7. Human and Social Values	4	Social cohesion, community centred, value of nature and landscape safeguards and restoration actively maintained
8. Culture and Food Traditions	4	Visible and actively maintained; strong civil society engagement in integrated development processes, very high identification with the region, its landscape and local products, willingness to pay premium for local products
9. Responsible Governance	4	Very important, especially in the Bad Hindelang municipality, and good networks between formal and informal institutions, participatory decision-making process in integrated development strategies
10. Circular and Solidarity Economy	3	Visible in a number of civil society initiatives; actively pursued;

Source: own data

<b>Table A4: Agroecological transformation in Großes Walsertal</b>		
<b>Agroecology Elements</b>	<b>1-5</b>	<b>Description for Großes Walsertal</b>
1. Diversity	3	Alpine dairying is itself not very diverse but it maintains very high levels of grassland biodiversity. Forests are restored to improve forest biodiversity.
2. Co-creation and sharing of knowledge	4	Relatively strong with a good network between key actors in farming and important collaborative ties between sectors. However, there are no strong connections to actors outside of the region.
3. Synergies	3	There are synergies through dairy cooperatives and the connecting of actors related to the landscape and promoting of products through the biosphere reserve.
4. Efficiency	3	High even in conventional farms; very high on organically farmed land; low external input use.
5. Recycling	4	High on conventional and organic farms using manure compost, but restricted to the farming sector; waste is avoided on most farms.
6. Resilience	4	Build up over generations of trial and error coping with mountain terrain challenges.
7. Human and Social Values	4	Social cohesion, community centred, value of nature and landscape actively maintained. Strong identification with the region.
8. Culture and Food Traditions	4	Visible and actively maintained; willingness to pay premium for local products such as "Walserstolz".
9. Responsible Governance	4	Very important and good networks between formal and informal institutions, subsidies come from the state and farmers are also supported by the biosphere reserve.
10. Circular and Solidarity Economy	3	Visible in a number of civil society initiatives; actively pursued.

Source: own data

**Annex 3: List of interviewees**

<b>Table A5: List of interviewees</b>			
Date	Phase/region	Institution	Name(s)
20210719	Exploratory interview	International Young Farmers Exchange Programme (IYFEP) - Schorlemer Foundation	Johannes Leberer
20210720	Exploratory interview	Leuphana Lüneburg	Jens Newig
20210722	Exploratory interview	GIZ	Karl Moosmann
20210728	Exploratory interview	International Young Farmers Exchange Programme (IYFEP) - Andreas Hermes Akademie	Thorben Persch
20210728	Exploratory interview	IRI THESys, HU-Berlin	Jonas Nielsen
20210804	Exploratory interview	European Coordination Via Campesina (ECVC)	Mr Attila Szocs and Ms Olcay Bingol
20210806	Exploratory interview	Professor for Sustainable land-use and Climate Change at HU and Head of Research Department Climate Resilience at PIK	Prof. Dr. Hermann Lotze-Campen
20210816	Exploratory interview	Ecologic Institute	Irina Herb
20210820	Exploratory interview	Office MdB Kekeritz	Ines Thomssen
20210825	Barnim	Smart Fisch	Dr Ralf Fisch
20210825	Barnim	Volkshochschule Eberswalde	Ms Christina Schäfer
20210825	Barnim	Hübner Farm	Farmer Hübner
20210826	Barnim	Fairtrade-Town-Eberswalde	Claudia Ibisch
20210826	Barnim	Umweltamt (Environment office) Barnim	Baaske, Ronny Lüdke, Frank

Date	Phase/region	Institution	Name(s)
20210826	Barnim	Biorama Project	Sarah Phillips
20210827	Barnim	Lobetal bio	Tobias Böttcher
20210827	Barnim	Spörgelhof	Diego Marouese
20210830	Barnim	Slow Food Barnim	Mathias Schirmer
20210831	Barnim	Hochschule für Nachhaltige Entwicklung Eberswalde	Prof. Dr. Ralf Bloch
20210831	Barnim	Naturpark Barnim	Peter Gärnter
20210831	Barnim	Brodowin	Ludolf von Maltzan
20210901	Barnim	Dezernat Umwelt, Nachhaltige Entwicklung, und Bau	Holger Lampe
20210902	Barnim	Naturkost Globus	
20210902	Barnim	Palanca	August Yone
20210902	Barnim	Action Aggra	Ms. Leone Steinherr
20210903	Barnim	Edith Stöber Organic Farm	Edith Stöber
20210904	Barnim	Barnimer Energy Gesellschaft mbH	Steven Lindner
20210904	Barnim	University for Sustainable Development-Eberswalde (HNE)	Prof. Dr. Martin Guericke
20210906	Barnim	Town Forst	Thomas Schulze
20210906	Barnim	LAG e.V. Barnim	Ulrike Schubert, Thorsten Jeran
20210907	Barnim	Biosphärenreservat Schorfheide	Uwe Graumann
20210902	Barnim	Tourismusverein Naturpark Barnim	Stephan Durant
20210909	Barnim	HNF-Bikes	Mr. Micheal Hecken
20210824	Wendland	Mützen 7 e.G.	Andrea and Nicolaus

Date	Phase/region	Institution	Name(s)
			Ilgner
20210824	Wendland	Kurve Wustrow e.V.	Nele Simon
20210824	Wendland	Bauck GmbH - Rosche Mühle	Stephanie Sichler, Hannes Öhler
20210825	Wendland	Landwende e.V.	Franziska Müller, Jörg Knaak
20210825	Wendland	Regional consultant	Daniela Weinand
20210826	Wendland	Regional planning office	Nicole Servatius
20210826	Wendland	Wendlandleben	Sigrun Kreuser
20210826	Wendland	Biohof Tietke	Monika Tietke
20210826	Wendland	Arbeitsgemeinschaft Natur- und Umweltbildung e.V.	Albert and H. Doninger
20210827	Wendland	Fungi Futuro	Roman Seifert
20210830	Wendland	Hitzacker Dorf	Elke and Evelyn
20210831	Wendland	Voluntary service permaculture	Sophie Richter
20210831	Wendland	Kulturland	Dr. Titus Bahner
20210901	Wendland	Michaelhof	Claudia Brady and Janosch Toth
20210901	Wendland	Lower Saxony Chamber of Agriculture	Kai Clauswitz
20210901	Wendland	EU Ruralization	Hans-Albrecht Wiehler, Dr. Titus Bahner
20210901	Wendland	Pflanzgarten Hitzacker	Hans-Albrecht Wiehler
20210901	Wendland	Farmer	Gustav Ihde
20210902	Wendland	Regional consultant and project manager	Hannes Gerlof
20210902	Wendland	Gärtnerei Marlin	Robert and Judith

Date	Phase/region	Institution	Name(s)
20210902	Wendland	WendlandLeben	Sigrun Kreuser
20210903	Wendland	Voelkel Juice	Boris Voelkel (CEO)
20210906	Wendland	Elbe-Wendland	Edna Heller
20210906	Wendland	Biogasanlage Seelwig	Christian Lühmann
20210906	Wendland	Competence network organic farming Lower Saxony	Ulrich Ebert
20210907	Wendland	Archezentrum Amt Neuhaus	Siegrun Hogelücht (in Vertretung von Holger Belz)
20210907	Wendland	Bio im Wendland	Martha Quis
20210928	Wendland	Biosphere Reserve Elbtalaue	Franz Höchtel
2021091	Vorarlberg	House Glatthorn	Peter Martin
20210910	Vorarlberg	Landesfischereizentrum Vorarlberg	Nicolas Schotzko
20210913	Vorarlberg	Biosphere park house tour	Josef Türtscher
20210913	Vorarlberg	Biosphere park management	Christine Klenovec
20210913	Vorarlberg	Marul Alpine Dairy	Primin Jenny
20210914	Vorarlberg	District Governor Bludenz	Ing. Dr. Harald Dreher
20210915	Vorarlberg	Agricultural chamber Austria	Josef Moosbrugger
20210915	Vorarlberg	Stand Montafon	Bernhard Maier
20210915	Vorarlberg	Energy Management Großes Walsertal	Andreas Bertel
20210916	Vorarlberg	Biosphere park - regional development	Josef Türtscher
20210917	Vorarlberg	Regio im Walgau	Walter Rauch
20210916	Vorarlberg	Faschina biomass energy plant for heating	Andreas Burtscher

Date	Phase/region	Institution	Name(s)
20210917	Vorarlberg	Dairy Farmer and Vice Mayor of Fontanella	Stefan Martin
20210917	Vorarlberg	Dairy Farmer Kurt	Kurt Stark
20210919	Vorarlberg	Organic vegetable farmer	David Rein
20210920	Vorarlberg	Alchemilla herbal woman and beekeeper	Monika Hartmann
20210920	Vorarlberg	Dairy Farmer	Bernd Pfister
20210920	Vorarlberg	State Council	Christian Gantner
20210921	Vorarlberg	REGIO Großes Walsertal	Ingo Türtscher
20210921	Vorarlberg	Großes Walsertal Tourism	Kerstin Biedermann-Smith
20210921	Vorarlberg	Südwind e.V.	Therea Werhan
20210921	Vorarlberg	Bergholz / Mountainwood cooperative	Gottlieb Kaufmann
20210923	Vorarlberg	Office for Citizen Participation	Judith Lutz, Annemarie Felder
20210923	Vorarlberg	Unit for Agriculture and Rural Areas; State of Vorarlberg	DI Wolfgang Burtscher, DI Ulrich Ströhle, DI Walter Vögel, Ing. Dietmar Mathis
20210923	Vorarlberg	Energy Institute Vorarlberg - Climate and Energy Model Region Vorderwald	Monika Forster
20210924	Vorarlberg	Regional Development Vorarlberg	Peter Steuerer
20210929	Vorarlberg	Unit for Environmental and Climate Protection; State of Vorarlberg	Max Albrecht
20210909	Oberallgäu	Hoimat Genusskäserei Eschach	Philipp Haggenmüller and Lisa Gräsel
20210910	Oberallgäu	Tourism Bad Hindelang	Max Hillmeier
20210910	Oberallgäu	Farm	Joachim Huber (and

<b>Table A5: List of interviewees</b>			
Date	Phase/region	Institution	Name(s)
			Wolfgang Huber)
20210913	Oberallgäu	Ökomodell Region	Sarah Diem
20210913	Oberallgäu	Municipality of Bad Hindelang	Dr Sabina Rödel (Mayor)
20210915	Oberallgäu	Fair Trade / Bio Regio Fair	Karin Agerer
20210916	Oberallgäu	100% Klimaschutz Oberallgäu	Thorsten Metke
20210917	Oberallgäu	LVÖL	Dr. Cordula Rutz
20210920	Oberallgäu	Bergbauernmuseum	
20210920	Oberallgäu	IHK Swabia	Björn Athmer (Director)
20210921	Oberallgäu	B90/Grüne Regionalbüro	Thomas Gehring MdL
20210921	Oberallgäu	Bayrische Staatsforsten	Jann Oetting
20210921	Oberallgäu	Biolandhof Agerer	Fam. Agerer
20210922	Oberallgäu	Gemeinde Bad Hindelang	Reinhard Pargant
20210922	Oberallgäu	Allgäu Locals	Leonie Stuken
20210923	Oberallgäu	ALE Schwaben	Christian Kreye
20210923	Oberallgäu	World Shop Sonthofen	Christine Arnold
20210924	Oberallgäu	BUND	
20211015	Brussels	Agroecology Europe	Paola Migliorini
20211018	Brussels	EC INTPA	Guy Faure; Christophe Larose
20211018	Brussels	EC JRC	Maria Luisa Paracchini
20211019	Brussels	COLEAPC	Jeremy Knops
20211019	Brussels	DG Agri	Wolfgang Burtscher



<b>Table A5: List of interviewees</b>			
Date	Phase/region	Institution	Name(s)
20211019	Brussels	EIP-AGRI	Sergiu Didcescu
20211020	Brussels		Norbert Lins
20211020	Exploratory in- terview	FDP speaker AwZ, BT19	Dr. Christoph Hoffmann
20211020	Brussels	IFOAM / organics Europe	Eric Gall
20211021	Brussels	ENRD	Flavio Conti
20211025	Brussels	ELARD	Marion Eckardt

## Annex 4: FAO 10 Elements of Agroecology cards



Figure A1: FAO 10 Elements of Agroecology cards, example 1

Picture: C. Grasi

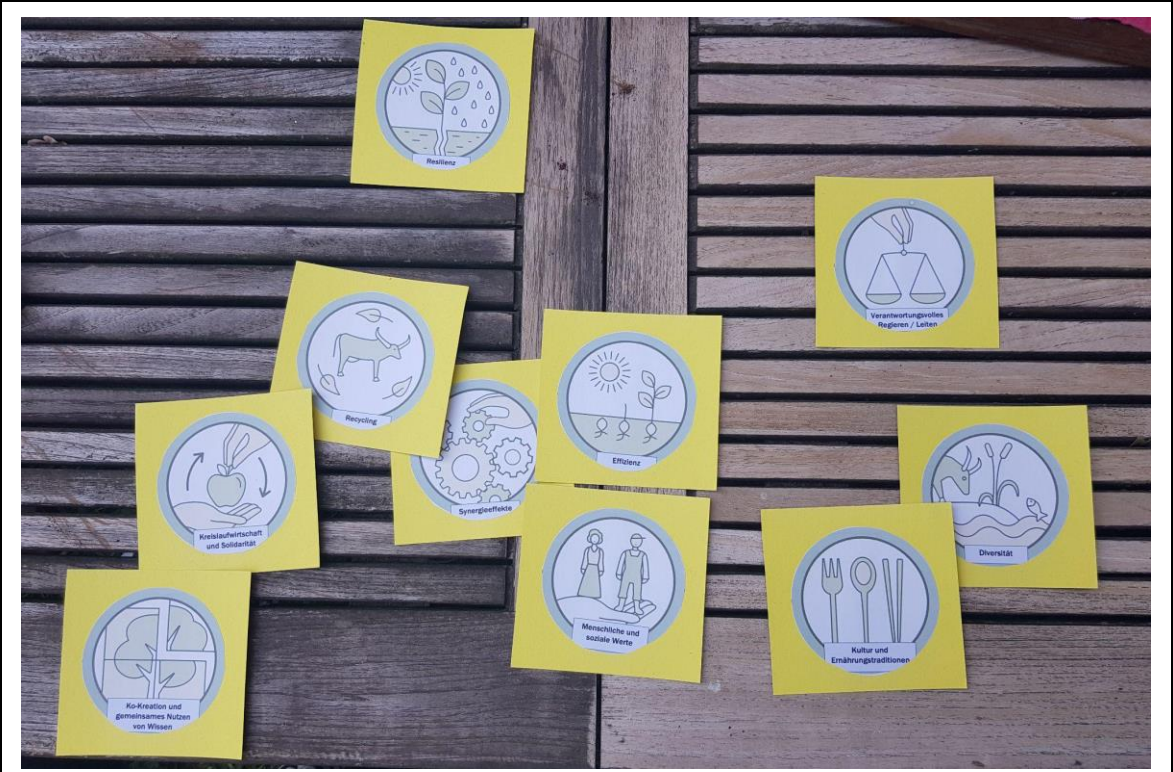


Figure A2: FAO 10 Elements of Agroecology cards, example 2

Picture: C. Grasi

## 11 List of SLE publications since 2011

All studies are available for download at [www.sle-berlin.de](http://www.sle-berlin.de).

- Mirjam Steglich**, Thomas Beutler, Segbedji Geraldo Favi, Carolin Grasi, Deborah Kallee, Omotunde Idris Kasali, Saymore Ngonidzashe Kativu, Caroline Kawira, Amina Aden Maalim, Nimah F. Osho-Abdulgafar, Jonas Schaaf: *Agrarökologie und Ländliche Entwicklung, Handeln im Globalen Norden – mit dem Globalen Süden*. Berlin, 2022 S290 D
- Mirjam Steglich**, Thomas Beutler, Segbedji Geraldo Favi, Carolin Grasi, Deborah Kallee, Omotunde Idris Kasali, Saymore Ngonidzashe Kativu, Caroline Kawira, Amina Aden Maalim, Nimah F. Osho-Abdulgafar, Jonas Schaaf: *Agroecology and Rural Development, Acting in the Global North – with the Global South*. Berlin, 2022 S290 E
- Mohamed Mejed Heni**, Dima Faour-Klingbeil, Gabriela Degen, Lena Gomer, Sari-Luisa Jung, Alexander Kückes, Ruth Meißner: *Eat safe, eat well! Strengthening institutional capacities and the resilience of the food safety system in Tunisia*. Berlin, 2022 S289 E
- Mohamed Mejed Heni**, Dima Faour-Klingbeil, Gabriela Degen, Lena Gomer, Sari-Luisa Jung, Alexander Kückes, Ruth Meißner: *Mangeons sûr, mangeons bien ! Renforcement des capacités institutionnelles et de la résilience du système de sécurité sanitaire des aliments en Tunisie*. Berlin, 2022 S289 F
- Klaus Droppelmann**, Ngosa Bangwe, Joel Hähnle, Rickie Klingler, Cornelius Krüger, Johanna Kückes, Simushi Liswaniso, Leeroy Mapulanga, Cleopatra Kawanga, Namakando Namakando, Annika Reimann: *From method to action - Designing a participatory hotspot analysis to assess sustainability in Zambia's groundnut and dairy value chains*. Berlin, 2022 S288
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- Dorothea Kulla**, Priscilia F. Amoussou, Ambroise Yawédeou Dognon, Tankpinou Rémy Gbèdé, Inès Thècle Glele, Maximilian Graser, Kouété Paul Jimmy, Sakiratou Karimou, Agoussoussi Thierry Kinkpet, Kai A. Klause, Gabriela Maldonado Castro, Esther Minguemadje Marner: *The impact of chicken imports on the Beninese poultry industry: Analyzing trade issues, consumer preferences and production systems to strengthening the competitiveness of the national sector*. Berlin, 2022 S286
- Dorothea Kulla**, Priscilia F. Amoussou, Ambroise Yawédeou Dognon, Tankpinou Rémy Gbèdé, Inès Thècle Glele, Maximilian Graser, Kouété Paul Jimmy, Sakiratou Karimou, Agoussoussi Thierry Kinkpet, Kai A. Klause, Gabriela Maldonado Castro, Esther Minguemadje Marner : *L'impact des importations de poulet sur la filière avicole béninoise : Analyse des questions commerciales, des préférences de consommation et des systèmes de production pour renforcer la compétitivité du secteur national*. Berlin, 2022 S286 F
- Nicole Paganini**, Hilda Adams, Khutala Bokolo, Nomonde Buthelezi, Johanna Hansmann, Washiela Isaacs, Nomonde Kweza, Alexander Mewes, Hazel Nyaba, Vuyani Qamata, Vincent Reich, Moritz Reigl, Lara Sander, Haidee Swanby: *Agency in South Africa's food systems: A food justice perspective of food security in the Cape Flats and St. Helena Bay during the COVID-19 pandemic*. Berlin, 2021 S285
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