

Additional Help: 200-203
File Name: 200san_100500_cd20
Last Revised: 10/05/2000

Agriculture Sector Assessments

The purpose of an agriculture sector assessment is to establish an intellectual framework for planning and implementing an A.I.D. agricultural assistance program. This reference identifies some issues that need to be considered and addressed during the preparation of an agriculture sector assessment. [Agriculture is broadly defined to include all elements of the primary sector including crops (food and non-food), livestock, poultry, fisheries, and forestry products. In some cases a separate sub-sector, as distinct from sector, assessment may be needed.]

An agriculture sector assessment may consist of four sections: (a) structure of the sector, (b) beneficiary group analysis, (c) constraints analysis, and (d) sector strategy. Each section is discussed, after which an illustrative outline is set forth.

A. Structure of the Sector

This section describes some elements of an analytical description of the agriculture sector, and in particular its relative importance to the national economy. It should report the country's GNP and GDP, the sectoral composition of GDP, and relative growth rates of each sector over the last five years, with projections for five years in the future. It should indicate the contribution of the agriculture sector to the GDP, the balance of payments, the supply of food and raw materials (for both domestic and export markets), a nation's trade and other external commercial relationships, the supply of nutritional requirements, employment, income distribution, government revenue, etc.

Data on the economically active population engaged in agriculture, agribusiness and other sectors of the economy can be used to estimate labor productivity by sector, which can be compared within a country and among countries.

The analytical description of the sector should be disaggregated by major crop, livestock, poultry, fisheries, or forestry product. It should estimate what portion of total production of each commodity is grown on small as distinct from medium and large farms; what portion of agricultural exports is grown by these classes of farms; whether agricultural production, by commodity, is growing, declining or stationary; and whether or not the amount of land that is cultivated has changed over time. It should also show the distribution of agricultural producers both by size of farm and by the number of farms.

The description should present an analysis of the extent to which the agriculture sector provides both adequate food and appropriate nutrients for the country's population, as well as what proportion of food consumption requirements is supplied by imports (commercial and concessional).

B. Beneficiary Group Analysis

A.I.D.'s agriculture focus statement stresses, inter alia, that the Agency's agricultural assistance program is designed to increase the incomes of the poor majority..." This section should identify the groups, which comprise the "poor majority," especially those selected to benefit from A.I.D. assistance, or at least not be harmed or otherwise adversely affected by A.I.D. assistance. The rural poor may be characterized on the basis of average per capita expenditure, often approximated by average per capita income, as well as other criteria including, for example: geographic location, access to resources, land tenure, market orientation, and socio-cultural variables.

1. Geographic Location

Populations may be disaggregated by (a) cropping regions that are homogeneous with respect to crop mixes, (b) ecological regions (such as highlands or semi-arid zones), (c) political or administrative regions, and (d) distance from urban centers or communications systems.

2. Access to Resources

Populations may be disaggregated by (a) land holdings (farm size, land quality, and land value), (b) labor availability (relative to labor requirements during different seasons and for different crops), and (c) productive capital (such

as livestock, stored crops, input supplies, savings, access to credit, buildings, equipment).

3. Land Tenure

Land tenure categories may include (a) landless laborers, (b) squatters, (c) sharecroppers, (d) cash renters, (e) farmers with clear land title, and (f) farmers operating collective farms.

4. Market Orientation

The percentage of total farm production which is sold for cash or bartered, as distinct from that which is consumed, can help characterize the rural poor. Corollary indicators of the degree of market orientation include location relative to all-weather roads and markets and type of transportation available.

4. Socio-cultural Variables

Ethnic identity, language, religion, family structure, participation in local organizations, and access to basic services (health, education, family planning, nutrition) can help distinguish the rural poor majority from other groups.

In all cases it is essential that the beneficiary group analysis differentiate between rural men and rural women, since gender (and other demographic variables) may make a difference in, for example, access to resources, control of marketing functions, social equity, or political power.

C. Constraints Analysis

This section should analyze those constraints which most directly prevent the poor or other groups expected to benefit from A.I.D. agricultural assistance from increasing their productivity and income. The analysis should begin at the micro level (the individual farm) and be expanded to consider constraints at the regional and national levels. Possible constraints include access to productive resources, climate, marketing, institutional constraints, economic policies, including trade policy.

This section should allow problems to suggest solutions; it should not identify solutions in search of problems.

1. Farm-level Constraints

These consist of: (a) constraints on the farmer's access to productive resources and (b) natural constraints imposed by climate, geography, and ecology.

a. Access to Productive Resources includes land and land tenure, capital, labor, and technology (knowledge).

i. Land involves not just availability of land, per se, but availability of agriculturally useful land. Illustrative constraints include steep gradients, rocky ground, shallow topsoil, heavy tree cover, lack of rainfall or irrigation, and poor drainage. Land tenure is the institutional side of land availability. Illustrative constraints include skewed ownership patterns, temporary tenure arrangements, and collective ownership or farming arrangements.

ii. Capital to finance productive investments must come from savings, borrowings, or a combination thereof. Without some growth in capital, increases in farm productivity are impossible. Yet the poor majority often is characterized by limited savings and limited access to credit.

iii. Labor is often a temporary constraint with which farmers cope by (a) bidding up the market price for hired labor or (b) substituting agricultural machinery services for labor. However, without access to credit to hire labor or machinery services, labor scarcity can sharply limit the area that a farmer can plant and harvest. Conversely, the labor problem is often one of surplus labor (rather than scarce labor), as manifested by low productivity and low income per laborer, seasonal unemployment, and rural-to-urban migration.

iv. Technology that is introduced as "modern" may help to increase yields and improve efficiency. But new technology typically consists of a package of specialized inputs which must be applied on time to be effective. And this, in turn, requires complementary investments in irrigation and equipment on the one hand, and the need for production and investment credit, and distribution services for inputs, on the other.

b. Natural Constraints

i. **Natural disasters** make agriculture risky. It is important to assess the normal incidence (or estimate the range of frequency) of, for example, hail, flood, and drought.

ii. **Other natural constraints** include low soil fertility, poor soil structure, inadequate rainfall, excessive temperatures, high incidence of insects, disease, or rodents. Each farm-level constraint that is identified should be associated with particular groups of the poor majority and particular regions of the country. The severity of each constraint should also be assessed. This will help to determine which constraints are of priority importance.

2. **Support System Constraints**

These consist of: (a) market constraints and (b) institutional constraints.

a. **Market constraints** can be identified by analyzing the supply, demand, and price situation of the commodities produced by the poor majority, the commodities they could produce, or the commodities most profitable to produce given their comparative advantage.

i. **Supply analysis** permits an estimate of the productive potential of an average farm, given the farm level resource constraints that have been identified. The principal crops, livestock, and other commodities should be identified; the range in yields for each commodity should be established; and the consumption claim on harvested product should be estimated for an average family and average farm size (including claims for subsistence, seed, animal feed, and losses); the balance is net marketable surplus.

ii. **Demand analysis** identifies the principal markets for the marketable surplus of those commodities produced by the poor majority, including both domestic markets and export markets.

iii. **Price analysis** assesses (a) commodity price fluctuations within the same agricultural season, (b) commodity price fluctuations on a multi-year basis, (c) price trends among various commodities, and (d) prices of

agricultural commodities in relation to prices of purchased agricultural inputs and prices in general.

An analysis of supply, demand, and price data may highlight key marketing constraints, as manifested by a significant increase in consumer prices (thereby reducing consumer demand) or a reduction in producer prices (thereby reducing incentives to increase production). The analysis may also suggest that increases in output would result in a significant lowering in product price (and perhaps farm income). Illustrative market-related constraints faced by the poor majority include dispersed production of particular commodities, high transactions costs, high handling and transportation costs, limited access to marketing credit, and poor market information.

- b. **Institutional constraints**, public and private, typically include inadequate provision of services such as (a) credit, (b) input supply, (c) research and technology, (d) storage and marketing, (e) distribution of irrigation water, (f) mechanization services for plowing, seeding, and harvesting, and (g) information concerning market prices, weather, and farm management. In addition, agrarian reform policy may prohibit private land sales or rental contracts, impose rigid and lengthy titling requirements, and inadequately support land reform beneficiaries with agricultural services.

3. **Economic Policy Constraints**

Macroeconomic and sectoral policies can have a profound impact on the agriculture sector. Of particular importance are (a) foreign exchange rate policy, (b) fiscal policy, (c) price policy, (d) monetary policy, and (e) wage rate policy.

- a. A subsidized **foreign exchange rate** makes agricultural exports more expensive and agricultural imports cheaper, thereby reducing the incentive to produce agricultural commodities.

- b. **Fiscal policy** constraints include taxes on agricultural exports and tariffs on agricultural imports which will lower farm gate prices, again reducing the incentive to produce.
- c. **Price policy** constraints include fixed commodity price ceilings.
- d. **Monetary policy** constraints include artificially low interest rates which discourage private commercial lending and rigid collateral requirements.
- e. **Wage rate policy** constraints include minimum wage legislation which can raise the cost of farm labor as rural workers migrate to seek more favorable urban wages.
- f. **Trade policy** constraints include barriers to internal and external trade of agriculture and agribusiness products. Such barriers include tariff and non-tariff barriers.

D. **Sector Strategy**

The beneficiary group analysis provides a way for selecting potential beneficiaries of A.I.D. agriculture assistance. The constraints analysis identifies the primary problems preventing these groups from exploiting opportunities for increased productivity and income. The sector strategy proposes the most promising solutions to alleviating each priority constraint in such a way that the results will be commensurate with the needs and proportionate to the costs. It should incorporate an analysis of the country's comparative advantage for producing various crops, livestock products, and other agricultural commodities.

Before developing a sector strategy, it is necessary to rank and interrelate the constraints that exist at the farm level with those that exist at the support system and economic policy levels. Once the constraints have been ranked, it is necessary to review the activities currently financed by the mission, host country and other donors, thereby indicating which constraints are being adequately addressed and which are not.

It is important to be candid about how alternative U.S. assistance programs are expected to help the country address key constraints and achieve measurable improvements in sector goals. As such, the strategy should assess how the agriculture sector is expected to contribute to overall economic growth and development goals, both with and without A.I.D. assistance.

A.I.D.'s choices in developing a sector strategy to address the key constraints are conditioned by (a) the host country's goals and policies, (b) other donor activities, (c) A.I.D. policy and resources, and (d) the "comparative advantage" of the U.S. of providing assistance in the proposed areas vis-a-vis other donors and other sectors. The potential economic and political benefits to the U.S. of providing assistance in the agriculture sector should be considered in this context.

The sector strategy should also estimate the level of A.I.D. resources needed for implementation.

Finally, the sector strategy should specify the indicators that will be used to measure the impact of the strategy as well as the success of the projects and programs supported by A.I.D.

It is important to distinguish between impact indicators on the one hand and output level and purpose level indicators on the other. Impact, or goal level, indicators (such as per capita income, per capita calorie consumption, or physical quality of life) are designed to measure the effects of the sector strategy on people, society, or the environment. In contrast, output level indicators (such as the amount of fertilizer delivered to farmers or the number of farmers visited by an extension agent) and purpose level indicators (such as agricultural yields or the amount of additional land brought under irrigation) are typically used to assess the status or results of a project. As these illustrations suggest, there is some blurring among these types of indicators.

Impact indicators for the agriculture sector must be able to measure changes in the incomes of the poor majority, changes in food availability and consumption, or changes in the natural resource base -- either directly or indirectly. Per capita household income and per capita food consumption

are probably the most direct indicators for measuring change in these two variables; but the data on which these indicators are based are typically available only from an income distribution and food consumption survey. Income surveys may not be cost effective and, in rural areas, they often fail to provide reliable data. Therefore, proxies or indirect indicators may be necessary for measuring changes in these variables; appropriate indirect indicators may include household expenditures, household consumption, household wealth (or assets), and quality of life.

Purpose level indicators measure change that can be attributed to a particular program or project or other intervention. They should measure not only the degree and direction of change, but also establish causal links between the activity and the observed outputs. Attributing change to a particular intervention is especially difficult with agriculture projects. For example, a project may be designed to supply fertilizer to farmers in order to increase yields. And although yields may have increased dramatically, non-project factors such as an increase in producer prices for major crops, or better extension services, or expanded markets may account for most of the yield increase -- not the fertilizer provided under the project. These conceptual and methodological problems can be overcome, but only at substantial cost. Therefore, qualitative assessments may be needed to help determine whether a project has or has not contributed to a particular observed outcome.

Illustrative Outline of an Agriculture Sector Assessment

- A. Structure of the Agriculture Sector
 - 1. Contribution of the sector to:
 - a. GDP
 - b. Employment
 - c. Foreign Exchange
 - d. Food Supply
 - e. Industrial Raw materials
 - f. Government Revenue
 - 2. Pattern of Production (area, yield, and cropping intensity, in both volume and value terms)
 - a. Food Crops
 - b. Export Crops

- Traditional Exports
- Non-traditional Exports
- c. Livestock, Dairy, Poultry, and Fisheries
- d. Industrial Products e. Forestry Products

B. Beneficiary Group Analysis

1. Income and Employment
 - a. Farm Income
 - b. Non-farm Income
 - c. Employment/Unemployment/Underemployment
 - d. Rural Income relative to Urban Income

2. **Land Tenure**
 - a. ownership or operational Holding Size
 - Land Distribution by Farm Size
 - Land Distribution by Tenancy Type
 - Farm Income by Size and/or Tenancy
 - Cropping Pattern by Size and/or Tenancy
 - g. Historic Origins
 - h. Principal Tenancy Forms
 - i. Land Titling and Land markets

3. Farm Family Characteristics

- a. Health Status
- b. Nutritional Status
- c. Education
- d. Family Size
- e. Age
- f. Socio-cultural Variables

E. Constraints Analysis

1. Farm-level Constraints
 - a. Access to Productive Resources
 - Land
 - Labor
 - Capital
 - Technology
 - b. Physical Characteristics of the Region
 - Climate
 - soils
 - Natural Vegetation
 - River Systems

2. Agriculture-related Institutions responsible for:
 - a. Land Tenure
 - b. Farmers' organizations
 - c. Price Stabilization
 - d. Agricultural Research, Extension, and Education
 - e. Input Supply
 - f. Agricultural Credit
 - g. Irrigation/water
 - h. Natural Resources Protection and Management
 - i. Plant and Animal Health
 - j. Marketing
 - Transportation
 - Storage
 - Processing
 - k. Agribusiness

3. **Economic Policy Constraints**
 - a. Exchange Rate Policy
 - b. Fiscal Policy
 - c. Price Policy
 - d. Monetary Policy
 - e. Wage Rate Policy
 - f. Trade Policy

D. Sector Strategy

1. Approaches to Agricultural Growth
 - a. Natural Resource-based vs. Science-based
 - b. Export Expansion vs. import Substitution

2. Comparative Advantage: Commodities and Sources
 - a. Commodity Priorities
 - Traditional Export Commodities
 - Non-traditional Export Commodities
 - Domestic Food Commodities
 - Domestic Industrial Commodities
 - b. Sources of Comparative Advantage
 - Factor Costs
 - Transportation Costs
 - Productivity
 - Quality
 - Market Preferences
 - Unique Commodities

3. Beneficiary Group Priorities
4. Institutional Development Priorities
5. Natural Resource Priorities
6. Impact Indicators

Draft: PPC/PDPR, DGMcClelland:6/1/89:7612R