

Dialectic between family farming and coffee growing in Boyacá, Colombia: productive, socioeconomic, and environmental aspects

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EXPLANATION OF THE INDICATORS

Social Dimension

1. Education

The indicator will be considered sustainable when the respondent has at least a technical education level; partially sustainable if they have completed elementary or high school; and unsustainable if they have not completed elementary education school.

2. Associativity

The indicator will be considered sustainable when a satisfactory number of farmers belong to an association; partially sustainable if only few farmers are part of an association; and unsustainable if no farmers are involved in any association.

3. Access to Housing

The indicator will be considered sustainable when the respondent owns their own home; partially sustainable if they live in a rented home, and unsustainable if they live in a borrowed or provided house.

4. Access to Food – Allocated Budget

The indicator will be considered sustainable when the respondent allocates a sufficient amount of their budget to food purchases; partially sustainable if a moderate amount is allocated; and unsustainable if a small portion is allocated for food.

5. Food Quality

The indicator will be considered sustainable when the respondent rates their family's diet as good; partially sustainable if they consider it average; and unsustainable if they rate it as poor.

6. Medical Assistance – Treatment

The indicator will be considered sustainable when the respondent reports that family illnesses are treated with pharmaceutical medicines and/ or home medicines (depends on the severity); partially sustainable if they are treated only with home remedies; and unsustainable when other methods are used.

7. Use of Personal Protective Equipment (PPE)

The indicator will be considered sustainable when farmers use PPE during their activities; partially sustainable if PPE is used inconsistently; and unsustainable if PPE is not used.

8. Main Source of Water Access

The indicator will be considered sustainable when the property's main water source is a public supply system; partially sustainable if it comes from a cistern or well; and unsustainable if it relies on a spring or rainwater.

9. Main Method of Liquid Waste Disposal

The indicator will be considered sustainable when the property's liquid waste is disposed of through a public treatment system; partially sustainable if it is handled by a septic tank; and unsustainable if it involves runoff into community agriculture or direct discharge into regional rivers.

10. Gastric Diseases

The indicator will be considered sustainable when there are no reports of gastric diseases in families; partially sustainable if there is a low incidence; and unsustainable if there are frequent reports of this condition.

11. Respiratory Diseases

The indicator will be considered sustainable when there are no reports of respiratory diseases in families; partially sustainable if there is a low incidence; and unsustainable when there are frequent reports of this condition.

12. Skin Diseases

The indicator will be considered sustainable when there are no reports of skin diseases in families; partially sustainable if there is a low incidence; and unsustainable if there are frequent reports of this condition.

13. Cardiac and Vascular Diseases

The indicator will be considered sustainable when there are no reports of cardiac or vascular diseases in families; partially sustainable if there is a low incidence; and unsustainable if there are frequent reports of this condition.

14. Psychiatric Problems

The indicator will be considered sustainable when there are no reports of psychiatric problems in families; partially sustainable if there is a low incidence; and unsustainable if there are frequent reports of this condition.

15. Headaches

The indicator will be considered sustainable when there are no reports of headaches in families; partially sustainable if there is a low incidence; and unsustainable if there are frequent reports of this condition.

16. Anemia

The indicator will be considered sustainable when there are no reports of anemia in families; partially sustainable if there is a low incidence; and unsustainable if there are frequent reports of this condition.

17. Urinary Infections

The indicator will be considered sustainable when there are no reports of urinary infections in families; partially sustainable if there is a low incidence; and unsustainable if there are frequent reports of this condition.

18. Arthritis

The indicator will be considered sustainable when there are no reports of arthritis in families; partially sustainable if there is a low incidence; and unsustainable if there are frequent reports of this condition.

19. Osteoarthritis

The indicator will be considered sustainable when there are no reports of osteoarthritis in families; partially sustainable if there is a low incidence; and unsustainable if there are frequent reports of this condition.

Economic Dimension

1. Complementary Economic Activities

The indicator will be considered sustainable when there are no reports of farmers engaging in additional economic activities; partially sustainable if there are few cases (up to 2); and unsustainable if there are many reports (more than 2).

2. Number of Family Members Working in Agricultural Activities

The indicator will be considered sustainable when all family members work in agricultural activities; partially sustainable if more than half are involved; and unsustainable when less than half participate in agricultural work.

3. Percentage of Total Property Area Dedicated to Agricultural Production

The indicator will be considered sustainable when 75% or more of the total property area is used for agricultural production; partially sustainable when 50% or more is dedicated to agriculture; and unsustainable when 25% or less is used for farming.

4. Acquisition of Inputs – Seeds

The indicator will be considered sustainable when no farmers purchase seeds; partially sustainable if less than 50% of the farmers purchase seeds; and unsustainable if more than 50% of the farmers buy seeds.

5. Type of Land Use (Monoculture, Polyculture, Coffee + Polyculture)

The indicator will be considered sustainable when farmers cultivate coffee alongside polyculture; partially sustainable if they practice only polyculture; and unsustainable when they practice monoculture.

6. Income from Product Sales

The indicator will be considered sustainable when farmers report satisfactory income from the sale of agricultural products; partially sustainable when the income is moderate, but insufficient to maintain a basic standard of living; and unsustainable when the income is inadequate.

7. Use of Production

The indicator will be considered sustainable when farmers use the products from their land for both self-consumption and sale; partially sustainable if the products are sold, but not consumed by the family; and unsustainable if the products are only for self-consumption.

8. Dedicated Storage Area

The indicator will be considered sustainable when farmers report not using agrochemicals; partially sustainable if they have a dedicated area for storing agrochemicals; and unsustainable if there is no designated storage area for agrochemicals.

Environmental Dimension

1. Use of Pesticides

The indicator will be considered sustainable when no farmers report using pesticides; partially sustainable if less than 50% of the farmers use them; and unsustainable if more than 50% of the farmers report using pesticides.

2. Use of Fertilizers

The indicator will be considered sustainable when no farmers report using fertilizers; partially sustainable if less than 50% of the farmers use them; and unsustainable if more than 50% of the farmers report using fertilizers.

3. Use of Genetically Modified Seeds

The indicator will be considered sustainable when no farmers report using genetically modified seeds; partially sustainable if less than 50% of the farmers use them; and unsustainable if more than 50% of the farmers report using genetically modified seeds.

4. Use of Native Seeds

The indicator will be considered sustainable when all farmers report using native seeds; partially sustainable if up to 50% of the farmers use them; and unsustainable if less than 50% of the farmers report using native seeds.

5. Knowledge of Local Native Seed Bank

The indicator will be considered sustainable when all farmers report knowing about the local native seed bank; partially sustainable if up to 50% of the farmers have this knowledge; and unsustainable if less than 50% of the farmers are aware of the seed bank.

6. Main Irrigation Method

The indicator will be considered sustainable when the primary irrigation method is natural rainfall; partially sustainable if drip irrigation is used; and unsustainable when sprinkler irrigation from public water is the main method.

7. Composting

The indicator will be considered sustainable when all farmers report practicing composting; partially sustainable if more than 50% of the farmers report composting; and unsustainable if less than 50% farmers report practicing composting.

8. Selective Waste Collection

The indicator will be considered sustainable when all farmers report practicing selective waste collection; partially sustainable if more than 50% of the farmers engage in this practice; and unsustainable if less than 50% farmers report practicing it.

9. Solid Waste Collection by the Municipality

The indicator will be considered sustainable when all farmers report that the municipality collects solid waste from their properties; partially sustainable if up to 50% of the farmers report this collection; and unsustainable if less than 50% of the farmers receive municipal solid waste collection.