



JANUARY 2017

# AGRO-ECOLOGY

THE NECESSARY AGRICULTURAL TRANSITION TOWARDS  
NUTRITION SECURITY FOR ALL

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POSITION PAPER



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# SUMMARY OF THE POSITION PAPER

- The conventional agricultural model, although the most dominant, is increasingly questioned by several publications that draw the international community's attention to its indirect, health, social and environmental consequences and to its negative impacts on global food security and nutrition.
- Agro-ecology contributes to the preservation of the environment and natural resources through the provision of a number of ecosystem services.
- Agro-ecology represents a major lever of dynamic development for rural territories and enhances social cohesion by reducing social inequalities.
- Action Against Hunger considers agro-ecology as the best agricultural approach to achieve the food security, particularly for the most vulnerable populations. Agro-ecology indeed represents a credible alternative to best contribute to nutrition security. Agro-ecological practices allow yield increases, often greater than conventional farming, and therefore provide alternative and local solutions to food insecurity issues.
- Contrary to the mono-cultural systems, agro-ecology promotes farm crop diversification, which can help to secure a healthier and more balanced diets for smallholder producers. Agro-ecology addresses the issues of hidden hunger and micro-nutrient deficiencies.
- Action Against Hunger promotes agro-ecology for smallholder farmers because agro-ecology allows them to become more autonomous and self-sufficient in terms of agricultural inputs.
- Action Against Hunger also acknowledges some of the potential limits of agro-ecological practices in terms of health and nutrition impacts on farmers. Action Against Hunger will promote an agro-ecological approach that aims to maximize the positive impacts of agriculture while minimizing the negative ones.
- For agro-ecology to have the necessary space to develop, Action Against Hunger calls for it to be promoted through advocacy based on evidence and arguments which emphasize its value and potential. This advocacy endeavor aims to influence public policy decision-makers and donors, so that family farming and agro-ecology are put back at the heart of national food and nutritional security strategies and policies.



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# INTRODUCTION

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Action Against Hunger mandate is to fight against hunger by focusing its efforts on undernutrition. Under-nutrition results from interactions between various and complex factors. Food insecurity combined with inappropriate care practices and an unsanitary and inadequate environment (limited access to health services, water and sanitation) are the main underlying causes of undernutrition. As these causes usually relate to one or more of the Action Against Hunger technical sectors (nutrition & health, food security & livelihoods, mental health & care practices, water, sanitation and hygiene), Action Against Hunger promotes and uses a multidisciplinary approach, including disaster-risk management, to prevent and treat undernutrition. One of these approaches is through the development and implementation of nutrition-sensitive agricultural programs.

Today, one of the major challenges for agriculture is its capacity to ensure sustainable food and nutrition security for the world's growing and urbanizing population. A recent FAO study estimates that about 795 million people are still suffering from hunger in the world (FAO, IFAD, and WFP, 2015)<sup>1</sup>. In addition to hunger, there is also the burden of undernutrition: globally, in 2015, 159 million children under age five were estimated to be stunted and 50 million under five children were wasted; 26% of children in the world show growth failure, and 2 billion people suffer from micronutrient deficiencies. Moreover, impacts of climate change amplify the already existing threats to food and nutrition security.

Currently, the world agriculture is at a "crossroads" of two models, and the farming systems either belong to one or another, or are located in between, mixing techniques and approaches (see appendix 2). On one side, there is the industrial/conventional farming model, relentlessly pursued since the Second World War. It focuses on the intensive use of agro-chemical products and inputs, including the use of hybrid and/or transgenic seeds based on genetically modified organisms. This model is generally characterized by a massive demand of private investments, technology promotion and highly competitive markets. The champions of this model advocate that this is the best model to solve the problem of food insecurity and undernutrition in the world. Although the most dominant, it is increasingly questioned by several publications. They draw the international community's attention to its indirect, health, social and environmental consequences and to its negative impacts on global food security and nutrition (Treyer, 2011<sup>2</sup>; IAASTD, 2009<sup>3</sup>).

On the other side, the agro-ecology model favors a territorial approach based on the development and appreciation of natural resources, on the investments in favor of smallholder farming, building on existing indigenous knowledge and making the most of local capacities. This model promotes the sustainable intensification of the agriculture production, through various set of techniques and practices, such as conservation agriculture, agro-forestry, and organic farming among others, to be adopted and adapted according to specific contexts. The performance of the agro-ecology model already appears quite interesting: it reaches good yielding, it has positive impacts on the food diversity and reduction of undernutrition and it preserves environmental assets. This model appears particularly relevant to small-scale farmers and most food insecure food producers, particularly in regions where household food security originates primarily from their own production. Moreover, agroecology still has some unexplored but promising potentials as it has not benefited yet from substantial public investments and research programs.

Consequently, there is a need for a radical shift. Conventional farming should be fundamentally questioned and agroecology widely promoted. Action Against Hunger has recently been engaged in supporting agro-ecology and will definitely reinforce further this position through its advocacy and field interventions. This paper lays out the motives and support for the promotion of agroecology.

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1 - FAO, IFAD, and WFP, 2015. The State of Food Insecurity in the World

2 - Treyer, S., 2011. Enjeux alimentaires: quels défis pour l'agronomie ? Agronomie, Volume 1, Décembre 2011

3 - IAASTD, 2009. Synthesis report: Agriculture at a Crossroads. Assessment of Agricultural Knowledge, Science and Technology for Development

# CONCEPTS, DEFINITION AND PRINCIPLES OF AGRO-ECOLOGY<sup>456</sup>

Agro-ecology is an agricultural approach that seeks ways to enhance agricultural systems by mimicking natural processes, thus creating beneficial biological interactions and synergies among the components of the ecosystem. An ecosystem is a dynamic complex of plants, animals, microbes, and physical environmental features that interact with one another as a functional unit (Millennium Ecosystem Assessment, 2005)<sup>4</sup>. In addition to being a scientific discipline and a set of practices, agro-ecology also includes social, environmental, economic and political dimensions (Levard and Apollin, 2013<sup>5</sup>; OXFAM, 2014<sup>6</sup>).

Agro-ecology is based on the following common principles (Berton et al., 2013<sup>7</sup>; Altieri et al., 2012<sup>8</sup>; Wijeratna, 2012<sup>9</sup>):

- Recycling biomass and management of soil fertility through the optimization of organic matter;
- Minimizing losses of natural resources (energy, water, air, biodiversity);
- Enhancing biological and genetic diversification within the agro-ecosystem in time and space;
- Enhancing beneficial biological interactions and synergies between the components of agrobiodiversity;
- Protecting agricultural systems and conducting pest management (diseases, insects, and weeds) through the enhancement of functional biodiversity and of the agro-ecosystem « immunity »;
- Optimization of the human and social resources in terms of production of knowledge and capacities of innovation and adaptation.

All of these agro-ecological principles have a common objective: supply the foundations of an environmentally friendly, economically successful and socially acceptable sustainable food and nutrition security.

## ACTION AGAINST HUNGER AGRICULTURAL INTERVENTIONS: CURRENT SITUATION AND AGRO-ECOLOGICAL PERSPECTIVES

Most often, Action Against Hunger operates in countries where agriculture is the primary source of incomes and labor. Usually, Action Against Hunger's agricultural interventions include the rehabilitation and protection of crop and livestock production factors. They include the provision of technical expertise, the distribution of consumables (seeds, planting materials, fertilizers, animal feeding, etc.), and small agricultural equipment (agricultural tools, protection clothes, improved storage, small-scale irrigation materials, processing materials, beehives, etc.), the implementation of livestock restocking and destocking (sheep, goat, guinea pigs, etc.), the support to the management of pastoral water points and veterinary interventions. The list is not exhaustive and interventions really depend upon the contexts and local needs. Access to markets and the inclusion of the small-scale farmers into the local value-chains also appear the way forward.

Action Against Hunger agricultural interventions place communities at the heart of the decision-making process. They help communities become more autonomous and self-sufficient in terms of food and nutrition security in emergency situations as well as in the long term.

The Action Against Hunger Strategy for Agricultural Interventions (ACF, 2014<sup>b</sup>)<sup>10</sup> aims to increase not only the resilience of populations to food crises but also to prevent undernutrition during and beyond emergency interventions. This strategy has set the following four strategic goals:

- 1 Ensure agriculture rehabilitation after acute crises;
- 2 Increase the resilience of small producers and agro-sylvo-pastoral systems;
- 3 Allow access to a diversified diet;
- 4 Develop advocacy in favor of family farming.

4 - Berton, S., Billaz, R., Burger, P., Lebreton, A., 2013. Agroécologie, une transition vers des modes de vie et de développement viables. Paroles d'acteurs

5 - Altieri, M.A., 2012. It is possible to feed the world by scaling up agroecology<sup>9</sup>. Ecumenical Advocacy Alliance

6 - Wijeratna, A., 2012. Fed Up: Now's the time to invest in agroecology, ActionAid

7 - ACF, 2014b. ACF strategy for agricultural interventions

8 - Altieri, M.A., 2012. It is possible to feed the world by scaling up agroecology<sup>9</sup>. Ecumenical Advocacy Alliance

9 - Wijeratna, A., 2012. Fed Up: Now's the time to invest in agroecology, ActionAid

10 - ACF, 2014b. ACF strategy for agricultural interventions

# WHY DOES ACTION AGAINST HUNGER PROMOTE AGRO-ECOLOGY?

Action Against Hunger supports agro-ecology because Action Against Hunger considers agro-ecology as the best agricultural approach to achieve food and nutrition security at household level, particularly for the most vulnerable populations. In addition, agro-ecology has the potential to meet the challenges of feeding the growing and urbanized world population. Agro-ecology indeed represents a credible alternative to best contribute to nutrition security.



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## AGRO-ECOLOGY AND FOOD SECURITY

A number of publications (UNCTAD<sup>11</sup>, 2013; Pretty and Hine, 2009<sup>12</sup>; Pretty, 2006<sup>13</sup>) highlight the potential role of agro-ecology as a viable alternative to the achievement of the four dimensions of food security. For example, according to the study conducted by Pretty (Pretty, 2006)<sup>14</sup> on 286 projects in 57 developing countries, agro-ecological practices allow yield increases (up to 79% on the average), often greater than conventional farming, and therefore provide alternative and local solutions to food insecurity and allow communities to become more autonomous and self-sufficient in terms of food security, particularly in regions where household food security relies primarily on their own production.

## AGRO-ECOLOGY AND NUTRITION

The strong specialization put forward by conventional agriculture led to the development of mono-cultural systems which allowed yield increase of cereal crops, rich in carbohydrates, but poor in essential micro-nutrients, needed for better nutrition. Contrary to the mono-cultural systems, agro-ecology promotes farm crop diversification, which can help to secure a healthier and more balanced diet for smallholder producers, and eventually positively impact the nutritional status of all family members including children<sup>14</sup>. Agro-ecology addresses the issues of hidden hunger and micro-nutrient deficiencies (Mayer, 2015)<sup>15</sup>,

11 - UNCTAD, 2013. Wake up before it is too late: Make agriculture truly sustainable now for food security in a changing climate

12 - Pretty J, and Hine R (2009). The promising spread of sustainable agriculture in Asia. Nat Res Forum 24: 107-121

13 - Pretty J., 2006. Agroecological approaches to agricultural development. World Bank, Washington, DC

14 - Rachel Bezner Kerr, Peter R. Berti and Lizzie Shumba (2010). Effects of a participatory agriculture and nutrition education project on a child growth in Northern Malawi

15 - Mayer, A. M., 2015. Potential for nutrition-sensitive conservation agriculture in Zambia

particularly in regions where food consumption and the nutritional status of households is primarily driven by their own production. Conventional agriculture often puts the health status of the farmers at risk, whenever handling toxic and chemical products. For local consumers, production based on agro-ecology provides safe, nutritious and locally available foods produced with less or without any chemical inputs.

However, the implementation of some of the agro-ecological practices can be labor intensive and may create high demands for energy that farmers cannot meet due to their limited access to nutritious food. Generally, smallholder farmers are very hard working people and their agricultural activities can affect the time they allocate to child care. This is particularly important for women farmers, who are the main influencers of nutrition status in the household.

Action Against Hunger promotes an agro-ecological approach that aims to maximize the positive impacts of agriculture while minimizing the negative ones (for example reducing men and women workload, reducing farmers' health risk as related to their exposure to toxins and food borne and zoonotic diseases, etc.), observing the technical guidance described in the Action Against Hunger document *Maximizing the Nutritional Impact of Food Security and Livelihoods Interventions*<sup>16</sup>. More generally, the impact on nutrition will come through multi-sectoral approaches and interventions which go beyond mere agricultural production.

## AGRO-ECOLOGY AND SMALLHOLDER FARMERS

Action Against Hunger promotes an agro-ecological approach that places support to smallholder farmers and small family farming at the heart of its sustainable agricultural strategy. Support to smallholder farmers should definitely remain a priority, as small family agriculture produces about 70% of world food production, thus playing a central role in supplying rural, urban and peri-urban consumers with food commodities. Action Against Hunger promotes agro-ecology for smallholder farmers because agro-ecology allows them to become more autonomous and self-sufficient in terms of agricultural inputs. Indeed, agro-ecology allows for maximum recycling and use of available resources on the farm, rather than introducing external inputs; it encourages integrated farming systems to create a synergy which allows for the development and optimization of natural resources and production factors, and reduces the use of often costly synthetic agricultural inputs. This ultimately increases the purchasing power of farming households.

## AGRO-ECOLOGY AND THE ENVIRONMENT

Agro-ecology promotes the sustainable use of agricultural biodiversity. The conservation of agricultural biodiversity is one way to cope with the upcoming climate challenges and uncertainties, including the decreased availability of natural resources. It helps to raise the productivity of small-scale farmers and increase their resilience to different shocks. Agro-ecology contributes to the preservation of the environment and natural resources through the provision of a number of ecosystem services, including the protection of animal habitats, the flora diversity, the preservation of genetic diversity, and improved management of agricultural water resources. Agro-ecology also preserves the environment through organic fertilization of soils, and supports soil restoration and combats desertification.

## AGRO-ECOLOGY AND LOCAL DEVELOPMENT

The practices of agro-ecology present potential labor opportunities for rural and urban areas in countries with high demographic growth and a high level of unemployment among the active and young population. Employment in agro-ecology allows income diversification, overcomes rural exodus, and boosts the economic development of rural areas. Agro-ecology also represents a major lever of dynamic development for rural areas and enhances social cohesion by reducing social inequalities (including those that women and poor families experience). Furthermore, the supply chains put forth by agro-ecology make consumers less vulnerable to fluctuations in market prices of food commodities by providing them with locally produced nutritious and quality perishable food, which strengthens local and rural food systems.

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<sup>16</sup> - ACF, 2011. Maximising the Nutritional Impact of Food Security and Livelihoods Interventions



# CONCLUSION

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In this paper, Action Against Hunger presents the case for agro-ecology, as it believes that agro-ecology should be the way forward for agriculture development. In the meantime, Action Against Hunger acknowledges that the adoption of an agro-ecological model for production needs to be accompanied by support measures in order to minimize the vulnerability of smallholder farmers during a transition phase, until the farming system reaches a new balance of productivity. Action Against Hunger will offer the necessary support for effective change by implementing partnerships with local and/or international actors. The various links between agriculture and nutrition show that agriculture can have positive effects on nutrition. While Action Against Hunger promotes agro-ecology, it also acknowledges some of the potential limits of agro-ecological practices in terms of health and nutrition impacts on farmers, and will mitigate them implementing the Action Against Hunger existing guidelines.

Action Against Hunger continues to develop and monitor strong evidence on agriculture, and advocates for the emphasizing of the value and potential of agro-ecology. This advocacy endeavor aims to influence various key stakeholders, including public policy makers, donors and technical services to put in place enabling policies and frameworks. Family farming and agro-ecology need to be put back at the heart of national food and nutrition security strategies and policies.



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## GLOSSARY

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### AGROECOLOGY

Agroecology is both a scientific discipline and an agricultural approach based on a set of practices. As a scientific discipline, agroecology is the science of applying ecological concepts and principles to the study, design and management of sustainable agro-ecosystems (IAASTD, 2009)<sup>17</sup>. As a set of agricultural practices, agroecology seeks to improve agricultural systems by mimicking natural processes, thus creating beneficial biological interactions and synergies among the components of the agro-ecosystem. Agroecology is not just a scientific discipline and a set of agricultural practices; it also encompasses social, environmental, economic and political dimensions (Levard and Appolin, 2012<sup>18</sup>; Stassart et al., 2012<sup>19</sup>).

### CONSERVATION AGRICULTURE

According to the FAO's definition<sup>20</sup>, conservation agriculture is an approach to managing agro-ecosystems for improved and sustained productivity, increased profits and food security while preserving and enhancing the resource base and the environment. Conservation agriculture is characterized by three linked principles, namely: Continuous minimum mechanical soil disturbance (in some cases like direct seeding there is no tillage); Permanent organic soil cover (straw); Diversification of crop species cultivated in sequences and/or associations.

### FAMILY FARMING

The concept of family farming refers to a means of organizing agricultural production which is managed by a family and predominantly reliant on family labour. The family is considered to be a production unit and a consumer as well as a source of labour. As a result, the farm's production and family aspects are closely related. Family farming is carried out by families (one or more households) whose agricultural activities generate a significant part of their livelihoods and income - in cash or in kind (AFD, 2014<sup>21</sup>; Cirad, 2013<sup>22</sup>).

### FOOD SECURITY

Food security exists when all people, at all times, have physical, social and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (CSA, 2012)<sup>23</sup>. Food security relies on four main components: availability, access, utilization and stability. "Availability" refers to the availability of sufficient food quantities of appropriate quality, supplied through domestic production or importation (including food aid). "Access" refers to the physical and economic access to food. "Utilization" integrates water quality, sanitation and nutritional quality as well as food distribution within the household. "Stability" exists when the other three dimensions are verified over time.

### INDUSTRIAL AGRICULTURE

Industrial agriculture<sup>24</sup> or "modern" agriculture refers to any type of industrialisation of agricultural production systems. Industrialisation methods are biotechnological, economic and political. This system is supported by ongoing innovation in agricultural machinery and farming methods, genetic technology, techniques for achieving economies of scale, creation of new consumption markets, use of patents on genetic data and trade globalisation.

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17 - Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), 2009

18 - Levard et Appolin, 2013. How and why agroecology can meet the challenges of the 21st century?

19 - Stassart et al., 2012. Agroecology: pathway and potential For a transition to sustainable food systems

20 - FAO, 2014. What is conservation agriculture? <http://www.fao.org/ag/ca/fr/1a.html>

21 - AFD: 2014: Year of Family farming

22 - Cirad, 2013. Family farming around the world

23 - CSA, 2012. Committee on Food Security. <http://www.fao.org/cfs/cfs-home/fr/>

24 - Industrial agriculture. [http://fr.wikipedia.org/w/index.php?title=Agriculture\\_industrielle&oldid=92522505](http://fr.wikipedia.org/w/index.php?title=Agriculture_industrielle&oldid=92522505)

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## NUTRITION SECURITY

Nutrition security exists when food security is combined with a sanitary environment, adequate health services, and proper care and feeding practices to ensure a healthy and active life for all household members (CSA, 2012).

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## NUTRITION-SENSITIVE AGRICULTURE

According to the FAO<sup>25</sup>, nutrition-sensitive agriculture is an agricultural development approach that advocates for the incorporation of explicit nutrition objectives into agriculture, health, education, economic and social protection policies. Nutrition-sensitive agriculture narrows the “nutrition gap” between actually available foodstuffs and foodstuffs needed to be available for good nutrition. It does this by increasing year round availability, access to and consumption of a diverse range of foods necessary for a healthy diet (FAO).

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## ORGANIC AGRICULTURE

Organic agriculture is an agriculture which is mainly characterized by the absence of use of chemical inputs in farms. It is a farming model that advocates the respect for the living and natural cycles through a production model respectful for the environment and animal well-being.

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## INTEGRATED (OR “REASONED AGRICULTURE”)

Integrated (or reasoned) agriculture is a comprehensive approach to managing agricultural systems focusing on strengthening the positive environmental impacts of agricultural practices and mitigating the negative ones without compromising the farm’s profitability (Berton et al., 2012)<sup>26</sup>.

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## RESILIENCE

Resilience is the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (IRIN, 2013)<sup>27</sup>.

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## SUSTAINABLE AGRICULTURE

Just as sustainable development, sustainable agriculture promotes the respect of the environment and integrates the social, economic and political dimensions of human lives. In its widest sense, sustainable agriculture is an approach that aims at bringing together agricultural development and environment protection (TRAME, 2010)<sup>28</sup>.

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## SUSTAINABLE DEVELOPMENT

Sustainable development is a type of development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It relies on three principles: economic development, social development and environment protection (WCED, 2012)<sup>29</sup>.

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25 - FAO. <http://www.fao.org/food/une-agriculture-sensible-aux-enjeux-nutritionnels-et-des-approches-fondees-sur-lalimentation/fr/>

26 - Berton, S. et al., 2012. Agroecology, a transition towards sustainable livelihoods and development

27 - IRIN, 2013. Understanding resilience. <http://www.irinnews.org/fr/report/97640/comprendre-la-r%C3%A9silience>

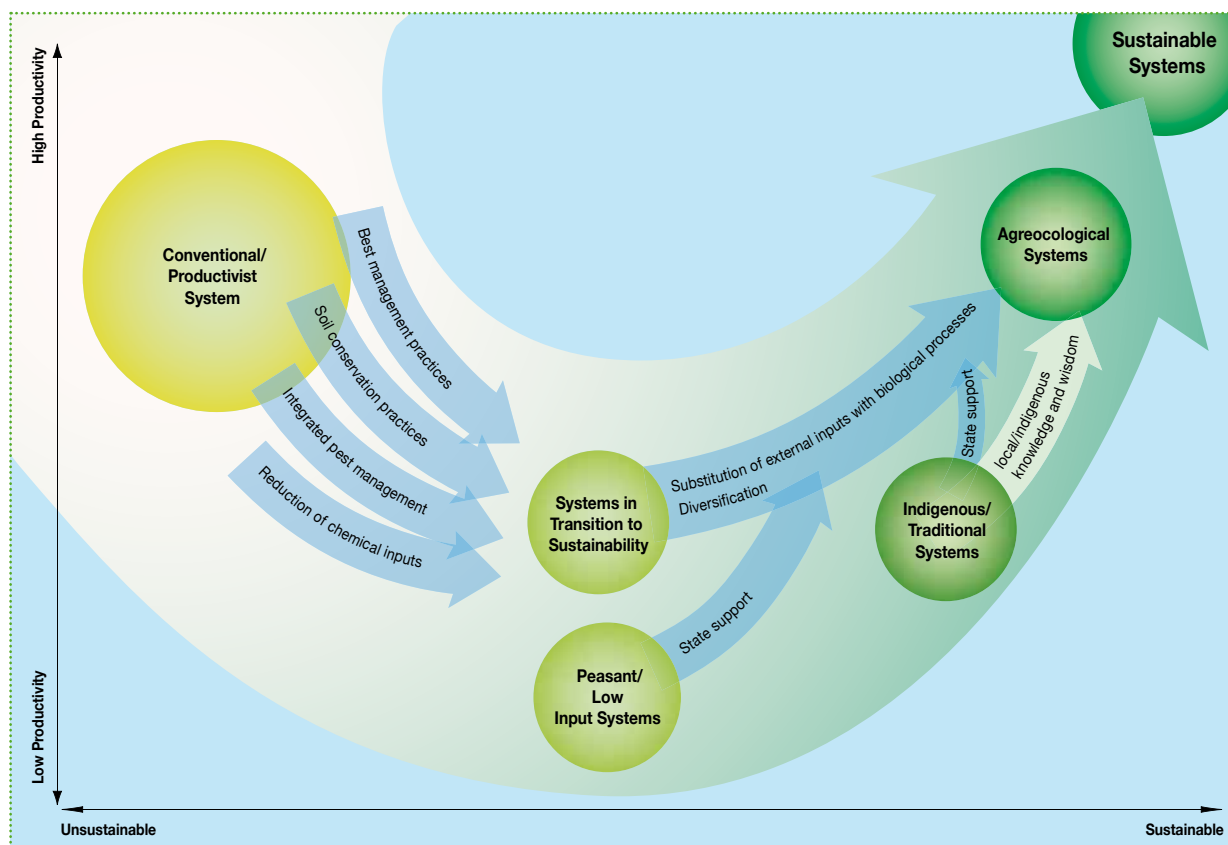
28 - TRAME, 2010. Agriculture Ecologiquement Intensive: Un nouveau cap Travaux et Innovations N°170.

29 - WCED, 2012. World Commission on Environment and Development [www.unescap.org/dpad/vc/orientation/awareness/sustainable\_development/sd\_definition.htm]

# ANNEX 2

## CONVENTIONAL AND AGRO-ECOLOGICAL SYSTEMS

The below chart is drawn from the "Summary for Decision Makers of the Latin America and the Caribbean (LAC)" of the Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)<sup>30</sup> and was published in 2009.



30 - IAASTD Latin America and the Caribbean (LAC) Summary for Decision Makers, p. 9. IAASTD/Ketill Berger, UNEP/GRID-Arendal.

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