

# Comparing set of principles on Agroecology

Elements of agroecology	Historical principles	Key characteristics of diversified agroecological farming	Principles and dimensions of agroecology	Dimensions of sustainable food system
FAO <sup>[1]</sup>	Nicholls, Altieri et al. 2016 <sup>[2]</sup>	IPES-Food <sup>[3]</sup>	CIDSE 2018 <sup>[4]</sup>	Beacons of Hope <sup>[5]</sup>
<b>Efficiency</b>	Minimize losses of energy, water, nutrients and genetic resources by enhancing conservation and regeneration of soil and water resources and agrobiodiversity	Low external inputs	<b>Environmental dimension:</b> AE eliminates the use of and dependency on external synthetic inputs by enabling farmers to control pests, weeds and improve fertility through ecological management.	<b>Nature/ecological dimension:</b> resource efficiency, reduce external inputs
<b>Recycling</b>	Enhance the recycling of biomass, with a view to optimizing organic matter decomposition and nutrient cycling over time	Recycling of waste within full nutrient cycling	<b>Environmental dimension:</b> AE optimises and closes resource loops (nutrients, biomass) by recycling existing nutrients and biomass in farming and food systems	<b>Nature/ecological dimension:</b> sustainable water use, reduce waste
<b>Diversity</b>	Diversify species and genetic resources in the agroecosystem over time and space at the field and landscape level	<p>Temporal and spatial diversification at various scales, including plot, farm and landscape</p> <p>Use of wide range of species and less uniform, locally adapted varieties/breeds, based on multiple uses, cultural preferences, taste, productivity and other criteria.</p> <p>Multiple sources of production, income and livelihood</p>	<p><b>Environmental dimension:</b> AE builds and conserves life in the soil to provide favourable conditions for plant growth</p> <p><b>Environmental dimension:</b> AE optimises and maintains biodiversity above and below ground (a wide range of species and varieties, genetic resources, locally adapted varieties/breeds, etc.) over time and space</p> <p><b>Economic dimension:</b> AE promotes diversification of on-farm incomes giving farmers greater financial independence, increases resilience by multiplying sources of production and livelihood, promoting independence from external inputs and reducing crop failure through its diversified system</p>	<b>Nature/ecological dimension:</b> agrobiodiversity, protect forest and trees, agroforestry

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<b>Synergies</b>	Provide the most favorable soil conditions for plant growth, particularly by managing organic matter and by enhancing soil biological activity Enhance beneficial biological interactions and synergies among the components of agrobiodiversity, thereby promoting key ecological processes and services	Natural synergies emphasized and production types integrated (e.g. mixed croplivestocktree farming systems and landscapes) Maximization of multiple outputs	<b>Environmental dimension:</b> AE enhances positive interaction, synergy, integration, and complementarities between the elements of agroecosystems (plants, animals, trees, soil, water, etc.) and food systems (water, renewable energy, and the connections of relocalised food chains).	<b>Nature/ecological dimension:</b> healthy fertile soils, delivery of ecosystem services, reduce GHG emissions <b>Production dimension:</b> multiple forms of food production
<b>Resilience</b>	Strengthen the “immune system” of agricultural systems through enhancement of functional biodiversity – natural enemies, antagonists, etc., by creating appropriate habitats		<b>Environmental dimension:</b> AE supports climate adaptation and resilience while contributing to greenhouse gas emission mitigation (reduction and sequestration) through lower use of fossil fuels and higher carbon sequestration in soils.	<b>Adaptive/resilience capacity dimension:</b> local adaptation, adaptive capacity, CC resilience, resilience to economic shocks, CO2 sequestration, resilience against pest and disease
<b>CoCreation and Sharing of Knowledge</b>			<b>Socio-cultural dimension:</b> AE is knowledge-intensive and promotes horizontal (farmer-to-farmer) contacts for sharing of knowledge, skills, and innovations, together with alliances giving equal weight to farmer and researcher	<b>Human/creative dimension:</b> education, innovation, creativity <b>Social/equity dimension:</b> Access extension services
<b>Culture and Food Traditions</b>		Multiple uses (including traditional uses), cultural preferences, taste, productivity and other criteria.	<b>Socio-cultural dimension:</b> AE is rooted in the culture, identity, tradition, innovation and knowledge of local communities <b>Socio-cultural dimension:</b> AE contributes to healthy, diversified, seasonally and culturally appropriate diets.	<b>Cultural dimension:</b> genetic resources, varieties, food specialities, traditions, customs, celebrate cultural aspects <b>Human/Creative dimension:</b> sustainable consumption patterns

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			<b>Socio-cultural dimension:</b> AE supports peoples and communities in maintaining their spiritual and material relationship with their land and environment.	<b>Production dimension:</b> sensitizes for local and seasonal demand
<b>Circular and Solidarity Economy</b>		Circular economy approaches	<b>Socio-cultural dimension:</b> AE does not necessarily require expensive external certification as it often relies on producer-consumer relations and transactions based on trust, promoting alternatives to certification such as Participatory Guarantee System and Community Supported Agriculture	<b>Financial/production dimension:</b> direct link between farmers and consumers, increase farm profitability and yield, regional value generation and access to financial resources
		Production of a wide range of less homogeneous products often destined for short value chain	<b>Economic dimension:</b> AE promotes fair, short distribution networks rather than linear distribution chains and builds a transparent network of relationships between producers and consumers.	<b>Social/Equity dimension:</b> group, associations, trade unions, marketing, commercialization organization
			<b>Economic dimension:</b> AE primarily helps provide livelihoods for peasant families and contributes to making local markets, economies and employment more robust.	
			<b>Economic dimension:</b> AE harnesses the power of local markets by enabling food producers to sell their produce at fair prices and respond actively to local market demand.	
			<b>Economic dimension:</b> AE is built on a vision of a social and solidarity economy	

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<b>Human and Social Value</b>		More labor intensive systems.	<b>Socio-cultural dimension:</b> AE creates opportunities for and promotion of solidarity and discussion between and among culturally diverse peoples (e.g. different ethnic groups that share the same values yet have different practices) and between rural and urban populations.	<b>Human/creative dimension:</b> food security, healthy and nutritious food, labour opportunities,
			<b>Socio-cultural dimension:</b> AE respects diversity between people in terms of gender, race, sexual orientation and religion, creates opportunities for young people and women and encourages women's leadership and gender equality	<b>Social/equity dimension:</b> building of trust, collaborative, celebrational processes, life promoting
			<b>Economic dimension:</b> AE reduces dependence on aid and increases community autonomy by encouraging sustainable livelihoods and dignity	
<b>Responsible Governance</b>			<b>Political dimension:</b> AE prioritises the needs and interests of smallscale food producers who supply the majority of the world's food and it deemphasizes the interests of large industrial food and agricultural systems.	<b>Political dimension:</b> sustainable policies, food democracy, multistakeholder dialogue, supports evidencebased policymaking, sensitize political food chain actors
			<b>Political dimension:</b> AE puts control of seed, biodiversity, land and territories, water, knowledge and the commons into the hands of the people who are part of the food system and so achieves betterintegrated resource management.	<b>Social/equity dimension:</b> land tenure system

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			<p><b>Political dimension:</b> AE can change power relationships by encouraging greater participation of food producers and consumers in decisionmaking on food systems and offers new governance structures.</p>	
			<p><b>Political dimension:</b> AE requires a set of supportive, complementary public policies, supportive policymakers and institutions, and public investment to achieve its full potential.</p>	
			<p><b>Political dimension:</b> AE encourages forms of social organisation needed for decentralised governance and local adaptive management of food and agricultural systems. It also incentivizes the selforganisation and collective management of groups and networks at different levels, from local to global (farmers organisations, consumers, research organisations, academic institutions, etc).</p>	

[1] FAO 2018 “10 Elements of Agroecology guiding the transition to sustainable food and agricultural systems” <http://www.fao.org/3/i9037EN/i9037en.pdf>

[2] Nicholls, C. I., Altieri, M. A., Vazquez, L. 2016 “Agroecology: principles for the conversion and redesign of farming systems”. Journal of Ecosystem and Ecography 5, 5. <https://www.omicsonline.org/openaccess/agroecologyprinciplesfortheconversionandredesignoffarmingsystems21577625S5010.pdf>

[3] IPESFood 2016 “From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems”.

[4] CIDSE 2018 “The Principles of Agroecology Towards just, resilient and sustainable food systems” <https://agroecologyprinciple.atavist.com/theprinciplesofagroecology>

[5] GAFF 2018 “Beacons of Hope A Sustainability Transitions Framework for Sustainable Food Systems”. In preparation