Planning and designing
RURAL MARKETS
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Planning and designing RURAL MARKETS

by John Tracey-White

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Preface

Upgrading rural markets is one way to improve access to marketing opportunities. This guide is designed to assist community planners, rural engineers and agricultural extension units to formulate and implement relevant market development plans.

The types of issues covered in this guide include designing markets that meet a community’s social and economic needs; working with communities to identify their marketing problems and to choose a site for a new market; using appropriate and simple methods to survey and plan the site layout and to design market buildings; preparing a market development proposal and making budget estimates; undertaking simple social and economic feasibility studies; looking for financing and constructing the market; and managing, operating and maintaining the market.
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This guide is intended to provide a step-by-step approach to the planning, design and construction of simple rural markets. Whether the market is to be built by national or local government, by donors, by a local community or privately, the assistance of extension departments, planners and rural engineers will be required. Such assistance is likely to include:

- identifying marketing problems and needs;
- helping with selection of market sites;
- planning, implementing and operating effective market improvement activities; and
- following up and evaluating the results of the development.

The guide follows the development process from identification of the need for a market through to operation of that market. Although each stage in the process is presented as a separate chapter the stages are not necessarily independent of each other. A diagram of the planning process is shown on pages 2 and 3 (Figure 1) with a brief description of each stage and indications of where findings may be used to modify the work of previous stages. An outline of all stages and steps is shown on page 4.
STAGE 1
IDENTIFYING THE NEED FOR RURAL MARKETS
The process starts with understanding the marketing system and the different types of rural markets as well as their relationship to settlement patterns. This understanding is then used to identify the need for market improvements.

STAGE 2
ASSESSING MARKET TRADING CONDITIONS
The next stage is to assess probable supply and demand conditions for the identified markets. Limited surveys may be required to estimate market throughput, so as to allow design to proceed.

STAGE 3
WORKING WITH FARMERS AND TRADERS
Consultations are undertaken with market users and local communities to identify their present problems and future needs - leading to proposals on how these might be met. Special needs, such as targeting of particular groups, may also be considered.

STAGE 4
IDENTIFYING THE SPACE REQUIRED
Data collected through consultation with existing or potential users, field surveys and desk studies of existing information are analysed to decide what space and market accommodation is required.

STAGE 5
CHOOSING THE RIGHT SITE
The next stage is to agree on the market site location, identify any potential problems and decide on whether an environmental impact assessment is needed. Different options may be assessed and the site availability checked.

Note: Initial conclusions regarding the need for market improvements (Stage 1) may be altered either after an assessment of market supplies is made (Stage 2) or after detailed consultations with users (Stage 3).
STAGE 6
PREPARING THE SITE PLAN
After identifying a market site, a draft master plan is prepared. This provides a framework for all the activities that will take place within the market.

STAGE 7
DECIDING ON THE BUILDINGS AND EQUIPMENT NEEDED
Next comes the detailed design of buildings, stalls and equipment. In discussion with the users, the various options that are available are identified and their relative advantages assessed.

Note: Estimates of space and accommodation (Stage 4), together with the detailed design of buildings that flow from them (Stage 7), may need to be modified after working out the cost of the proposed market (Stage 8).

STAGE 8
CHECKING THE MARKET’S VIABILITY
Cost estimates are prepared and an assessment is made of the market’s viability. Sometimes it is necessary at this stage to look again at the design and make modifications.

STAGE 9
CONSTRUCTING THE MARKET
Sources of funding are confirmed and designs finalized with users. Tender documents are prepared, followed by tendering and letting of contracts. The construction is carried out and monitored to ensure that what is being done conforms to the original design.

STAGE 10
OPERATING AND MAINTAINING THE MARKET
Finally, the market needs to be put into operation; space must be let, fees collected and market operations regulated.
A step-by-step outline of the planning process

STAGE 1
IDENTIFYING THE NEED FOR RURAL MARKETS

Steps
1.1 Identify market channels in rural areas
1.2 Define responsibility for decision-making
1.3 Review planning considerations
1.4 Identify market improvement options

STAGE 2
ASSESSING MARKET TRADING REQUIREMENTS

Steps
2.1 Decide on design information needed
2.2 Assess supply and demand
2.3 Estimate the market’s throughput

STAGE 3
WORKING WITH FARMERS AND TRADERS

Steps
3.1 Consult with the users
3.2 Provide support to the market committee
3.3 Assess user needs

STAGE 4
IDENTIFYING THE SPACE REQUIRED

Steps
4.1 Estimate sales space requirements
4.2 Identify trading spaces
4.3 Decide on the market’s facilities
4.4 Determine the area needed for the site

STAGE 5
CHOOSING THE RIGHT SITE

Steps
5.1 Review suitability of site locations
5.2 Reviewing site features
5.3 Determine if an environmental assessment is needed
5.4 Prepare an impact statement
5.5 Review site options and availability

STAGE 6
PREPARING THE SITE PLAN

Steps
6.1 Gather design data
6.2 Organize land uses
6.3 Plan vehicular access and circulation
6.4 Plan for supplementary uses
6.5 Finalize the site plan

STAGE 7
DECIDING ON THE BUILDINGS AND EQUIPMENT NEEDED

Steps
7.1 Design buildings
7.2 Design infrastructure
7.3 Identify environmental impact mitigation measures
7.4 Decide on market equipment

STAGE 8
CHECKING THE MARKET’S VIABILITY

Steps
8.1 Estimate development costs
8.2 Estimate recurrent costs
8.3 Estimate benefits
8.4 Test financial viability
8.5 Assess the proposals
8.6 Amend the designs

STAGE 9
CONSTRUCTING THE MARKET

Steps
9.1 Obtain consents and agree on the financing
9.2 Prepare tender documents and tender the works
9.3 Let construction and equipment contracts, supervise construction and monitor implementation
9.4 Confirm practical completion and evaluate the works

STAGE 10
OPERATING AND MAINTAINING THE MARKET

Steps
10.1 Commission the market
10.2 Agree on space allocation and leases
10.3 Agree on the market fee schedule
10.4 Agree on the market regulations
1 Identifying the need for rural markets
Stage 1 reviews existing marketing problems that may be solved by either new or improved markets, and identifies the kind of market needed and the improvements that will most benefit local communities. At the end of this stage, and subject to discussions with the existing or potential market users (see Stage 3), it should be possible to provisionally address the following points:

How the marketing system works and how this relates to the local settlements.

Who would be responsible for managing the identified market once it has been constructed or improved.

Special planning issues that need to be considered, such as developing markets in particular settlements, markets associated with particular road improvements or the needs of special groups.

The types of marketing improvement that are needed and where they will be undertaken.

STAGE 1
IDENTIFYING THE NEED FOR RURAL MARKETS

The problem
An efficient marketing system can provide better prices to producers and improve the availability of competitively priced produce to consumers. In some cases new markets or improvements to existing markets in rural areas can help overcome many of the marketing problems faced. However, before considering whether to carry out improvements to markets and what type of improvements to introduce, it is important to be sure that markets, or lack of them, represent the main problem. Other causes of inefficient marketing could be:

- poor roads;
- a lack of knowledge about marketing among farmers;
- an inadequate quantity of products to attract sufficient traders.

The benefits of markets
Formal markets in rural areas play an important role in improving agricultural marketing. They can:

- provide a location at which farmers can meet with traders;
- increase retail competition by providing a convenient place where farmers can meet with consumers;
- improve hygiene, if existing marketing activities are carried out in an insanitary manner;
- reduce post-harvest losses by providing protection for produce from direct sunlight, rain, etc.;
- make marketing a more pleasurable activity; and
- provide a focal point for rural activities.

**Location for trade.** Traders who buy produce from farmers for transport to urban markets experience significant costs in travelling from farmer to farmer to buy small quantities. This is not a major problem if farmers are situated close to major roads and traders simply drive along the road buying from each farmer. When farmers are at the end of poor quality local roads, however, traders lose considerable time. Costs are also high because traders often use the same large vehicles that they use for journeys to urban areas, and poor road conditions may damage those vehicles.

Farmers are also at a disadvantage because they are more or less forced to accept the price the trader offers. They cannot compare the price they are offered with the prevailing local price because there is no local market. Even if they have access to information about the prices in urban markets they cannot really use that knowledge to negotiate with traders because they have no realistic idea of the costs faced by the traders in travelling to their farm or village.

For these reasons “assembly” markets have tended to develop in rural areas. They provide a convenient location for traders to meet with farmers. In some cases these markets operate seasonally or on only one or two days of the week. In others, they operate more or less continuously, with large-scale traders sometimes employing agents in several such markets to buy on their behalf.

**Retail facilities.** In some countries farmers travel from door to door to sell their produce. This can be time consuming and exhausting and may require investment in transport, such as a bicycle. Door-to-door selling also makes price setting difficult because farmers have little information regarding prices being charged by other sellers. Markets, on the other hand, provide a location where all buyers and sellers can meet. Consumers can see the range and prices of produce on offer and make choices based on their preferences and income. Sellers can take their produce to one location rather than having to go from door to door. They can see how much of a particular product is on offer, compare the quality of their produce with that of other sellers, and set their prices accordingly.

In order to achieve such benefits, however, markets must be situated in locations acceptable to both sellers and buyers. This is emphasized strongly in this guide. There have been many examples of new markets being constructed in unsuitable locations and never being
used! Existing market sites, or places where buyers and sellers meet informally (e.g. a plot of land at the side of the road), are usually the best places to construct new markets because they are clearly at locations favoured by the users.

**Improve hygiene.** Existing “markets” are often just areas of available land that buyers and sellers find convenient to use. They may be well established in the sense that they have existed at the site for a long time, or they may be temporary, for example, a vacant plot of land used until it is reclaimed by the owner for some other purpose. Either way, hygienic conditions are usually very poor. In most cases there are no toilet facilities or running water and probably no arrangements for waste disposal. In the rainy or monsoon season the market area may be extremely muddy, but sellers may display their produce on the ground, with a risk of contamination from the soil or mud. Many municipal markets are like this, even though users are often charged a fee. Improved markets should minimize all of these problems. Apart from providing a healthier overall market environment, such improvements can reduce the danger of food contamination.

**Reduce post-harvest losses.** Unimproved markets usually lack any form of shelter. Produce is displayed and stored in the sun. Apart from conditions being very difficult for those using the markets, the lack of protection from the sun can have a major impact on the life of fresh produce and on its nutritional value. Leafy produce, for example, can be kept fresh by protecting it from the sun and by keeping it moist. This is not possible in markets that do not have either shelter or fresh water supplies.

**Provide a rural focal point.** Retail markets frequently play an important social function. Farmers in many countries prefer to take their own produce to market rather than sell it to traders. The visit to the rural centre provides them with the opportunity to buy items unavailable in their villages and to catch up with local news. In many countries markets function as more than just trading places. They are the focal point of a rural centre and provide an important place where people can meet. Markets that are attractive places to do business draw buyers and sellers alike. Competition is promoted amongst sellers and at the same time the sellers have a large number of potential customers.
Step 1.1
Identify market channels in rural areas

As a first step towards identifying requirements for new or improved rural markets it is important to understand how existing marketing functions. The most common transactions in rural areas are described below.

Farm-gate purchases. Purchase of produce may be on an individual basis at the farm gate. Buyers go to the farm, usually at a pre-arranged time. In some cases, such as with fruit crops, the produce can be sold “on the tree” or “in the field” and the buyer arranges for its harvesting. In other cases the sales may be through marketing groups or cooperatives. The farmers in this case may wait for the trader at collection centres.

Local (primary) markets. These markets are usually for direct sales of small quantities of produce by farmers to village traders and rural consumers. Rural primary markets often form part of a network arranged on a periodic basis, such as on a specific day of each week. They are commonly organized at a central place in a village or district centre or beside a village’s access road. In some instances, markets in small towns also provide an assembly function.

Assembly markets. Larger rural markets are found where greater quantities of produce are traded, either by the producers themselves or by traders. These “assembly” markets (gathering produce in larger quantities for onward sale to outside buyers) are often combined with local rural markets and are normally situated on main highways, other local main roads or near to ferries. Traders or collection agents working on behalf of urban wholesalers normally purchase produce. The market operations may be year-round or seasonal, depending on the types of crops being marketed.

Direct sales to urban markets. Farmers may also take their produce directly to urban areas, either to a retail market or to a wholesale market.

Note: The diagrams in Figure 2 on pages 10 and 11 show examples of how farmers market their products.
Figure 2
Examples of marketing channels

1. Farmer sells at farmgate
2. Farmer takes produce to local primary market
3. Farmer unloads produce and sells it in small quantities to consumers
4. Farmer takes produce to assembly market
5. Buyer purchases produce at assembly market
6. Farmer or trader takes produce to urban markets
7. Farmer unloads produce and sells it in small quantities to consumers

RURAL

ASSEMBLY MARKET

LOCAL PRIMARY MARKET
Produce is unloaded, weighed and delivered to wholesaler.

Retailers purchase produce from wholesalers and take it to their shops.

Retailer sells produce to consumer.

Farmer sells produce to consumer.

URBAN WHOLESALE MARKET

Retailer sells produce to consumer.

Retailers purchase produce from wholesalers and take it to their shops.

Retailer sells produce to consumer.

Farmer sells produce to consumer.

FARMERS' MARKET

RETAIL MARKET

RETAIL SHOP
Step 1.2
Define responsibility for decision-making

There is no right way to operate a rural market. The extent to which the public sector and local communities are involved depends on who pays for the development and who maintains it. The involvement of central government in small marketing infrastructure is usually limited to capital expenditure, the maintenance being undertaken by local government or the community itself using locally generated funds such as the market fees. A market committee (or, perhaps, a local rural development committee) would usually be the key decision-making body. The existing market users should be closely involved with decisions about whether to improve a market, or to develop new infrastructure (see Stage 3). Most development should involve a high level of local initiative. Sufficient time should be given at the start to ensure the community’s involvement in the design process and to establish ownership of the facility.

Step 1.3
Review planning considerations

Not all villages have permanent markets and the distance to market can vary a lot. A key concept in rural development is how rural settlements relate to the overall pattern of towns and villages.

Relationship of markets to settlement patterns.
Some settlements act as “central places”, providing the population of the surrounding “catchment” area with goods and services. They may also function as points for assembly of local farm produce for onward movement to urban areas. There are usually three levels of “central places” in rural areas (see Figure 3):

- growth centres;
- district centres; and
- rural service centres.

1. Growth centres: major regional or provincial towns. The centre contains a range of services such as a college, a hospital, banks, a major market (often with some wholesaling functions) and specialized shopping facilities.
Figure 3
Central places in a rural area

- **Provincial capital**
- **Growth centre**
- **District centres**
  - **Town**
    - **Village**
    - **Village**
    - **Village**
- **Major markets**
  - **District markets** (some with assembly function)
    - **Town**
      - **Village**
      - **Village**
      - **Village**
- **Rural service centres**
  - **Primary markets** (periodic)
    - **Town**
      - **Village**
      - **Village**
      - **Village**
2. **District centres**: rural settlements whose primary function is to provide administration and to deliver public services. These centres might contain a secondary school, a health clinic and a market, which could perform assembly functions for the district. The market is often found close to a bus station and a number of permanent shops.

3. **Rural service centres**: normally located in the centre of a village (and associated smaller villages) serving a population of around 5,000 people and an area not usually exceeding a 10-kilometer radius. Services provided at such a centre could include a primary school, a health post or dispensary, a police post and a primary market, often operating periodically. Market “catchment” areas are often defined by bus routes (or sometimes by short river journeys) and by walking distance. This could be up to one hour (i.e. 5 to 6 kilometres) or even more.

**Planning policies.** Local planning authorities may have clear plans as to which settlements should be developed and which should not. Ranking systems are sometimes used to determine which settlements are to be given priority. This is often based on rural road development policies. The guidance of local planning authorities on how to interpret such policies should always be obtained when planning markets.

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Step 1.4

**Identify market improvement options**

**Justification for new markets.** The basic choice is usually between choosing a new site or upgrading an existing market or trading area. The better option is normally to improve conditions on an existing site, particularly if this can be accompanied by improvements in the market’s management.

**Deciding on rural market improvements.** It is necessary to adopt some objective criteria in considering options for market improvement. This will depend on need (see Stage 3) and the market’s financial or economic viability (Stage 8). However, at an early stage, some overall criteria must be adopted to allow a preliminary selection of markets to be made. The following are some criteria that could be used:

- Improvement or construction of only those markets that have an assembly function and can promote agricultural production could be considered.
- The improvement of primary markets that have only a local retail function, or the construction of new markets, might be linked to those areas with an expanding population.
### Table 1
Types of rural market intervention

<table>
<thead>
<tr>
<th>Type of market</th>
<th>Reasons for undertaking improvements</th>
<th>Ownership</th>
<th>Possible interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing primary markets located in traditional rural village centres</td>
<td>Inadequate and insanitary facilities&lt;br&gt;Poor management&lt;br&gt;Production growth&lt;br&gt;Population growth</td>
<td>Public</td>
<td>Repair existing facilities&lt;br&gt;New building and infrastructure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private</td>
<td>Planning assistance&lt;br&gt;Repair existing infrastructure</td>
</tr>
<tr>
<td>Primary markets in newly planned rural settlements</td>
<td>Production growth&lt;br&gt;Population growth</td>
<td>Public</td>
<td>Site acquisition&lt;br&gt;New building and infrastructure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private</td>
<td>Planning assistance&lt;br&gt;New infrastructure</td>
</tr>
<tr>
<td>Existing assembly markets</td>
<td>Inadequate and insanitary facilities&lt;br&gt;Poor management&lt;br&gt;Production growth&lt;br&gt;Agricultural diversification</td>
<td>Public</td>
<td>Repair existing facilities&lt;br&gt;New building and infrastructure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private</td>
<td>Planning assistance&lt;br&gt;Repair existing infrastructure</td>
</tr>
<tr>
<td>New assembly markets</td>
<td>Production growth&lt;br&gt;Agricultural diversification</td>
<td>Public</td>
<td>Site acquisition&lt;br&gt;New building and infrastructure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private</td>
<td>Planning assistance&lt;br&gt;New infrastructure</td>
</tr>
</tbody>
</table>

- Market improvements might be planned where there are poor public health and sanitation conditions in existing markets because of inadequate space and facilities available in the market area.
- Improvements could depend on the willingness of market traders to improve the efficiency of existing market operations and to accept higher rents and charges to cover the costs.
- Emphasis could be placed on those markets where the private sector takes responsibility for improving individual sheds and stalls, allowing the improvement programme to concentrate on upgrading “common” infrastructure (i.e. roads, paving, fencing, drainage, toilets, etc.).

An initial assessment can be made using these criteria. This will reduce the need to cover all the markets in an area and should simplify the design process. A simple chart could be drawn up to classify the potential market interventions, as shown in Table 1.
2 Assessing market trading requirements
Stage 2 involves the review of data necessary for market design. Existing agricultural production statistics can be used together with surveys to estimate supply and demand. The following activities should be carried out:

Collection of information on local crop and livestock production, on the functioning of the various marketing channels and on general trade conditions in the market’s catchment area.

For new, larger markets and assembly markets, an assessment of the supply and demand conditions.

An estimate of the present quantities of produce that are traded and a projection of the future market throughput.

Overall approach

What is supplied to the market? In Stage 1 the reasons why market improvements might be needed were broadly identified. This stage involves estimating the levels of supply that could pass through new or improved markets. For existing markets the assessment can be based mainly on observing what is happening in the market. Where there is no existing market the assessment must be based on local supply and demand estimates and forecasts.

Supplies to a market and the type of market used vary depending on the type of local agriculture. For example, in areas where there is large-scale production of fruits and vegetables for urban areas, a new or improved assembly market may be required. In areas where production is primarily of export commodities, which usually have well-established independent marketing channels, only rural retail markets may be required.

Catchment areas. One of the most difficult points to consider is the “catchment area” to be served by a
particular market. This could be reviewed by looking at the production areas within walking or animal cart distance of a market, in which case a maximum radius of 10 km from the market might be a reasonable assumption. When an assembly market is being planned, and farmers have access to public transport or small trucks, a longer distance could be assumed. If there are no other large rural centres with markets a “catchment area” for an existing or new assembly market could have a radius as high as 50 km.

Step 2.1
Decide on design information needed

Secondary data. All rural planning depends on the availability of information. The first approach to collecting this information is to undertake a review of existing published documents and maps, such as regular population and agricultural census reports. These provide what is usually referred to as secondary data, examples of which are:

- population data (age composition, gender, migration, and mortality rates, annual growth rates);
- agricultural production data – areas and yields, location of agricultural production areas (irrigated and non-irrigated), forested areas, fishing concessions;
- relevant studies on crop marketing, existing market channels, location of agroprocessing and storage facilities; and
- available site engineering data and maps, strategic and physical planning standards and master plans, environmental data and building cost data.

Primary data. Primary data may also be needed. This involves working with communities, market traders and farmers to collect data and, if necessary, undertaking field surveys to fill gaps.

Market surveys. The types of survey that could be undertaken are as follows:

- inventory surveys that describe physical and trading conditions in existing markets;
- traffic surveys to measure the number of vehicles using a market, the mode of transport used and the origin and destination of agricultural produce;
- socio-economic and environmental impact studies of specific issues or areas; and
• case studies of small businesses, such as market traders, to investigate their financial viability. This is particularly important in order to evaluate their capacity to pay increased fees, which may be necessary after making improvements or building a new market.

The market inventory survey (detailed in Annex A) usually consists of two parts: a general review of market operations and a physical survey, which involves mapping the site and its facilities.

For more complex markets (such as an assembly market) this data should be supplemented by a traffic and origin/destination survey. Where there is a total lack of information on production, a sample survey of farm households may be necessary, although this level of investigation is probably not appropriate for most rural markets. A count of the existing sellers and observation of the market users' activities, together with discussions with traders, should be adequate for most markets.
Step 2.2
Assess supply and demand

It may be necessary to make an assessment of potential supply and demand to determine the existing or likely flows through new markets. The methods for doing this are shown in Annex B and the steps involved are as follows:

- review crop and livestock production, to identify the quantities that could be marketed;
- review the role of market channels, to find out where the produce is presently going;
- review existing consumption, on the basis of average food consumption levels;
- determine on-farm use, to identify what is retained by the farmers for their own use; and
- determine non-market sales, to quantify how much produce is not likely to go through the market.

Step 2.3
Estimate the market’s throughput

Existing throughput. The last step at this stage is to estimate the planned market’s throughput. The basic calculation method, which is the same for both primary and assembly markets, is shown in Form 6 in Annex B. Using this method for each of the main crops it is possible to estimate the following on an annual basis:

- marketable surplus;
- total non-market sales;
- planned or existing market sales;
- imports into the area to meet any deficit; and
- total market throughput.

Future market throughput. In calculating future market throughput additional factors need to be considered. The future throughput of produce marketed at an assembly market is dependent on how local production increases and what proportion of this increased growth will pass through the market. For a primary retail market the future throughput will depend on local retail demand, which will be affected by local population and income growth. The easiest way to handle this calculation is to assume that the competition from other marketing channels remains
Table 2
Calculation of future market throughput
(tonnes per year)

<table>
<thead>
<tr>
<th>Fresh produce</th>
<th>Present throughput</th>
<th>Retail trade Throughput Growth factor</th>
<th>Future</th>
<th>Assembly trade Throughput Growth factor</th>
<th>Future</th>
<th>Total future</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>b (60% of a)</td>
<td>c</td>
<td>d (b × c)</td>
<td>e (40% of a)</td>
<td>f (e × f)</td>
</tr>
<tr>
<td>Vegetables</td>
<td>2 000</td>
<td>1 200</td>
<td>1.40</td>
<td>1 680</td>
<td>800</td>
<td>1.40</td>
</tr>
<tr>
<td>Potatoes</td>
<td>2 500</td>
<td>1 500</td>
<td>1.40</td>
<td>2 100</td>
<td>1 000</td>
<td>1.60</td>
</tr>
<tr>
<td>Fruits</td>
<td>2 000</td>
<td>1 200</td>
<td>1.40</td>
<td>1 680</td>
<td>800</td>
<td>1.50</td>
</tr>
<tr>
<td>Meat</td>
<td>800</td>
<td>800</td>
<td>1.40</td>
<td>1 120</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Eggs</td>
<td>500</td>
<td>500</td>
<td>1.40</td>
<td>700</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fish</td>
<td>200</td>
<td>200</td>
<td>1.40</td>
<td>280</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8 000</strong></td>
<td><strong>5 400</strong></td>
<td><strong>7 560</strong></td>
<td><strong>2 600</strong></td>
<td><strong>3 920</strong></td>
<td><strong>11 480</strong></td>
</tr>
</tbody>
</table>
a constant proportion, to divide the market throughput into retail and assembly trade and then to apply growth factors for:

- retail trade, based on population growth and changes in consumption (remember that census data is often out of date and this may be significant when growth rates are very rapid); and
- assembly trade, based on expected production growth for different crops.

To make projections it is necessary to assume a time period. In financial and economic analysis this is usually taken at 20 to 25 years, based on the life of the investment. However, such long-term projections are difficult to justify and would give an exaggerated impression of demand for space. For rural markets a 10-year projection period is more appropriate. For example, if the growth is 3.5 percent per year, for 10 years it will be a growth factor of $1.035^{10}$, roughly equivalent to a 40 percent increase or a multiplier of 1.4.

In many cases, of course, a market has a mixture of functions. For example, retail trade might account for 60 percent of the total and the balance might be assembly trade. This assumption is made in the example shown in Table 2.

Given the uncertainty of making such estimates it is usually necessary to make two projections – high and low – of future throughput, which reflect optimistic and pessimistic views of likely growth scenarios. The basis for the growth factors should be discussed with local agricultural officers to ensure that they are consistent with current information and policies.

As was suggested earlier, for simple improvements to an existing primary market such detailed calculations can be omitted. By counting the number of stalls ($n$) and multiplying this by the average daily sales per trader ($s$) and the number of marketing days ($d$) in a year, a rough estimate of the annual total ($T$) throughput can be derived. $T = n \times s \times d$. This can be projected into the future using a simple growth factor (as in Table 2).

Note: More detail on methods that can be used to project demand is given in the FAO Agricultural Services Bulletins Nos. 90, 121 and 141 (see Further Reading at the end of the guide).
3 Working with farmers and traders
Those who are likely to use a market must be involved in its planning. The purpose of Stage 3 is to initiate a dialogue with market users to jointly identify the problems they face and possible solutions. This involves working with farmers, traders, consumers and local communities. By the end of the Stage:

An overall social assessment should have been undertaken with the market users (communities, producers and traders).

If a market management committee did not exist, one should have been established.

Special needs (such as for women traders) should have been identified and included in the needs assessment and the users’ needs should have been prioritised.

STAGE 3
WORKING WITH FARMERS AND TRADERS

A participatory approach
Before decisions are made about constructing new markets or improving existing markets full-scale consultations must be carried out with the likely users. These will obviously include farmers and traders and the needs of consumers must certainly be taken into account when planning retail markets. Such consultations should be designed to identify:

- the marketing problems facing the producers and market traders;
- possible ways of overcoming those problems;
- the location for any new market;
- whether surveys are needed, such as a detailed survey of users, and who pays for such surveys;
- whether the community is capable of setting up and running a market committee; and
- whether a sufficient number of producers and traders will benefit from market improvements and be willing to pay additional fees.

Consultation methods. There are many ways to consult with the users. A simple method is just to walk
through a market with local traders and villagers and observe the existing conditions and problems. Another method is to use a simple questionnaire to find out the users’ opinions. For example, this might be used to find out the willingness of market traders to pay additional market fees for better facilities.

Sometimes a more systematic approach is needed in order to gain insight into local conditions. An understanding of the cultural, social and marketing processes involved is required. The community’s perception of its marketing problems and their possible solutions also needs to be examined. The approaches used for consultation include:

- **Rapid Rural Appraisal (RRA).** This method calls for the planner to visit communities and their markets in order to obtain information.
- **Participatory Rural Appraisal (PRA).** With this method the planner assists a community to collect and analyse information and holds meetings at which local people are able to make proposals regarding what is required.

**Key informants.** Both of the above methods usually rely on using key informants (local “experts”), including formal and informal leaders, traders, women’s group representatives and teachers. Acquiring an insight into local knowledge is a significant benefit of the RRA and PRA processes. Planners should attempt to reach a real
cross section of the community. For example, in societies where women do most of the shopping, and where their contact with outside males is either forbidden or frowned upon, it is essential that interviews with consumers be conducted by women.

Step 3.1
Consult with the users

Consultations that may be needed for marketing projects are listed below:

Communities. Discussions with communities are necessary to identify their marketing problems. A common approach is to undertake a PRA or RRA, as mentioned above. There are similarities between the methods and both may be used together. For example, in circumstances where financing is already available for construction, a PRA may be used to help select the location of the new market. Where there may be the possibility to upgrade a market, but only if it is financially feasible, it would be unfair to raise people’s expectations and an RRA may be used to identify present marketing problems. Subsequently, if proposals are shown to be viable, planners may return to the community to conduct a PRA in order to work out the proposals in detail.

Producers. To best understand their marketing problems, discussions with producers are better held at farm level. It is necessary to discuss their problems regarding access to markets to sell their produce. Producers’ organizations or associations could also be approached.
Market traders. Unless a traders’ association exists, discussions with traders are usually best undertaken on a one-to-one basis. There is often a “senior” person or elder who may be delegated to talk for other traders. Where new markets are being considered, meetings should be held at the sites where farmers and traders currently conduct business.

Consumers. A market, however well built, will fail if consumers do not want to use it. The main factor that influences the acceptability of a market to consumers is usually the location. If a location has already been identified, its suitability must be discussed with a sample of retail shoppers; if no site has been identified, individual or group meetings must be held with consumers to identify possible locations.

The best way of holding discussions with the users is usually through a series of meetings. This process could start with a brief introductory meeting, followed by meetings with key informants of community organizations, producers and traders. A final gathering would be necessary to draw up an assessment of the users’ needs (see Step 3.3).
Step 3.2

Provide support to the market committee

The most effective method of involving users in market development is to ensure that they are fully represented on a market committee. Such a committee may already exist; if not, it may be necessary to set one up. This is not an easy step to undertake, but is essential for achieving a sustainable market.

The mandate of the committee should be as flexible as possible in order to accommodate changes in its membership and its powers. Members of the committee should include traders, producers, the market’s manager and transporters. If possible, consumers and women’s groups should also be represented. Financial support may be necessary for the setting up of a market committee. The types of temporary support that could be provided to a committee are:

- minor financial support to cover travel and other expenses of the committee members;
- provision of space to hold meetings, such as a local government committee room; and
- secretarial assistance to prepare documentation.

Step 3.3

Assess user needs

As a result of consultations with market users a “needs assessment” can be developed. Once the problems have been identified, the users should try to prioritize them at the final meeting as a guide for the market designers (Stages 4 to 7) and as a basis for preparing an overall assessment of the project (Stage 8). When preparing the assessment it is a good idea to make experienced facilitators available at the meeting to help the users clarify and prioritize their problems. Facilitators could include representatives from the local departments of agriculture, planning, community development and rural engineering. Some of the physical, social and managerial issues that might be identified (based on the situation at an existing market) are shown in Table 3.

During consultations with the users some special requirements may be identified (such as a need for space to be reserved for women or cooperative groups). Such needs should initially be included in the overall assessment so that the practicality of meeting them is considered.
## Table 3
**Market needs assessment and ranking of users' priorities**
(1 = highest priority)

<table>
<thead>
<tr>
<th>Problems with existing market facilities</th>
<th>Farmers</th>
<th>Traders</th>
<th>Managers</th>
<th>Overall score</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of temporary sales space for producers at peak periods</td>
<td>✓1</td>
<td>✓13</td>
<td>✓10</td>
<td>24 ÷ 3 = 8.0</td>
<td>7</td>
</tr>
<tr>
<td>Lack of temporary buying space for assembly traders</td>
<td>✓2</td>
<td>✓12</td>
<td>✓9</td>
<td>23 ÷ 3 = 7.7</td>
<td>5</td>
</tr>
<tr>
<td>Produce presently being sold in the open, with consequent spoilage</td>
<td>✓3</td>
<td>✓14</td>
<td>✓14</td>
<td>31 ÷ 3 =10.3</td>
<td>12</td>
</tr>
<tr>
<td>Inadequate site security and overnight storage facilities</td>
<td>✓4</td>
<td>✓5</td>
<td>✓11</td>
<td>20 ÷ 3 = 6.7</td>
<td>4</td>
</tr>
<tr>
<td>Poor layout, inhibiting customer flow</td>
<td>✓11</td>
<td>✓2</td>
<td>✓12</td>
<td>25 ÷ 3 = 8.3</td>
<td>8</td>
</tr>
<tr>
<td>Lack of building repair and maintenance</td>
<td>✓14</td>
<td>✓4</td>
<td>✓8</td>
<td>26 ÷ 3 = 8.7</td>
<td>9</td>
</tr>
<tr>
<td>Vehicular and pedestrian congestion due to insufficient circulation space</td>
<td>✓8</td>
<td>✓3</td>
<td>✓7</td>
<td>18 ÷ 3 = 6.0</td>
<td>2</td>
</tr>
<tr>
<td>Lack of parking provision and areas for unloading</td>
<td>✓9</td>
<td>✓6</td>
<td>✓13</td>
<td>28 ÷ 3 = 9.3</td>
<td>10</td>
</tr>
<tr>
<td>Poor condition of roads and paving</td>
<td>✓10</td>
<td>✓7</td>
<td>✓6</td>
<td>23 ÷ 3 = 7.7</td>
<td>5</td>
</tr>
<tr>
<td>Inadequate drainage, with produce loss and potential health problems</td>
<td>✓7</td>
<td>✓9</td>
<td>✓15</td>
<td>31 ÷ 3 =10.3</td>
<td>12</td>
</tr>
<tr>
<td>Inadequate provision for the hygienic handling of meat, poultry and fish</td>
<td>✓12</td>
<td>✓8</td>
<td>✓16</td>
<td>36 ÷ 3 =12.0</td>
<td>16</td>
</tr>
<tr>
<td>A strong demand for new permanent trading spaces</td>
<td>✓15</td>
<td>✓11</td>
<td>✓5</td>
<td>31 ÷ 3 =10.3</td>
<td>12</td>
</tr>
<tr>
<td>Inefficient use of market sales space with low sales volume per trader and low rents</td>
<td>✓16</td>
<td>✓15</td>
<td>✓4</td>
<td>35 ÷ 3 =11.7</td>
<td>15</td>
</tr>
<tr>
<td>Difficulties in enforcing the present market regulations</td>
<td>✓6</td>
<td>✓10</td>
<td>✓2</td>
<td>18 ÷ 3 = 6.0</td>
<td>2</td>
</tr>
<tr>
<td>Inadequate market management, providing few facilities</td>
<td>✓5</td>
<td>✓1</td>
<td>✓3</td>
<td>9 ÷ 3 = 3.0</td>
<td>1</td>
</tr>
<tr>
<td>Under-funding, especially for repairs and maintenance</td>
<td>✓13</td>
<td>✓16</td>
<td>✓1</td>
<td>30 ÷ 3 =10.0</td>
<td>11</td>
</tr>
</tbody>
</table>
4 Identifying the space required
STAGE 4
IDENTIFYING THE SPACE REQUIRED

Introduction
On the basis of the projections made in Stage 2 an estimate can be made as to whether an existing market could cope with increased trade. This applies both to its building floor space (sales area and other uses) and to the overall site area. For a new market the floor space and site requirements will be key factors in the preparation of any plan.

Step 4.1
Estimate sales space requirements

Rural markets normally achieve an annual turnover ranging from 5 to 15 tonnes per square metre of sales area. Appropriate annual throughput values that can be used for projections are:

Stage 4 analyses data collected from market users and from field surveys and desk studies. Facilities to be accommodated in the new or expanded market are defined and, based on this, calculations of overall space requirements are made in preparation for site selection. On completion of Stage 4 there should be a clear and quantified brief that can be used for market site selection and infrastructure design. The following should have been done:

The retail and assembly sales areas of the market should have been calculated.

The potential number of traders in the market should have been estimated.

A list of possible facilities for the different functions of the market should have been drawn up and checked with the users.

The overall site area should have been calculated and, for an existing market, checked against what presently exists.
- small-scale fruit and vegetable primary markets, from 3 to 7 tonnes per m²;
- fruit and vegetable year-round assembly markets, from 10 to 15 tonnes per m²;
- small-town fruit and vegetable open markets, from 5 to 10 tonnes per m².

These standards can be used both for designing a new market and assessing an existing market. If an existing market broadly matches such standards then the sales space should be examined to see if there is scope for it to be used in a more efficient manner in order to meet future demand. Additional space may not be required.

For best results the sales space should be around 20 percent of the total site area and, except in exceptional circumstances, should not exceed 40 percent. Space should be allowed for sales and general internal circulation and daily and seasonal fluctuations should be taken into account. The standards given above are based on experience of the relationship between space requirements and annual turnover. The figures assume an average mix of produce, with fruit and vegetable sales predominating. If a market specializes in a particular commodity such as livestock, some adjustment may be necessary.

With the introduction of physical and managerial improvements, the utilization of market space should become more efficient over time. This means that the unit space required for the various activities can be gradually reduced. For example, a standard of four tonnes per m² might be used for the initial period of operation for a primary market, increasing to five tonnes per m² as management improves. A calculation of space requirements is shown in Table 4.

### Table 4

**Sales space calculation (covered and open) for a basic rural market**

<table>
<thead>
<tr>
<th>Throughput (tonnes per annum)</th>
<th>Space standard (tonnes/m²)</th>
<th>Space needs (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td><strong>Present needs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary market section</td>
<td>5 400</td>
<td>4</td>
</tr>
<tr>
<td>Assembly market section</td>
<td>2 600</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total – present</strong></td>
<td>8 000</td>
<td>10</td>
</tr>
<tr>
<td><strong>Future needs (in 10 years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary market section</td>
<td>7 560</td>
<td>5</td>
</tr>
<tr>
<td>Assembly market section</td>
<td>3 920</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total – future</strong></td>
<td>11 480</td>
<td>12</td>
</tr>
</tbody>
</table>
In the example in Table 4, the calculation indicates that the present need for sales space is around 1,600 m² and there is a future need of 1,840 m². If the sales area of an existing market is less than 1,600 m² there may be a case for expanding it to at least that area and, to meet future needs, probably up to 1,840 m². This figure should also be used as the target for the design of a market on a new site. Space for livestock trading must be added separately. In addition, if the market is going to trade in non-food items such as charcoal, cloth and household goods, additional space should be allowed.

**Step 4.2 Identify trading spaces**

It is possible to calculate the number of trading spaces that might be allocated from the estimate of overall sales space required. An important consideration is that all those wishing to trade in a retail market should be given the opportunity to do so. In assembly markets, on the other hand, it may be necessary to restrict space to existing traders, with allocation for some growth. It is not unknown for people with no previous trading experience to seek to gain access to a new market. Allocating space to all those who request it may limit the amount of space that can be given to experienced and *bona fide* traders.

In order to check whether the space allocations match traders’ needs an assumption has to be made about the proportion of retailing that will be undertaken by farmers. Some primary markets are exclusively used by farmers, whilst in others all the space is allocated to permanent traders. A mixed approach is, however, often the best.

Using the previous example of 1,840 m² of sales space the calculation of the number of trading spaces might be as shown in Table 5. The space allocation is based on experience of average rural market conditions. The amount of space allocated to users is usually around 10 m² for each permanent retail trader, 6 m² for an assembly trader (who requires less space as most trade is done from vehicles) and 3 m² for a farmer.

The figures need to be checked against present use but, obviously, the amount of space allocated per user could be varied. This is an issue that would need to be discussed with the users during Stage 3. However, it is important to be cautious. Traders will inevitably ask for
much more space than they really need. Maximizing the efficient use of space must be one of the clear objectives of market planning. Space used badly is a misuse of resources, particularly if there is a shortage of suitable land or if construction costs are high.

A decision must also be made as to how to sub-divide the space between covered and open use. For example, in the dry season temporary users might sell in the open, using tables and umbrellas. Permanent traders would then be allocated the covered areas. However, one great danger with this approach is that all food items might end up being sold in the open areas with the permanent stalls only allocated to those traders selling non-food items.

### Table 5
**Estimating trading spaces for a basic rural market**

<table>
<thead>
<tr>
<th></th>
<th>Space needs $(m^2)$</th>
<th>Space per user $(m^2)$</th>
<th>Number of users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present needs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary market section</td>
<td>1 512</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- traders (60% of space)</td>
<td>907</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>- farmers (40% of space)</td>
<td>605</td>
<td>3</td>
<td>200</td>
</tr>
<tr>
<td>Assembly market section</td>
<td>328</td>
<td>6</td>
<td>55</td>
</tr>
<tr>
<td>Total</td>
<td>1 840</td>
<td>345</td>
<td></td>
</tr>
</tbody>
</table>

From the discussions with the users carried out in Stage 3, initial proposals can be made regarding the facilities that might need to be included in the market. There are three broad types of facilities: those that are standard to all markets; specialized uses that may be required in some markets; and non-market facilities.

**Standard uses**

**Retail traders’ stalls.** These are likely to be fixed-roofed stalls, rented on a monthly or annual basis. Often the stalls are provided with lock-up storage facilities (for...
example, under a raised platform or counter). In some circumstances, such as for the sale of meat, fish or dairy products, the stall may be enclosed with wire mesh. Sometimes separate lock-up shops for butchers and fishmongers are also provided. Stalls for non-food items should be located in a separate area.

**Producers’ stalls.** These may be similar to the retailers’ stalls, but are usually rented on a daily basis. The premises normally have a roof over them, but are not usually provided with lock-up storage facilities. Sales may be made from a marked area on the floor, from a raised platform or fixed counter, or from trestle tables that can be folded and stored at the end of the trading day (see details in Stage 7).

**Assembly market sales area.** Assembly activities often take place on temporary spaces, which are mainly used during the peak harvesting season. The simplest form is where the sales take place in a parking area, the producers bringing their produce up to the trucks of the traders. Alternatively, a roofed market hall can be provided, in which the producers lay out their crops for purchase by traders who carry them to their trucks. In some countries, such as many in the Near East, commission agents operate in assembly markets. An alternative sales method is for crops to be auctioned to the assemblers, either by commission agents or by the market operators. In this case it is normal to provide a separate auction area on a raised concrete slab.
Pedestrian and vehicle circulation areas. In rural markets these are usually the same areas (unlike larger urban retail or wholesale markets where there is often segregation). There must be adequate circulation around all the trading areas, so that produce can be brought in or taken out with minimum obstruction.

Parking. Parking provision is needed for service vehicles, delivery vehicles and visitors. This should include space for non-motorized transport, such as bicycles, motor bikes and ox-carts. In most primary retail markets the provision can be minimal, but in assembly markets greater consideration must be given to providing organized parking areas.

Ancillary facilities. These usually include a cleaner’s store, an office for the market manager, public toilets, standpipes for fresh water and garbage collection points.

Other marketing uses
Specialist users’ stalls. Retailers’ or producers’ stalls provided for specialist or targeted users, such as women traders, producer groups or cooperatives.

Livestock sales areas. Livestock sales are normally undertaken outdoors, preferably in a fenced enclosure or ring. A livestock market needs space for holding live animals, with temporary shade space and water points. Many rural markets also have a separate area for live poultry.

Slaughter slabs. Sales are usually of live animals, but slaughter facilities are sometimes provided, particularly in rural retail markets. The simplest arrangement is a concrete slab, with a hoisting rail, water supply and effective drainage.

Storage. Most rural markets deal in fresh produce for which storage provision is not necessary. However, small lockable chests for overnight storage may be provided, for example, in markets where grains or other non-perishable crops are sold.

Non-market uses
Other facilities that should be located near the market may be identified from discussions with the users. It might not be possible to accommodate these facilities on the market site, but provision can often be made on adjacent land. This is particularly important when a market is constructed in an entirely new location. If the market is to play an important role in the life of the community, services and businesses will want to be close to it. These could include:

- agricultural extension service office;
- police post;
- dispensary or clinic;
- banks;
- post office and public telephones;
- space for grain millers (e.g. rice or maize mills);
- cooked food stalls;
bus or lorry stand;
* crèche or nursery for mothers working in the market;
* dormitory accommodation for farmers and traders who need to make an overnight stay; and
* space for second-hand clothes sales. Clothing traders often locate close to a market because the visiting farmers have money to spend after selling their produce.

---

**Step 4.4**

**Determine the area needed for the site**

The final step at this stage is to estimate the overall space requirements for a market. As noted in Step 4.1, the built-up area of the site should be around 20 percent of the total site and under no circumstances should exceed 40 percent.

In addition to the sales space some allowance should be made for other buildings that may need to be...
accommodated on the market site (if this is concluded from Step 4.3). For a normal small-scale rural market this is likely to consist of a market manager’s office, latrines and security and cleaning arrangements. Based on the sales space calculations in Step 4.1, the method of calculation of the site area is shown in Table 6.

In this example, the total site requirement is around one hectare (10 000 m²), assuming the buildings take up 20 percent of the site area. The absolute minimum site requirement would be 0.5 hectare, assuming a building coverage of 40 percent. These figures can be used to check the area of an existing market, to determine the additional land needed to expand an existing market or to use as a basis for selecting a new market site.

At this stage it is usually not possible to accurately determine the areas for specialized and other uses. These will need to be reconsidered at the detailed building design stage (Stage 7).

<table>
<thead>
<tr>
<th>Table 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Estimating overall land uses (m²)</strong></td>
</tr>
<tr>
<td><strong>Land use needs</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Primary market section:</td>
</tr>
<tr>
<td>• traders (60% of space)</td>
</tr>
<tr>
<td>• farmers (40% of space)</td>
</tr>
<tr>
<td>Assembly market section</td>
</tr>
<tr>
<td>Manager’s office at 10-15 m² per office worker</td>
</tr>
<tr>
<td>Cleaner’s store plus guardhouse at 10 m²</td>
</tr>
<tr>
<td>Toilets at 15 m²</td>
</tr>
<tr>
<td>Total built space m²</td>
</tr>
<tr>
<td><strong>Total site area m²</strong></td>
</tr>
</tbody>
</table>
5 Choosing the right site
In Stage 5 the desirable economic, social and environmental characteristics of the market need to be reviewed and a site chosen that comes closest to fulfilling those requirements. The site for the market and the availability of the chosen site should be confirmed, and the need for an environmental assessment reviewed. The following points should be considered:

The location of an existing market site or a new site should be reviewed to ensure that it is well located.

The features of the chosen site should be analysed to identify whether it is suitable and to confirm that there are no constraints.

The chosen site (or sites) should be screened to see whether an Environmental Impact Assessment (EIA) is needed.

If an EIA is needed, the process for undertaking such a study should be initiated.

The site options should be assessed and the availability of the preferred site confirmed.
gate or deliver produce directly to urban markets. Investment in a new or improved retail market may similarly be wasted if there are plans to move a bus station to the other side of the village or town. Under such circumstances, farmers and retailers are likely to follow the bus station, even if it means conducting business on a vacant plot of land and leaving a purpose-built retail market empty. For such reasons, it is essential that existing and planned traffic flows be fully reviewed.

**Mapping.** Before choosing a site it is essential to see if maps are available of:

- the planning context, indicating the potential market site in relation to its catchment area, transport links and other economic and social facilities; and
- the potential market site (or sites), showing its physical layout and facilities, including infrastructure services.

Sources of such information are survey departments and local authority engineers. Other relevant data may also exist, such as aerial photographs and planning reports. The mapping process is discussed in further detail in Annex A.

---

**Step 5.1**

**Review suitability of site locations**

The first step in choosing a market site is to ensure that its location is satisfactory. The essential locational characteristics that a site should have are:

- There must be easy access for deliveries to the market. If the market is not well located, producers may bypass an assembly market and try to supply an urban market directly.
- Primary markets that are mainly retail in nature should be close to where consumers live so that it is convenient for them to use the market.
- Both primary and assembly markets should be close to public transport facilities and, preferably, also close to other commercial and social facilities.

These locational characteristics are important, whether an existing market is to be upgraded or a new site is to be selected. At this stage there may be a number of alternative sites for the market and it may also be necessary to choose between upgrading an existing market or relocating it to a new site. Some examples of typical locational factors in selecting a site are shown in Figure 4.
**Figure 4**

**Market location characteristics**

In this example the market site was identified in a local action plan and located adjacent to a proposed bypass road. The site was within a short walking distance of the centre of a small district town and near to the district hospital, a potential customer for produce.

The site for this market is relatively flat, compared to adjacent areas, but as it was located in a minor valley there were potential drainage problems. This issue was addressed in the layout plan of the market and the design of the infrastructure (see Figures 6 and 7).

**KEY**

1. Possible market site
2. District centre and mini-bus stand
3. Local district hospital
4. Proposed bypass road
5. Existing main road to the capital
6. Steep slopes
7. Valley with drainage problems
8. Sports field
Step 5.2
Reviewing site features

After a list of the potential sites has been drawn up, it is then necessary to look in detail at the individual sites. The factors that should be considered are as follows.

- Will the site meet the needs of the users, as identified in Stage 3? Is the site, or a nearby location, already being used for marketing, thus suggesting that the location is suitable?
- Is there sufficient space on the site to accommodate the required facilities that were identified during Stage 4?
- Is the site available for market use (see also Step 5.5)? Does the use of the site as a market fit in with local planning or zoning requirements?
- Can the site development be coordinated with other projects or linked to road and other transport infrastructure upgrading?
- Is there good access for pedestrians and uncongested road access for vehicular traffic?
- Will the site be easy to develop? Generally, building costs are lower for flatter sites.
- Are there any breaks in slope that will need retaining structures?
- Are there soil problems, such as contamination, low bearing capacity or swelling clays?
- Are there any potential hazards, such as flooding, erosion or landslide problems?
- Could there be any negative environmental impact (see Step 5.3)?
- Are any public services, such as water or electricity supply, available on the site?

The result of the site analysis will be a list of the site characteristics, which can be noted on a map of each potential site. An example of a simple site analysis map is shown in Figure 5. Such a map will also form an essential basis for the site planning process to be undertaken in Stage 6.
Figure 5

Market site analysis

Site analysis looks at development options and problems. In this case, the original market site was rejected as it caused congestion on the main road and obstructed the view from a guest house. The only viable alternative in this steeply sloping settlement was an area adjacent to a fast flowing river with a potential flooding risk, requiring river training to protect the site. In compensation, the site could accommodate some future expansion and easily be provided with parking, drinking water and electricity supplies.

KEY

1 Proposed market site
2 Road to district centre
3 Main road to capital
4 Bridge over river
5 Landfill parking area
6 Original market site
7 Guest house
8 Expansion/parking area
Step 5.3  
Determine if an environmental assessment is needed

Environmental issues need to be taken into account at an early stage to ensure that any positive impact is maximized and any negative impact is either prevented or reduced to a minimum. A well-formulated market development should not have a negative effect on the environment or on the local population. Any negative impact can be reduced, but at a cost. It is better, therefore, that the potential impact is recognized from the beginning.

*Environmental Impact Assessment (EIA).* This is a process for preparing a balanced appraisal of a project by predicting and evaluating the likely effects that a development activity could have on the natural and human environment. The EIA is undertaken before the activity starts. Small rural markets do not usually need an EIA, although it may be required where a donor funds the market.

*Screening.* This establishes whether a detailed assessment is needed. Guidance on the criteria for screening needs to be obtained from a relevant government department or agency. Screening criteria usually relate to the type of land use and scale of development. Most industrial activities and large-scale developments require an EIA.

Step 5.4  
Prepare an impact statement

When an EIA is required, the market owner or rural planner usually prepares it. Most rural technicians can carry out an initial assessment (IEIA), but a full-scale EIA is likely to need the assistance of a specialized agency or of private consultants.

When the EIA has been completed a government or specialized agency usually reviews it and comments on the proposals. A formal environmental consent is often needed (see Stage 9), and this may also specify whether an environmental management plan needs to be drawn up.
<table>
<thead>
<tr>
<th>Site characteristics</th>
<th>Existing site</th>
<th>New site 1</th>
<th>New site 2</th>
<th>New site 3</th>
</tr>
</thead>
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<tr>
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<td>1.5</td>
<td>2.0</td>
<td>1.8</td>
</tr>
<tr>
<td>1. Fits needs assessment</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Adequate size</td>
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<td>2 (6)</td>
<td>1 (3)</td>
<td>2 (6)</td>
</tr>
<tr>
<td>3. Land availability</td>
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<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4. Access</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Topography</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Services availability</td>
<td>1</td>
<td>2</td>
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<td>7. Environmental impact</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8. Hazards</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9. Planning context</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Maximum score 27 ( or 33)</strong></td>
<td><strong>15 (21)</strong></td>
<td><strong>17 (21)</strong></td>
<td><strong>18 (20)</strong></td>
<td><strong>20 (24)</strong></td>
</tr>
</tbody>
</table>

**Note:** Lowest number = best option
Step 5.5
Review site options and availability

The last step of this stage is to review the site options, choose the best option and confirm the availability of the preferred site. The information obtained during the previous steps needs to be gathered and compiled into a ranked tabulation of the alternatives (see Table 7).

**Ranking.** If there is only one possible site, the purpose of this analysis is to ensure that it fulfils all the criteria listed in Step 5.3. If there are a number of alternatives the simplest approach is to prepare a table (as in Table 7) in which they can be compared. This can be done by ranking the factors for each site on a scale of 1 to 3 (with 1 being best and 3 worst) and then totalling all the factors. If the market users find some of the factors more important than others these could be “weighted”.

Thus, in the example shown in Table 7, the “existing site” offers the best alternative. However, because this site is the smallest, it may not be found viable at the time of detailed design. This problem could be reflected by weighting factor 2 (site size) using a ranking of the options on a scale of 3 to 9 (the alternative scores are given in brackets in Table 7). In that case the overall ranking of the options would change and “new site 2” would become the preferred option.

**Site availability.** Site availability is often one of the main constraints to choosing a site. Ownership or title to the land must be clarified and the relevant planning, building and environmental consents obtained. If compulsory acquisition is not possible, an agreement to purchase or rent the land will need to be made with the landowner. This may be a private owner, a local authority or a community. These issues need to be clarified at the site selection stage and before any detailed site planning is started (Stage 6).
6 Preparing the site plan
In Stage 6 an overall master plan is prepared for the site incorporating all design elements. This provides a framework for all activities that will take place within the market. The following points should be covered:

All relevant design information obtained during the previous stages should be gathered together.

The site design should be organized to reflect the users’ needs.

The road system inside the market should be designed to maximize efficient circulation.

Supplementary uses, such as public spaces and landscaping, should be incorporated into the site plan.

The site plan should be finalized. Changes made during the detailed design of buildings and infrastructure (see Stage 7) should be incorporated.

Site development principles
The next stage after choosing the site is to prepare a draft master plan. This is a method of organizing the different uses on the site and should incorporate all the needs of the users and take account of the factors that influence the management and operation of the market. A good plan reflects these factors well and provides the maximum benefit for the minimum investment. A bad plan can hinder the market’s operations. At this point, the plan will only be tentative. It will need to be finalized during the detailed design in Stage 7.

Market development is often an ongoing process. At first there may be an open market in a street or on a piece of vacant land with temporary stalls. This may be followed by the construction of simple sheds. Assuming sufficient land is available, the market might gradually provide more specialized facilities, justifying the provision of covered market buildings. A small rural market might start with the building of a perimeter wall and provisions for paving and rubbish collection facilities. Covered stalls might then be built when the resources
are available. The site plan will need to take into account this evolution. Initially, lack of resources may mean that it won’t be possible to meet all the needs of the users, but provision should be made so they can be accommodated in the future.

Step 6.1  
Gather design data

It is necessary to gather all the information that has been assembled during the previous stages. The social, physical and institutional factors that need to be considered in preparing a site plan are:

- site analysis maps (from Step 5.2) showing the geometry of the site, its boundary, whether it is flat or sloping and the positions of vehicular and pedestrian access points;
- maps showing the surrounding land uses and infrastructure facilities, such as main drains, sewers, overhead power lines, adjacent buildings, and bus stops; and
- tabulation from Stage 4 of the areas of buildings required, the number of users’ spaces and lists of any special facilities that may be required, including environmental impact mitigation measures.

Step 6.2  
Organize land uses

The purpose of this step is to reflect the views of the users on how the activities on the site might be organized for maximum efficiency.

Zoning land uses. The question of segregating assembly and retailing functions is a difficult issue. Few rural assembly markets are used exclusively for assembly purposes and many assemblers are also retail traders. Farmers bringing their produce to assembly markets often use the markets’ retail facilities as well. The mixing of assembly and retail functions in small markets can be viable, particularly if the functions are separated by time, e.g. with assembly taking place early in the morning before retailing starts.
Another zoning issue is whether specialized uses should remain in a general market or are better located elsewhere. For example, it may be preferable for a meat market to be located adjacent to a slaughterhouse.

The different sections of a market can be set up as follows:

- fresh fruit and vegetable retail trading areas;
- temporary sales areas for producers and assembly traders;
- meat, fish, poultry and egg sales;
- sales of grains and spices;
- sales of cooked food;
- other non-food sales, such as clothing and household goods;
- general circulation areas (internal and external); and
- other uses, such as storage, administration and public toilets.

**Grouping sales outlets.** The direction from which most customers arrive influences the location and grouping of stalls. Customers often come from a main point such as a bus stop or from the direction of a more densely populated area. It is preferable that stalls for products that people buy on an almost daily basis, such as roots and tubers, fruits and vegetables, be located away from these approaches so customers can be drawn into the market. If retailers are grouped by type of product, competition will be greater, which should be beneficial for consumers.

Some food stalls, such as those used by butchers and fishmongers, may be incompatible with others. These should be located in different sections of the market or at least separated by a main path or aisle.

**Temporary and small-scale vendors.** Small-scale retailers or farmers often operate in the area surrounding a market, causing congestion and competing with the permanent retailers, as consumers may find buying outside the market quicker. However, it is not desirable to remove such small-scale traders, as they would lose their means of livelihood. These temporary vendors and producers sometimes operate during limited days of the week or for a limited season. Ideally, separate spaces within the market should be provided for them and daily licences issued.
Step 6.3

Plan vehicular access and circulation

Easy access to the market is essential for efficient movement of goods and people. The best form of access is for public transport to be provided with a stopping point at the front of the site and for the service access to be at the side or rear of the premises. With a small rural market this is achieved by providing:

- an access road to one side of the market; or
- a perimeter road around the market site (the typical market square).

For larger markets, an internal road system, which has neither short cuts to other destinations nor dead-ends (cul-de-sacs), could be provided.

A road running through the centre of the market area (i.e. effectively creating a street market) causes the most congestion and is not a recommended option.

To avoid traffic accidents, junctions of loop roads to main roads should be T-junctions (i.e. having only three potential collision points compared with the 16 that occur with crossroads). The T-junctions should be as near as possible at right angles so that maximum visibility at corners is obtained. Separating cars and pedestrians is not necessary in rural markets, although priority should be given to pedestrians, at least during the main hours of operation. A workable circulation system is to develop pedestrian paths roughly at right angles to the service roads. Some of these characteristics are included in the market layouts shown in Figure 6.

Parking. Separate parking areas should be available for visitors’ vehicles. In larger markets traders should be allocated separate parking for their vehicles, usually in an area from which the general public is excluded. Delivery vehicles need to be able to unload close to the market stalls, although this may not be possible for all retail markets. To reduce congestion, deliveries should normally be made before trading starts (usually early morning) and rubbish collection and cleaning should be undertaken at the end of the working day. Signs are desirable to indicate who is allowed to park and at what time parking is permitted. The relationship of the market to bus stops and petrol filling stations is also important and ideally all these facilities should be located close together. In most rural markets, parking areas for bicycles, motorcycles and animal carts are a greater priority than parking for private cars.
Figure 6

Basic layouts of rural markets

The basic layout of a rural market will depend on physical site conditions, the level of investment and local cultural preferences.

Example A: The simplest solution is a street market, with stalls either on one or both sides of the road. This is really only suitable if the market is not on a main road.

Example B: A traditional solution is to locate facilities (open sales area or covered stalls) in a central square or village green, with a road system preferably around the edges.

Example C: Another common form is a dedicated market site, which is often enclosed by a wall or fence. The sketch layout on the opposite page is an example and shows the evolution of the site location plan illustrated in Figure 4.

KEY
1 New covered market stalls
2 Open sales area
3 Dairy and meat stall
4 Future covered market stalls
5 Parking
6 Future parking
7 Paved area
8 Future paving
9 Future shed/cold room
10 Future toilets
11 Planted area
12 Steps
13 Existing road connecting hospital to centre
14 Assumed alignment of future bypass road
Figure 6, continued
A sketch layout
Step 6.4
Plan for supplementary uses

Public space. The market should provide an atmosphere favourable to selling. For larger markets the circulation system is usually best arranged so there is a “hierarchy” of spaces, with one or more major trading areas, off of which there are minor spaces serving other functions.

Location of facilities. Facilities that serve all market users, such as toilets, rubbish bins and boards that give price and other information, should be centrally located so that they are easily accessible. In larger markets, such facilities will need to be provided in several different locations.

Marketing of live animals. Livestock has no place inside a food market. A separate enclosure with its own water supply is needed. The humane treatment of animals is important to maximize the benefits of livestock sales, and basic principles of animal husbandry must be observed. In most rural markets there is no possibility of erecting a separate building for poultry. Therefore, the best solution is usually to house the birds in cages in a well-ventilated area, close to the exit and separated by solid masonry walls from other parts of the market.

Uses around the fringe of the market. It is important for a market to be a lively place in order to attract customers. Spaces should be allocated around the edge of the market for business activities such as small-scale shops. Seating accommodation is a common feature on the fringe of traditional market spaces, for both traders and shoppers to relax. Spaces are often provided for cafés and cooked-food stands, which should be concentrated at junctions of roads and paths in order to maximize trade. Portable stands or small huts are normally used.

Site landscaping. Facilities are needed to make the site comfortable for users. Existing shade trees should be retained and new trees planted wherever possible. Tree guards made of wooden stakes or steel gratings should be used to protect trees. In larger markets, outdoor seating should be provided. Low walls can provide appropriate seats.
Step 6.5
Finalize the site plan

After reviewing all the planning factors discussed above a draft site plan can be prepared. Approaches to preparing site plan maps are discussed in Annex A. The main factors that must be reflected in the site plan are:

- the dimensions of the market elements, such as optimum size of buildings and stalls, width of streets and drain reserves (see Annex C);
- land-use zoning and provision of adequate circulation and parking areas, which include space for animal carts, cycles and motorcycles (Steps 6.2 and 6.3);
- orientation of buildings in relation to climatic factors, such as maximizing air flow through buildings and minimizing solar heat gain by staggering the buildings in relation to each other and orienting them on an east-west axis; and
- meeting any requirements set down by the local authority to conform to minimum structural, public health, hygiene and disabled-access standards.

Checking areas. The first part of the process is to total up the sales and circulation space and check whether it broadly corresponds to the overall area projected for the market in Stage 4. If necessary, adjustments to the total requirements can be made to take account of existing facilities. If an existing market is sub-standard it is better to consider its redesign as though it were a new market, making allowance for existing facilities.

Consulting with users. An important part of the process is to consult with market users. The market committee should be given the opportunity to examine critically the market layout and building designs to see if they fulfil the requirements set down in the design brief. Users may need to be presented with a number of alternative site layouts so that the most suitable can be chosen. This cannot be undertaken until the next stage has been completed.

After Stage 7 it will usually be necessary to revise the draft site plan. An example of a rural market site plan is shown in Figure 7.
Adjusted site layout for Monggar market, Bhutan
Figure 7
Example of a rural market site plan

To construct a rural market it is necessary to prepare dimensioned drawings that can be used by contractors for setting out and construction. This figure shows the detailed planning that was needed to develop the site illustrated in Figures 4 and 6. The main features shown on the site plan are:

Key

1 Market buildings, stalls and pitches
1a Dairy market
2 Stores and market offices
3 Paved areas for pedestrian circulation
4 Access roads
5 Parking areas, including defining parking bays
6 Changes in level – steps and ramps
7 Walls and fences
8 Landscaping – new and existing trees and grassed areas
9 Drains and culverts
10 Other infrastructure – garbage collection points, toilets, street-lights and water supply points

The new cheese and milk market at Monggar, Bhutan.
7 Deciding on the buildings and equipment needed
In Stage 7 the building and infrastructure designs are completed. The following points should be covered:

The detailed designs for buildings and stalls are prepared.

The detailed designs for infrastructure such as roads, paving and services are prepared.

The necessary environmental mitigation measures are identified and integrated into the project design.

A list of the equipment needed for the market is drawn up.

After completing these steps the site plan (See Stage 6) may need to be amended to incorporate changes made during the detailed design of buildings and infrastructure.

STAGE 7
DECIDING ON THE BUILDINGS AND EQUIPMENT NEEDED

The purpose of this stage is to use the space projections (from Stage 4) to design the buildings and infrastructure in detail, within the context of the draft site plan (from Stage 6). This is mainly the responsibility of a rural engineer or architect.

Step 7.1
Design buildings

The first step in the detailed design process is the design of the market buildings. In the context of markets, buildings can include many forms of structures, ranging from simple isolated stalls and open-sided roofed sheds to fully enclosed buildings.
Facilities required
The basic issue to resolve is whether the market should use open-air stalls, purpose-built buildings or a combination of both of these. The facilities required for sellers of fruits and vegetables are much simpler than those required for traders of higher-value goods, such as clothing, who will invariably need lock-up facilities. It is necessary to determine the number of sellers requiring facilities under cover and the number who prefer to sell in the open air, perhaps providing their own stall. In many periodic rural markets only the permanent traders operate under cover. Although everyone might wish to be under cover, there has to be a clear relationship between the level of rent and fees charged and the quality of facilities provided.

Market stall design. The basic module of any market design is the individual market stall. The size of sales space may vary widely. Some sellers may only trade a single sack of fresh produce a day (25-50 kilograms). A small stall or trestle table would be appropriate for them. There may also be a need for very large stalls, for example, for specialized traders in grains or dry foods who require additional space for storage.

Designing stalls in a modular fashion so that a number of stalls can be combined to form a larger unit normally addresses such design problems. Standard dimensions of stalls are given in Annex C. An example of stall arrangement is given in Figure 8.

There are many forms of multi-use stall design, depending on local cultural preferences. They can be based on the trader standing behind the stall, standing in front of the stall or sitting on the stall to serve customers. The distance a person can reach determines the overall dimension of the stall. It is essential to consult with traders on the suitability of the stalls and their dimensions before finalizing the design. In some cases traders may have problems in understanding drawings or designs. In such circumstances it would be useful to make a model of the planned stalls. Too often, markets are designed without such consultation. This often leads to traders redesigning their stalls after moving into the market. In one market in Nepal, for example, traders took advantage of the high ceilings of their individual lock-up stalls to build a second floor to provide sleeping quarters. Such lock-up stalls, often placed around the perimeter of the market, are frequently the most popular with sellers.

For small rural markets it is common for stallholders to provide their own stalls (e.g. umbrellas, barrows with an integral roof, or simple structures that can be collapsed at the end of the day). They usually have a canvas awning or plastic-sheeted roof spanning between a timber, bamboo or steel framework. In these cases, the market stalls are the property of the individual stallholders and are not subject to any design control. Alternatively, the market could provide standard prefabricated stalls on an individual or group basis, the rental fee reflecting the use of the stall as well as the space.
Design of market stalls

The design of market stalls will depend on whether traders’ premises are enclosed or open and what method is customary for the sale of produce. A way of understanding this is to look at the arrangement and the space needed as a cross section. There are three basic ways the sellers might use their sales spaces:

Example A: The trader stands behind a fixed stall or trestle table. Produce can be stored and displayed both under the stall and behind the trader.

Example B: The trader sits on the stall and serves the customer by reaching forwards over the displayed produce.

Example C: The trader stands in the aisle and serves the customer from goods displayed and stacked behind

These arrangements can be applied to open pitches, fixed stalls or lockable units. The minimum width of a stall or pitch should be 1.5-1.8 metres. Another issue to resolve is the extent to which shelter is provided for customers: by either extending the roof overhang over the aisle or by placing the pitches or stalls in a wide span structure.
**Meat and fish stalls.** Although fresh fruits and vegetables may make up the majority of the food stalls, it is likely that facilities for butchers and fishmongers will also be needed. It is important from a health point of view that these facilities are concentrated in one location. The provision of a water supply, fly-proof meat safes and hanging rails for meat is essential.

**Poultry marketing.** If chickens, ducks and geese are sold slaughtered the sales facilities will be similar to those used for fresh meat or fish. For a market seller, however, live birds have an advantage over slaughtered birds in that they do not have to be disposed of at the end of the working day. In simple rural markets live poultry may be displayed in an open enclosure or in the baskets in which the birds were transported to market. The poultry can be either purchased live (i.e. for slaughter at home) or slaughtered and plucked on demand in the market, in which case the provision of separate slaughter facilities is necessary. This requires a shackle for hanging the birds and hot water for scalding carcasses. Provision should be also made for condemned carcasses, which are usually taken away from the market and incinerated.

**Egg marketing.** Eggs are sold by grade, usually in baskets, cartons or trays. Samples of the eggs are often displayed on a table or bench. As eggs are perishable it is essential they be located in the coolest place, with adequate shade and cross-ventilation.
Figure 9
Layout of market buildings

This figure shows two typical types of small-scale market buildings: an open shed with pitches on which the sellers sit and an enclosed market building, in this case a facility for the sellers of meat and cheese products. The layout also illustrates selling from trestle tables under a shade tree and selling cooked food from a mobile stall.

KEY
1 Double-sided open shed pitches, 1.5 × 2.25 metres
2 Booths for sale of meat or cheese
3 Sink and preparation counter
4 Serving counter, with shutter
5 Customer area in enclosed single-sided building
6 Entrance steps
7 Paved area for pedestrian circulation
8 Trestle tables under shade tree
9 Cooked food stall, under umbrella
10 Wall used for sitting
11 New and existing trees
12 “V” drain
13 Garbage collection point
14 Water supply point
Design of market buildings
A typical layout for simple market buildings is shown in Figure 9. The fixed stalls can either be accommodated in single-sided buildings ranged along the external wall or in double-sided blocks (as in the figure). With the latter, access can either be from the perimeter or stalls can be approached from a walkway through the centre of the building. The walkway is particularly important when protection from weather conditions is a major consideration.

The extent of enclosure of the market building (walled or not walled) and the requirements for security, particularly for storing products, determine the overall internal circulation system. Maximum airflow can be provided by constructing an open-sided shed, with either fixed stalls or pitches (defined areas of the market floor) for sellers laid out within it. A conventional arrangement of covered markets is to have two or three aisles, with one or two double-sided sets of stalls down the middle of the building and single-sided stalls on the perimeter looking into the market.

Storage. Many users would like to have storage facilities. A simple lockable cupboard under a stall is often sufficient. Stalls that can be closed off with pull-down shutters or separate lock-up retail shop units are more secure.

Construction methods
Use of resources. If at all possible buildings in rural areas should be constructed using locally available resources such as materials, craftsmen and labourers. The rural engineer may have to undertake a rapid appraisal of what resources are available and at what cost. Traditional building crafts are also appropriate to use, particularly for walling, roofing, plastering, carpentry and joinery. These methods are highly adaptable for creating simple market structures, although it is not always possible to use them because they may require skilled craftsmen. Some level of off-site prefabrication of parts of the buildings, such as roof trusses, may also be needed.

Fire and air pollution. Fire is common in rural areas, particularly dry-season bush fires. If fire-resistant materials are not used the minimum distance between any rural buildings should be from 6 to 8 metres. The location of fresh and cooked food stalls should be downwind from odours, dust and flies. Fires in markets are, unfortunately, quite common and the use of traditional building materials can increase the risk.
Step 7.2
Design infrastructure

In parallel with the design of the market buildings the design of the infrastructure needs to be considered carefully. Features of some of the key infrastructure elements are shown in Figure 10.

**Paving.** This is required for roads, parking areas and pedestrian circulation. Ideally, a market should have completely paved surfaces, using asphalt, in-situ concrete or, where vehicular traffic is minimal, some form of paving units such as pre-cast concrete or stone blocks. The cost of paving, however, can often take up most of the limited budget that is available for market construction and maintenance. It is important therefore to find an economic solution to paving. Although easy to clean and wash down, paved surfaces of markets can cause severe run-off and erosion problems. Small-scale, rural markets may be effectively paved using more traditional materials such as brick, stone cobbles or even crushed and rolled gravel, which allow some of the rainwater to be absorbed into the subsoil.

**Pedestrian safety measures.** At intersections of paths and roads it is necessary to provide a crossing where the...
pedestrians have the right of way over vehicles. An effective method is to provide a physical interruption in the road, such as a speed hump, so that the vehicles are forced to slow down.

**Pitch markings.** For sales in open areas the space allocated to the traders, frequently called a “pitch”, should be clearly outlined. The size of the pitch should be based on the experience of stallholders’ needs. Methods for defining pitches include road-line painting or using a different construction material (e.g. defining the pitch using a concrete strip). The most important consideration is that the paint or other method of defining the pitch should not be worn away by normal foot traffic. It is also important to distinguish each pitch by numbering. Painting the pitch number on the paving is the simplest method.

**Surface water drainage.** A key issue in designing any paving system is the method of drainage. Clogging of poorly designed or maintained drains is a common occurrence at many markets. In small markets it may not be necessary to have any internal drains within the market area as all the rainwater can run to perimeter drains. This is not possible in larger markets, where internal drains must be installed. This presents two problems: the difficulty of routine cleaning, particularly of debris from vegetables, and the potential obstruction the drains introduce, both to delivery vehicles and foot traffic.

To counteract these problems the drainage channels need to be set as flush as possible with the general level of the paving. Dished-shaped drains are generally easier to keep clean. They are damaged less than other types of drains when a vehicle inadvertently enters them. Drain covers using fixed steel grills are invariably damaged and should be avoided. If covers must be provided they should be of a lift-out type. Ignoring these problems will not help, as market users often take matters into their own hands by, for example, back-filling a drain with earth. Like any drainage system the alignment and gradients should be designed so that the velocity of the water creates self-cleansing drains. To achieve this it is better to start the drainage runs with a minimum depth at the start of the drain run (i.e. the drain bottom at the same level as the pavement).

In rural areas drainage generally discharges directly into streams, ponds and open water areas, which can become highly polluted if wastewater (such as from toilets) and garbage are disposed of in a watercourse.

**Water supply.** A water supply at a reasonable walking distance is important for markets, particularly for washing down the market area and for products such as fish. In rural markets water is usually pumped from a borehole, with a raised concrete apron to prevent polluted water from running into the ground and contaminating the supply. The supply should probably be
Market infrastructure is a main component of the overall development costs. It is a false economy to try and minimize these costs as without appropriate infrastructure a market will not operate effectively. The key infrastructure is roads and paving, drainage and solid waste disposal. Water supply is also important, particularly if the market’s trade includes meat and fish sales. The design of the infrastructure will depend on what materials are easily and economically available locally. In the examples shown here there was a plentiful supply of local stone, timber and sand, but the costs of other materials, such as cement and steel, were high due to the need to transport them over long distances.
**Figure 10, continued**

**Plan and Section through Garbage Collection and Water Supply Point**

- **Plan**
  - Steel lighting column on concrete base
  - Dresses stone cobbles on sand blinding on compacted sub-base
  - Masonry verge/wall

- **Section**
  - Hinged steel mesh flap doors
  - Reinforced concrete slab
  - Rendered block wall
  - Lever tap
  - Reinforced concrete slab
  - Garbage pit
  - Cleaning materials
  - Barrow
  - Bins, brooms and buckets

**Measurements**

- 1.8 metres
- 1.0 metres
- 1.5 metres
- 0.2 metres
- 0.1 metres
- 0.9 metres
- 0.3 metres
- 0.45 m
- 0.7 metres
- 1.4 metres
- 0.2 metres
- 0.15 metres
- 1.2 metres
- 0.15 metres
- 1.0 metres
- 0.15 metres
located on the perimeter of the market, using the overflow to flush out drains, rather than directing it straight to an outfall.

The water supply should be on an individual basis for butchers and fishmongers; however, to reduce costs a water point can be provided on a group basis.

**Sewerage.** Standards for providing toilet facilities are shown in Annex C. It is important that toilet provision is not made without there being an integral or nearby water supply for washing hands. There should also be provision for some form of on-site treatment of effluent (such as a septic tank). It is vital to ensure that the treatment is carefully located to minimize any potential contamination of ground water sources.

**Garbage disposal.** As waste in rural markets is mainly organic it does not usually create major problems; however, arrangements must be made for its collection and disposal. There are three options: aerobic composting; anaerobic digestion (biogas production); and disposal through burying or sanitary landfill. There is no point in providing containers or constructing garbage pits if a collection system has not been set up as part of a routine maintenance programme. The provision of small, easily cleaned containers throughout a market area is preferable to the construction of large pits remote from users (see Step 7.4).

**Electrical supply and street lighting.** The supply of electricity is not affordable in most rural markets, except those located in important rural towns, where it can be provided externally using conventional streetlights mounted on lamp standards or fittings attached to adjacent buildings. Lighting for market buildings is relatively easy as fittings can be suspended from the roof structure. The fittings should be robust (either industrial quality pendant fittings or fluorescent tubes) and easily accessible for replacement of bulbs or tubes. Long-life, low-energy fittings are highly appropriate for market buildings.

Traders selling meat, fish or dairy products may need an individual electrical supply to run a small refrigerator or chiller cabinet. Separate metering is essential in this case, unless a special charge for power use is included in the stall rent.

If a mains supply is not available, an auxiliary power supply may be needed, using diesel-driven generator units. However, the environmental impact of this requires particular attention, as there could be air pollution from poor maintenance of equipment and diesel spillage from the generator itself or from on-site fuel storage tanks. In order to minimize potential risks, a concrete apron slab to the generator or tank, with a raised stand, should be provided.
**Fencing and gates.** The market site may require fencing for security purposes, using walls of buildings around the perimeter, close-timber fencing, brick walling or chain-link fencing. Gates can be made from timber, steel or framed chain-linking and are usually left open during the working hours of the market. If there is a need to charge an entrance fee based on the type of vehicle entering the market, a hinged barrier may be appropriate.

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**Step 7.3**

**Identify environmental impact mitigation measures**

Even if there are no official requirements for an EIA, it is advisable that environmental mitigation measures are incorporated as “best practice” in the design of markets. Such measures often include the following:

- The design should minimize earthworks and avoid taking extra land for widening roads or constructing drainage channels or wells.

- If land is needed for expanding an existing site or for a new site, full compensation payments should be made. Alternatively, where land is presently in public ownership or village common land is used, memorandums of agreements should be drawn up with the local communities.

- Soil conservation and reinstatement measures should be followed for storage and reuse of stripped top soil, slope treatment and surface water drainage control, in order to reduce possible erosion and siltation risks.

- There should be minimum interference with the hydrology of existing rivers and streams. This means minimizing scour around culverts and drainage outlets, and preventing backing up.

- Drinking water must meet the minimum quality standards for potable water.

- Provision should be made for the handling and treatment of organic or toxic effluents; including creating an appropriate solid waste management system (locating sanitary landfill disposal sites and making provision for haulage transport).
Step 7.4  
**Decide on the market equipment**

The next step is to decide on the equipment needed for the operation of the market. Most rural markets have only very limited equipment, which may include the following.

*Trestle tables and display stands.* The simplest form of sales space is the trestle table. It should be made of timber sufficiently robust to stand the heavy wear that occurs in markets. Alternatively, fixed stalls made of permanent materials, such as concrete or masonry, can be provided. For the sale of fish, meat, dairy products and cooked foods such stalls should be covered with tiles or stainless steel to make them easy to clean. A separate chopping block or table should be used for gutting and boning. Where wall space is available, tiered display stands can be used, with wide shelves at the bottom, reducing in depth at the top of the stand.

*Prefabricated market stalls.* Such stalls are found in many markets and can be used by an individual trader or for a pair of traders. The most common materials used to manufacture these stalls are brick or stonework, steel or timber or a combination of these. They can incorporate a roof, integral storage, a rail to prevent produce slipping off the sales area and a small shelf at a lower level, convenient for shoppers to place their bags.

*Weighing equipment.* Individual stallholders normally own their equipment, but the market may have weighing equipment for checking purposes. The more sophisticated forms of equipment, such as a dial or electronic scale, are not appropriate in rural markets. A spring balance or a steelyard with a suspended arm are both inexpensive, but the most convenient is likely to be a pan scale. For accurate weighing, a complete range of weights, ranging from 50 grams to two kilograms, is needed. Assembly markets do, of course, require larger scales. In some countries, such as Indonesia, weighing services are provided by private individuals who own wheel-mounted platform scales.

*Equipment for the disposal of solid-waste.* All rural markets need simple cleaning equipment, such as brooms and wheelbarrows. For waste disposal, the usual practice in rural markets is for solid waste to be taken (by cleaners and/or the traders themselves) to a central location, such as a walled enclosure, from where it is reloaded onto a refuse collection vehicle, such as a tractor or trailer. It is usually very difficult to keep these facilities clean, particularly as the refuse is double-handled. A more satisfactory method is the use of receptacles with a capacity of 2 m$^3$ to 3 m$^3$, made from sheet steel, which is relatively easy to clean.
8 Checking the market’s viability
Overall approach

The purpose of this stage is to make an assessment of the market proposals to ensure that they are economically sound. The market's impact has to be quantified, expressing costs and benefits in financial terms to see whether the capital and running costs are likely to be covered by the expected revenues. This depends on two factors: expenditure levels and the market's ability to attract traders willing to rent or lease space. The costs must be covered. In order to achieve this, investments in physical infrastructure must be kept to a minimum by using low-cost construction methods.

The market must also be evaluated in social and qualitative terms. By combining all these factors it should be possible to demonstrate that it is socially, technically and economically viable. The method of doing this is to prepare a feasibility study. The factors involved in making this assessment are explained in Step 8.5. However, before reaching that step it is necessary to make some preliminary calculations (Steps 1 to 4).
Step 8.1
Estimate development costs

Detailed budget estimates of capital works need to be prepared by the engineer. These estimates will provide the basis for making a cash flow projection on a year-by-year basis and should be undertaken as carefully as possible. The cost of preparing a design is a small proportion of the total cost while the benefits derived from ensuring appropriate design can be substantial.

Buildings. For simple markets the estimated cost of buildings is usually derived from the costs per square meter of buildings constructed using similar standards. Open-shed constructions will obviously cost less than buildings enclosed by walls.

Infrastructure and other costs. Infrastructure costs such as roads, bridges and culverts, drainage and water supply, should be calculated by using prices that reflect local conditions and material costs. Preferably, they should be priced in detail using unit rates derived from recent contracts of a similar scale. Other costs might include:

- pre-development costs, including site survey, planning fees, official permit fees and financing costs for banks and other lending institutions;
- land acquisition costs, including legal fees, duties and property taxes;
- site preparation and clearance;
- environmental impact mitigation measures; and
- design and supervision costs (for engineers and planning consultants).

Equipment costs. The most accurate way to estimate costs for equipment or vehicles is to obtain quotations from manufacturers or suppliers. For special items, such as prefabricated stalls or trestle tables, local craftsmen may be able to provide quotations.

Overall costs. An example of how to estimate the development cost is shown in Table 8.
Step 8.2
Estimate recurrent costs

In addition to the capital costs of civil works and equipment it is necessary to estimate the annual recurrent costs of operating and maintaining the market. The estimate for a new market requires some guesswork. For an existing market the present recurrent expenditure provides a guide.

The recurrent costs of an existing market may increase or decrease as a result of improvements. An increase will occur if more staff is employed or if additional services are used, such as electrical power. Running costs may decrease if a rationalization of management results in reduced staffing requirements or if improved infrastructure results in reduced operating, cleaning, maintenance or insurance costs.

An example of how to estimate recurrent costs is shown in Table 9.

| Table 8
<table>
<thead>
<tr>
<th>Market development costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average cost per m² for market buildings</td>
</tr>
<tr>
<td>Multiply by gross internal floor area (m²)</td>
</tr>
<tr>
<td><strong>Estimated building costs</strong></td>
</tr>
<tr>
<td>Add other costs:</td>
</tr>
<tr>
<td>Land purchase</td>
</tr>
<tr>
<td>Roads and drainage</td>
</tr>
<tr>
<td>Water supply/power</td>
</tr>
<tr>
<td>Equipment</td>
</tr>
<tr>
<td>Bank charges</td>
</tr>
<tr>
<td>Professional fees</td>
</tr>
<tr>
<td><strong>Total development costs</strong></td>
</tr>
<tr>
<td>Divide by number of trading units</td>
</tr>
<tr>
<td><strong>Average development cost per unit</strong></td>
</tr>
<tr>
<td>Divide by repayment period (years)</td>
</tr>
<tr>
<td><strong>Average annual development cost per unit</strong></td>
</tr>
</tbody>
</table>
Step 8.3
Estimating benefits

The next step is to consider the benefits resulting from market improvements. For the market users these improvements should help to reduce transaction costs by providing more direct and cost-efficient access to marketing channels and by reducing losses of produce by spoilage. These benefits must be sufficient to attract the users to pay more for services in an improved market.

These benefits are best calculated in terms of the revenues that can be collected. There are two approaches to making estimates of the revenues. The first method is to estimate receipts on the basis of charges that are in line with those at comparable facilities elsewhere. The second method is to estimate the revenues on the basis of covering costs. In practice, it is best to use a combination of the two methods, checking one against the other and looking at the impact of the changes on the producers’ or traders’ margins. An example of calculating benefits is shown in Table 10:

<table>
<thead>
<tr>
<th>Table 9</th>
<th>Annual market recurrent costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodic maintenance and repairs</td>
<td>$2,000</td>
</tr>
<tr>
<td>Divide by frequency of maintenance (years)</td>
<td>÷ 4</td>
</tr>
<tr>
<td><strong>Equivalent annual maintenance cost</strong></td>
<td><strong>500</strong></td>
</tr>
<tr>
<td><strong>Staff costs:</strong></td>
<td></td>
</tr>
<tr>
<td>Management staff</td>
<td>2,500</td>
</tr>
<tr>
<td>Security staff</td>
<td>500</td>
</tr>
<tr>
<td>Cleaning staff</td>
<td>1,500</td>
</tr>
<tr>
<td><strong>Total annual staff costs</strong></td>
<td><strong>4,500</strong></td>
</tr>
<tr>
<td><strong>Add other costs:</strong></td>
<td></td>
</tr>
<tr>
<td>Routine repairs</td>
<td>150</td>
</tr>
<tr>
<td>Cleaning materials</td>
<td>50</td>
</tr>
<tr>
<td>Water/power charges</td>
<td>500</td>
</tr>
<tr>
<td>Equipment replacement</td>
<td>250</td>
</tr>
<tr>
<td>Bank charges</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total other annual costs</strong></td>
<td><strong>1,000</strong></td>
</tr>
<tr>
<td><strong>Total annual recurrent costs</strong></td>
<td><strong>6,000</strong></td>
</tr>
<tr>
<td>Divide by number of trading units</td>
<td>÷ 24</td>
</tr>
<tr>
<td><strong>Average recurrent cost per unit</strong></td>
<td><strong>$250</strong></td>
</tr>
</tbody>
</table>

The returns are generally very sensitive to the level of daily charges and rents charged for the stalls. The
revenues derived from undertaking improvements should ideally be sufficient to cover all operating costs, including putting aside funds for future market expansion (and, possibly, for the maintenance of roads around the market). Revenues may not be sufficient to cover repayment of capital and interest, even assuming both a long repayment period and a grace period before repayment.

<table>
<thead>
<tr>
<th>Table 10</th>
<th>Annual market benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly lease rental per trading unit</td>
<td>$ 25</td>
</tr>
<tr>
<td>Multiply by number of months</td>
<td>× 12</td>
</tr>
<tr>
<td>Multiply by number of trading units</td>
<td>× 24</td>
</tr>
<tr>
<td>Total revenue from leasing</td>
<td>7 200</td>
</tr>
<tr>
<td>Revenue from a daily pitch</td>
<td>0.50</td>
</tr>
<tr>
<td>Multiply by number of peak market days</td>
<td>× 100</td>
</tr>
<tr>
<td>Multiply by visiting traders + farmers</td>
<td>× 50</td>
</tr>
<tr>
<td>Total revenue from daily pitch charges</td>
<td>2 500</td>
</tr>
<tr>
<td>Other revenues (parking, licensing)</td>
<td>500</td>
</tr>
<tr>
<td>Total all revenues</td>
<td>10 200</td>
</tr>
<tr>
<td>Divide by number of trading units</td>
<td>÷ 24</td>
</tr>
<tr>
<td>Average revenue per unit</td>
<td>$ 425</td>
</tr>
</tbody>
</table>
Step 8.4
Test financial viability

After assembling the information on costs and revenues it is possible to test the financial viability of the market.

Discounted cash flows. The approach often adopted for analysis, particularly when there is external funding involved, is to undertake both a financial analysis and an economic analysis using discounted cash flows. This means that the values are shown as “current” costs and revenues. In this way, it is possible to add and subtract costs and benefits as though they all occurred in the same year. The purpose of such an analysis is to assess whether the sum of the discounted benefits exceeds the sum of the costs, i.e. whether the returns from a development will exceed the sum of the investment and discounted recurrent costs. The conventional way of expressing profitability calculated in this way is as an Internal Rate of Return (IRR) percentage. Normally a minimum IRR of 10 to 12 percent is required for a development to be considered viable.

The distinction between the two types of analysis is that a financial analysis evaluates the commercial worth of a development to its owner, whilst an economic analysis assesses a development’s worth to the whole economy (“public good”). In the latter case, the costs are adjusted to account for any distortions, such as subsidies and taxes. The benefits are not necessarily quantified on the basis of revenues but on the basis of reductions in produce losses or timesaving due to reduced traffic congestion.

Sources of how to undertake these types of analysis are given in the list of Further Reading at the end of the manual.

Break-even analysis. A more appropriate approach to evaluating a very simple market development is to use a break-even analysis, which requires only a normal calculator. This method is particularly appropriate if the investment is being locally funded. This approach to development analysis ignores discounted costs and is suitable for checking whether the level of investment is matched by the likely increase in rents and other revenues.

The method uses the familiar concept of defining the point at which a development breaks even, i.e. does not make a profit or a loss. It can be used to answer the following simple questions:

- What is the minimum rent or market fee that would need to be charged to recover all the capital and operating costs?
- Given the expected rents and market fee rates, what is the maximum amount that could be spent on the construction and on operating expenses?
- Given the likely level of operating costs and expected user rates, what is the minimum number of traders that would need to take leases on stalls or attend on market day?

Some examples of applying break-even analysis are shown in Table 11, using the figures calculated in Steps 1-3. This demonstrates that if the overall development costs were $32 000 and operating costs $6 000 a year, the annual revenues from stall hire and rents for 24 traders would need to be around $10 200 to break even. If the analysis produces rent levels that traders would not be willing to pay, the design should be reviewed to see if it is possible to reduce the capital and operating costs.

<table>
<thead>
<tr>
<th>Table 11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Viability of a simple market development</strong></td>
</tr>
<tr>
<td><strong>a. Break-even rent per unit:</strong></td>
</tr>
<tr>
<td>Average annual dev. cost per unit (Step 8.1)</td>
</tr>
<tr>
<td>Average recurrent cost per unit (Step 8.2)</td>
</tr>
<tr>
<td>Total annual cost per unit</td>
</tr>
<tr>
<td>Average annual revenue per unit (Step 8.3)</td>
</tr>
<tr>
<td><strong>Annual profit / loss on rents per unit</strong></td>
</tr>
<tr>
<td><strong>b. Break-even number of trading units:</strong></td>
</tr>
<tr>
<td>Total annual leasing revenue (Step 8.3)</td>
</tr>
<tr>
<td>Divide by number of months (Step 8.3)</td>
</tr>
<tr>
<td>Divide by rent per month per trading unit (Step 8.3)</td>
</tr>
<tr>
<td><strong>Number of trading units required</strong></td>
</tr>
<tr>
<td><strong>c. Break-even capital cost:</strong></td>
</tr>
<tr>
<td>Total of all revenues (Step 8.3)</td>
</tr>
<tr>
<td>Deduct annual recurrent costs (Step 8.2)</td>
</tr>
<tr>
<td><strong>Net revenue available to cover development costs</strong></td>
</tr>
<tr>
<td><strong>Annual development costs (32 000 ÷ 10)</strong></td>
</tr>
</tbody>
</table>
Step 8.5
Assess the proposals

The purpose of assessing the viability of a rural market development is to enable a financier to make a decision on whether to go ahead with the project. This will be needed whether the financier is a government authority, a private company, a donor, an NGO, a local community, a market committee or a mixture of these.

Questions to consider. The market proposals need to address a number of fundamental questions:

- What are the real objectives of the development and what are the marketing problems being addressed?
- Have alternative strategies been analysed and has the most viable one been selected?
- If the programme is undertaken as envisaged, will it satisfy the needs of producers, traders and consumers? How have they been involved in the project design?
- What is the potential social and environmental impact of the development? Have adverse effects been minimized?
- Are the proposals operationally workable and are there any potential risks?
- How will the market be constructed? What are the potential sources of financing? How long will it take to construct?
- Are there any preconditions for success?
- Will the benefits from development cover the estimated cost? (Answered by Steps 1 to 4).

The answers to all of these questions need to be written down clearly in a report in order that a final decision on whether to proceed can be reached by those providing the finance.

Step 8.6
Amend the designs

The last step is to review the designs again and amend them if they are not financially viable or do not satisfy the traders and other market users. This effectively means re-examining some of the previous stages (site planning, building design, infrastructure and equipment provision and staffing levels) until a reasonable viability is reached.
It may be necessary to adjust the capital costs, recurrent costs and potential revenues. As market development is a collaborative effort, with success depending on the quality of market design and management, it is essential to go back to the users to find out whether it is possible to make these changes and still satisfy their needs.
9 Constructing the market
Constructing infrastructure and facilities is likely to be a familiar task for the rural engineer and planner. However, with market development there are some differences that need to be taken into consideration.

Both the market users and the financiers are probably totally unfamiliar with the formal steps involved with the construction process. They need to be kept informed and the process needs to be clearly explained to them. This can be done through regular meetings with the market committee. This is particularly important if there are cost over-runs or the works are significantly delayed because of bad weather or hold-ups in the supply of materials.

A major risk at the construction stage is that the process is interfered with. An impartial system of inviting and reviewing tenders is essential. It is equally important to ensure that only essential changes are made during the construction process, as this is likely to have substantial cost implications. Of particular importance is that the contractor should only receive site instructions and variation orders from the engineer, not from the client or market users.

In Stage 9 all approvals and necessary financing should be obtained; and the market should be constructed. The following points should be covered:

All interested parties should give their consent and approval and the sources of funding and method of financing the project should be agreed.

The tender documents should be ready and the implementation method should be decided upon.

Tenders should be invited and evaluated.

The construction and equipment supply contracts should be let.

Construction should be adequately supervised during implementation.

Construction works should be finalized.
Any design changes need to be carefully explained to the users. To the engineer they may not seem important, but to the user they may have a major impact on how they operate the facilities. Examples include introducing changes in levels that effect handling produce on trolleys or changes in heights that cause obstructions to head loading of produce.

Step 9.1
Obtain consents and agree on the financing

It is necessary to work out a way of consulting both the market users and the decision-makers. The most convenient method is usually to hold a meeting for those most affected. The final site plan, building and infrastructure designs and the overall budget estimate should be presented. Although complete agreement from all those present at the meeting is unlikely, a general consensus should be obtained.
**Formal consents.** A number of consents or approvals may need to be obtained before the development can proceed, including:

- planning consent;
- building and public health approval; and
- environmental consents.

**Sources of finance.** Ideally, a rural market should be self-financed from fees and charges. However, the initial capital requirement is always a problem. All possible sources of funding should be explored, including:

- the budget of a particular government department, such as the agriculture department;
- special government grants, such as those sometimes available for small-business promotion and environmental improvements;
- a joint venture with private enterprise, such as the existing market traders (as individuals or groups), or through leasing the whole or part of a site to private entrepreneurs, while still maintaining some control over fees charged;
- cost sharing with a donor, government department or private enterprise. In this case part of the revenues generated by the market may be used to finance other social facilities. Cost sharing can take the form of capital contributions or other forms of equity, such as the provision of land; and
- self-help schemes, which involve traders providing their individual stalls. However, such arrangements would not be expected to cover overall infrastructure costs.

It is important to ensure that the cost estimates are realistic so that adequate finance is obtained. If tenders are higher than the estimate and the funds allocated, this is likely to result in delays in implementation or even cancellation of construction.

**Step 9.2**

**Prepare tender documents and tender the works**

**Preparing tender documents.** After the source of financing is confirmed the final tender documents can be prepared. These include final drawings, specifications, bills of quantities and the conditions of contract.
A formal contractual arrangement with one or more private contractors is likely to be the easiest and most rapid approach to implementation. However, such contractors may not be available in remote rural areas and it may be necessary to employ labour directly.

**Inviting tenders.** Procedures for inviting tenders for construction works and for equipment are normally well laid down by governments. The process usually involves advertising in local newspapers. In drawing up a list of potential contractors allowance must be made for local conditions, such as:

- the type and scale of works;
- grading or the class of contractor (based on technical competence, capital and financial performance and availability of resources);
- government procurement procedures, such as the minimum number of tenders to be submitted; and
- policies regarding the use of open tenders or for selecting, pre-qualifying or targeting particular types of contractors.

**Evaluation of tenders.** Tender evaluation procedures are generally well established and usually involve tender review panels appointed by local government. The remoteness of rural markets is often a problem in that few tenders may be obtained and the experience of contractors may not cover the range of works required for a market. The most experienced local contractors are often those who are used to constructing roads, and their building experience may be limited. This may necessitate the provision of special training for both the contractors and their skilled and unskilled labour.

**Contract conditions.** There are usually standard conditions of contract available for letting contracts for the supply of equipment and construction services. However, the engineer needs to ensure that employment methods used by the contractors are fair and conform to government standards. Issues that must be addressed include defining:

- labour standards, maximum working hours, occupational health and safety requirements;
• social security provision and insurance, minimum age levels, mode of payment, recruitment and productivity agreements;
• methods for setting out the works and monitoring the quality of work, maintaining minimum technical standards; and
• valuation of works and frequency of payment.

**Supervision.** Day-to-day supervision of a contract is the responsibility of a local rural engineer or an appointed consultant.

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**Step 9.4**

**Confirm practical completion and evaluate the works**

**Snagging.** The last step is to confirm that the construction works are complete and that all the equipment has been acquired. It is normal practice that at the end of the construction period (practical completion) a “snagging list” is drawn up that specifies any outstanding or incomplete works. This refers only to problems related to the contract and cannot be used to introduce new requirements, which were not foreseen before construction started.

The list should be drawn up by the engineer in collaboration with the market committee, to ensure that all their concerns have been fully addressed. The contractor should make good these snags before the penultimate payment is made. After completion, a period of 6 to 12 months is usually specified in the contract documents (called a “defects liability period”) during which other defects should be made good. After this period the final payment to the contractor can be made.

**Testing equipment.** Prior to the practical completion, it may be necessary to commission or test installations and equipment, such as:

• water supply pumps;
• septic tanks;
• lighting installations; and
• weighing equipment.

**Evaluation.** Evaluation of a market’s impact after completion is important. It enables an assessment to be made of the market’s social and economic impact and whether resources have been correctly utilized. It also provides an indication of what adjustment should be made in the design of future markets.
Individual small-scale market improvements probably need to be evaluated using only simple indicators, such as the total area improved, the number of stalls created and total number of traders using the new facilities.

For larger-scale programmes, the expansion of market trading activities could also be evaluated. This will require ongoing monitoring during the first few years of the market’s operations. Certain indicators may be used to assess the project’s effectiveness.

These include:

- increased trade in the market, measured by market turnover (tonnes);
- whether users believe that there is a reduction in produce losses;
- increased number of farmers and traders using the market facilities;
- increased market revenues; and
- improved market maintenance and management.

Construction of a privately built market in Lao People’s Democratic Republic.
10 Operating and maintaining the market
In Stage 10 the market is commissioned and put into operation. The following points should be covered:

The method of management should be defined including how the market will be operated and maintained.

The procedure for allocating space and letting leases should be finalised with the users and the market committee.

The users and the market committee should agree on the method of charging for use of the market.

The users and the market committee should agree on the scope of the market regulations.

STAGE 10
OPERATING AND MAINTAINING THE MARKET

Introduction
Clear arrangements must be set up for the management of markets. Although this is presented as the final stage in this guide, in fact, investments in rural markets should not be made without a management system being previously defined and a market committee being in place. Rules for market operation need to be agreed at an early stage as well as methods of leasing spaces and the setting of fees.

Market management
A complex management structure is not appropriate for rural markets.

Primary markets. For small primary markets, the presence of full-time market staff is not usually viable and the management options are limited. The simplest solution is for management to be undertaken by local government, particularly when rents for stalls or pitches are collected on a monthly or annual basis. Apart from daily rubbish collection, an adequate system of management normally requires only regular visits to the market by local health inspectors.
Where fees are collected on a daily basis, it is sometimes necessary to give a local government officer responsibility for fee collection. Alternatively, the market can be run as a franchise operation, with a private company or individual tendering for annual fee-collection rights. It can also be operated by a traders’ group or association. Whatever the case, the operations must be overseen by an elected market management committee.

**Assembly markets.** Larger assembly markets usually require full-time market staff. The operation of the market might be the responsibility of a local authority or private enterprise and come under the overall supervision of a market manager or superintendent. He or she provides the main channel of communication to the market committee and may be assisted by a small staff. An assembly market manager, for example, may have three basic functions:

- revenue collection, administration and record keeping;
- security and traffic control; and
- cleaning and maintenance.

It is necessary at the outset to agree on minimum staffing requirements and qualifications, job descriptions, selection procedures, levels of remuneration, promotion criteria and training needs.

**Role of market management committee**

After construction has been completed major problems may still occur with the effective operation of a market. Issues such as disputes over space allocation and rent levels, delays in appointment of staff, and lack of working capital for operation, staff salaries and recurrent maintenance need to be resolved before the market is commissioned. Cash-flow projections should be made. The market management committee’s responsibility is to operate a well-functioning organization, which includes defining procedures for ensuring:

- effective market operations;
- application of rental and stall-allocation policies;
- revenue collection and appropriate revisions to rental levels and daily fees;
- operation of market rules and regulations;
- dispute resolution procedures;
- effective traffic control and management;
- enforcement of environmental, public health and food safety requirements;
- mechanisms for meeting recurrent and periodic maintenance requirements; and
- future improvement and expansion of facilities.

For small rural markets without full-time staff but with permanent traders, many functions could be delegated to a traders’ organization. The market management committee would need to initiate meetings with the traders on a regular basis in order to resolve specific issues.
Step 10.1

Commission the market

It is usually necessary for the project promoter or financier, such as a local authority, to draw up an agreement covering market operations and maintenance.

**Market operations.** The scope of an agreement should cover the following areas:

- Who will be on the market management committee, and will it have specified representation from traders and farmers?
- How often will committee meetings be held?
- How will temporary space be provided in the market for producers?
- How will market fees be collected?

**Market maintenance.** Agreement will also need to be reached on recurrent maintenance.

- Procedures should be defined and arrangements made for daily cleaning of the common areas and of the individual premises, particularly stalls and equipment in meat and fish sections and where cooked food is being prepared.
- Procedures should be defined for cleaning and maintenance on a periodic basis of the building fabric and main infrastructure services, such as roads, water supply, drainage and sewerage.
- An agreed percentage of the market fees should be reserved for market operations and maintenance (a minimum of 30 percent). This is usually calculated in advance, so that the money can be put aside.
- Agreements should be made with relevant authorities for their involvement in the collection of solid waste, street lighting, site security, surface water drainage and environmental health issues.

Step 10.2

Agree on space allocation and leases

The market committee should prepare, in consultation with the users, draft agreements on how space will be allocated in the market and what form lease arrangements should take. Discussions should have been held with the
traders at the design stage; however, until the new facilities have been completed it is not really possible to finalize such arrangements.

**Space allocation.** This has two aspects: distribution of space between permanent and temporary traders, and allocation.

**Distribution.** Sometimes permanent traders try to prevent temporary traders from using a market. This can be avoided by allocating a section of the market to temporary traders. Temporary users should pay fees on a daily or, sometimes, a weekly basis.

**Allocation.** The allocation of permanent space needs to be done in a fair and transparent manner. Two common ways to achieve this are to:

- at the planning stage hold an auction or a lottery for the right to apply for a lease on market space, so that the potential market revenues can be determined at the outset; or
- place a limit on the maximum amount of space any individual trader can lease.

If the use of the market is to be restricted to trading in agricultural products, or part of the market is to be reserved for specific products, applicants would have to confirm that they would only trade in such products before being allowed to take part in auctions or lotteries.

An important role for market management is to ensure that spaces reserved for agricultural products in general, or for specific agricultural products, are in fact used for those purposes. This frequently is not done. A common experience with urban markets is that traders in dry goods and clothing gradually take over space allocated for agricultural trade. This particularly applies to indoor markets.

**Leases.** The contract terms and duration should be specified, including renewal or termination conditions (i.e. the period of notice and how it is to be given). Ideally, contracts for the renting of fixed stalls should not exceed one year. The lease conditions should include requirements for traders to maintain their stalls open during the working hours and for the duration of the contract. Sanctions in case of default in payment should be defined (normally requiring the termination of a contract), together with the liability of traders for any damage caused by them or their personnel, either to the common parts of the market or to the allocated stand or stall.

**Disputes.** The market management committee should also reserve the right to terminate the contracts of users with records of bad relationships with other traders, the market administration or the general public.
Step 10.3
Agree on the market fee schedule

There are a number of different ways in which markets can collect revenues. The collection method should be simple and inexpensive to administer and should correspond to normal practices. The collection method should be seen to be fair and highly visible. The types of fees collected will depend on whether the traders are permanent or temporary (such as farmers selling their own produce).

Temporary traders. The following types of market fees are usual for temporary traders:

- *Daily ticket fees* should be set on the basis of the space occupied or the quantity of produce brought in for sale.
- *Stand or pitch fees* are for daily or weekly use of an area and are based on the size of the pitch and, sometimes, its location in the market area (e.g. fees are normally higher for pitches near the entrance).
- *Parking fees* are charged on entry and based on the type of vehicle (this system is more likely to be used for assembly markets).

Permanent traders. The following types of market fees are usual for permanent traders:

- *Stall rents* can be charged on a monthly, quarterly or annual basis for the use of a meat, fish or other fixed stall or for a lock-up shop (rents are usually based on area used and location).
- *Licence fees* are paid by specialized market users, such as butchers, fishmongers or slaughtermen.

The market committee should draw up a possible fee schedule and discuss this in detail with the market users. Particular care must be taken to ensure that revenues are set at a sufficiently high level to fully cover all operation and maintenance costs.

The normal practice is for the local authority to collect the fees. However, an alternative approach is for the rights to the fees to be sold in advance to a private individual or company. This can be done by auctioning or competitively tendering the right to collect the fees on an annual basis. Such an approach has several advantages for the market:

- the revenue to be received is known in advance;
- market employees are not needed to collect fees;
- there is no danger of corrupt collusion between market users and staff to avoid payment or pay reduced fees; and
- problems associated with handling cash are reduced.
Step 10.4
Agree on the market regulations

The smooth operation of a market and the proper use of its facilities require the promotion of and strict compliance with a set of realistic regulations. Appropriate legislation needs to be in place and this is usually provided in the form of local government acts or, more rarely, special market legislation. Such legislation should permit an authority to enact or modify by-laws.

Regulations should be prepared by the market committee in collaboration with staff and users. They should be realistically enforceable and culturally acceptable taking into account existing practices. The regulations need to be clear, concise and written in language intelligible to every user. A public signboard giving a summary of the main rules, principally those relating to hours of operation, traffic, public and users’ behaviour, should be put up at the entrance and in conspicuous places within the market.

Details of market regulations are included in a number of the FAO publications in Further Reading at the end of the guide. The usual scope of such regulations is listed in the box.

Scope of market regulations

**Market administration.** Liability of users of the market and type of disciplinary powers and sanctions that will be applied for breaches of marketing, hygiene, safety and security rules.

**Market operations.** Opening and closing hours, holidays and days when market is closed, times for deliveries and stall preparation.

**Traffic controls.** Traffic management controls, including vehicle parking, non-obstruction of roads, prohibition on washing or repairing vehicles and rapid departure of vehicles after unloading.

**Physical controls.** Prohibition on users erecting structures and installing electrical equipment without prior approval.

**Marketing practices.** Traders to sell specified produce, maintain stalls and not encroach or obstruct public rights of way.

**Public order.** Right to prohibit admission to persons causing a disturbance.

**Security and fire safety.** Locking of premises, maintaining access to fire-fighting equipment and prohibition on the use of open fires for cooking, except in designated locations.

**Hygiene control and inspection.** Right to withdraw and dispose of any product or spoiled food unsuitable for human consumption.

**Cleaning.** Traders to keep stalls clean; waste to be deposited in bins provided and general cleaning to be undertaken at end of working day.

**Special facilities.** Exclusion of live animals and slaughtering unless provided for. Inspection by competent veterinary services. Cleaning of butchers’ cutting boards and other tools.
Annex A
Survey checklist

Market surveys

An example of a market survey is provided in “Retail markets planning guide” (Agricultural Services Bulletin No. 121, FAO Rome, 1995). The following types of information could be collected:

- types and quantities of goods transacted daily, divided into agricultural produce, inputs and other merchandise;
- details of market users (farmers, retailers, wholesalers, commission agents, processors, etc.);
- the market management system, including fee collection and details of present and projected income and expenditure;
- marketing channels for agricultural produce, inputs and non-food items;
- methods of transporting produce, the types of vehicles used, frequency of travel and cost of transportation;
- produce flowing into the market and going out to other destinations;
- number of customers attending on market days;
- physical facilities available in the market area (stores, shops, sales platforms, open and enclosed sales sheds, slaughter slabs, meat/fish retail sheds, etc.) and future needs of traders; and
- present infrastructure, including market roads, pathways, surface water drains, tube wells, sanitation, drinking-water supply, drainage, sanitary latrines and facilities for disposal of solid waste.

Setting up surveys. Surveys can be time consuming. Sufficient financial resources and a trained and competent staff are needed. Where surveys are required it is necessary to decide the following.

- Who is responsible for the survey design?
- Who will carry out the survey?
- How will it be paid for and what is the procedure for recruitment of the necessary staff?
- Who will supervise the survey and be responsible for logistics, such as transport?
- Who will be responsible for data handling?
- Is a "pilot" survey needed before starting the main survey?
- When will the survey be undertaken (for example, during peak agricultural production periods)?
- Is special approval required from adjoining owners, traffic authorities or local communities?
Social assessment methods

The methodologies used in rapid rural appraisal (RRA) or participatory rural appraisal (PRA) are very similar. For market studies they have in common the following features:

- semi-structured open-ended interviews, in groups or with individuals;
- participatory mapping, by walking through a market area to understand the distribution of stalls and types of produce sold;
- local histories of what has happened in recent years in the production areas or the market;
- seasonal diagrams of what is grown and when, and peak harvesting times; and
- group discussions to crosscheck information on marketing practices such as where farmers sell their produce, how often they visit markets and the problems experienced at markets.

Mapping

Mapping is an integral part of the planning process. The purpose of mapping is to provide:

- a "baseline" assessment of present conditions;
- a means to enhance communication with users and help in identifying marketing problems and in formulating proposals;
- the basis for preparing a site master plan; and
- a means for monitoring a project's impact.

Approaches to mapping

There are basically two approaches to mapping, both of which may need to be applied. These can be supplemented by field survey work and the choice of method will depend on the availability of resources and equipment.

*Participatory mapping.* This is a method of creating maps through a dialogue with key informants, such as traders and farmers. The maps, which can be drawn on a blackboard or even on the ground, clarify the relationship between the various factors that influence marketing and highlight what is important (or unimportant) to the users. The mapping is often combined with a systematic walk through the area with the key informants, which can be useful for understanding any changes that are taking place.
**Formal mapping.** These are working maps used to understand existing market patterns and to identify and plan new market sites. The mapping is undertaken to provide:

- a base map of the area;
- thematic maps, showing different characteristics such as market locations and catchment areas;
- site maps of the market area as the basis for selecting the sites and for preparing detailed site development plans.

The process of producing base-line maps consists of the following:

1. Collection of copies of all maps in current circulation and of any geographic information system database (if available).
2. Identification of provincial, district and village boundaries, administrative centres and market locations.
3. Drawing or redrawing of a base map.
4. Reproduction of the base map on tracing sheets.

Often the base maps are out of date. Advice on updating should be sought from the local survey department.

**Site maps.** The most important mapping in the whole process is preparing the site map of the market site. If adequate mapping of the market area is not available a survey should be carried out to record all the existing features within the market. The survey should be at least 1:500 scale, picking up details of levels (spot heights on a 2 to 5 metre grid, inverts of drains, slabs, breaks in slope, etc.) and the market site should be related to a fixed point. For an existing market the site map should also include all the existing buildings and other infrastructure on the site.

The survey may need to be extended to record other important features outside the market area, such as main road links and drainage outfalls. All mapping should be plotted to conform to a standard sheet size.
Annex B
Assessment of supply and demand

This annex supplements the description of Stage 2 and outlines the methods by which survey data, combined with information on agricultural production and household consumption, can be used to estimate the potential throughput of a larger market. Where very simple market improvements are planned (for example, to upgrade existing retail market infrastructure), such steps can be omitted.

Step B.1
Reviewing crop and livestock production

Where information on market supplies does not exist, estimates can be made by looking at the available data on crop and livestock production within the market catchment area, including:

- planted area under production (in hectares); with multiple cropping this will exceed the cropped area;
- average yields (in tonnes per hectare);
- total quantity of crops produced (in tonnes); and
- total number of livestock reared.

Often, local or district data collected on an annual basis can give an idea of crop production. Estimates of livestock can be more difficult, as the data that is normally collected is the number of animals (head) in the field or pen. One way of handling data on local production is shown in Form 1.

Form 1
Estimating local farm production

<table>
<thead>
<tr>
<th>Crop</th>
<th>Area (ha)</th>
<th>Yield (t/ha)</th>
<th>Production (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green vegetables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roots and tubers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grains (unmilled)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total local production</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Livestock</th>
<th>Number (head)</th>
<th>Live weight (t)</th>
<th>Dead weight (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goats and sheep</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total meat/poultry</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This approach only gives existing production levels. However, by looking at trends over a number of years it should be possible to identify some patterns of growth. These will be influenced by a number of factors, including the way farmers are intensifying production (increasing yields) of existing crops or diversifying into new crops (changing to higher-value crops). If no trend data is available, a simple assumption to make is that production is increasing in line with population growth.

**Step B.2**

**Reviewing the role of market channels**

Step B.1 gives an approximate idea of total production, but this has to be adjusted to take account of what is marketed and what farm households consume. A commercial farmer produces exclusively for the market, whilst a subsistence farmer grows primarily for home consumption.

Subsistence farmers are likely to rely mainly on the local retail market for their sales. More advanced farmers may use a variety of outlets, including on-farm sales and assembly markets. Large-scale commercial growers are probably better able to control their own marketing, which could be done through a mixture of contract selling at the farm gate and direct deliveries to local assembly markets or to wholesale markets in urban areas. From discussions with local officials and farmers it should be possible to obtain an overall impression of what marketing channels are presently being used, and what proportion (%) of marketed production is going through each channel (see Form 2).

**Form 2**

**Estimating use of market outlets**

<table>
<thead>
<tr>
<th>Type of farmer</th>
<th>Type of outlet</th>
<th>Fresh vegetables</th>
<th>Fresh fruit</th>
<th>Livestock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small-scale</td>
<td>- on-farm sales</td>
<td>(………..)</td>
<td>…%…</td>
<td>………...)</td>
</tr>
<tr>
<td></td>
<td>- local markets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- other outlets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large-scale</td>
<td>- on-farm sales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- local markets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- other outlets</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Step B.3
Reviewing existing consumption data

The next step in the process requires a review to be made of what people eat. Consumption data is normally expressed as an annual average consumption for individual food items on a per capita (per person) basis, for example, 100 kilograms of potatoes per capita.

This information is often available from nutrition surveys. Alternatively, data from a comprehensive household budget survey may be available. Information may not be specific to the market catchment area, but can provide a broad estimate of what is consumed by local households.

Form 3 shows how consumption figures, by age and gender, can be used to calculate an average. These are likely to be national figures, but more reliable figures specific to the area may be available and sometimes these figures may distinguish between urban and rural households. As far as possible, local rural figures should be used. Care should be taken to use actual figures or reliable estimates. For food security purposes figures of daily food “requirements” are often announced and used in calculations of food balances. Such figures should not be used when planning markets as there is often a big difference between “requirements” and actual “consumption.”

<table>
<thead>
<tr>
<th>Fresh produce</th>
<th>Daily consumption per capita (grams)</th>
<th>Annual consumption per capita (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Step B.4  
**Determining on-farm use**

Once it has been decided what consumption figures to use it is possible to calculate the amount farm families are likely to consume of their own produce. However, farms may not be able to produce all their requirements and may need to purchase some commodities from outside, usually from a local primary market. The procedure for calculating average food requirements is shown in Form 4.

**Form 4  
Annual farm household food needs**

<table>
<thead>
<tr>
<th>Fresh produce</th>
<th>Annual on-farm consumption</th>
<th>Farm population in catchment area</th>
<th>Total food needs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kilograms per capita</td>
<td>Tonnes per capita</td>
<td>Per capita area</td>
</tr>
<tr>
<td>Fresh produce</td>
<td>a (from Step 3)</td>
<td>b (a ÷ 1000)</td>
<td>c (from census)</td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This may not be the total use of produce on the farm. To determine the farm surplus, adjustments need to be made and this will require some rough estimates to be made as shown in Form 5.

**Form 5  
Total annual farm use (tonnes)**

<table>
<thead>
<tr>
<th>Fresh produce</th>
<th>Total food needs</th>
<th>Other use of produce</th>
<th>Total farm use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>b</td>
<td>c</td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td>Fodder</td>
<td>Seed</td>
</tr>
<tr>
<td>Potatoes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a + b + c + d)

The last calculation is to determine whether there is actually a surplus from the farms. It compares the farm household needs with the production estimates derived in Step B.1, as shown in Form 6.
Step B.5
Determining non-market sales

Before estimating what might be the market throughput, the role of other marketing channels (Step B.2) needs to be taken into account. As this is influenced by many factors only a rough estimate can be made, particularly of produce sold at farm level or delivered directly to urban wholesale and urban retail markets. An illustration of the calculation is shown in Form 7, using the percentages from Step B.2 to divide the surplus between different channels.

Form 6
Marketable annual surplus or deficit (tonnes)

<table>
<thead>
<tr>
<th>Fresh produce</th>
<th>Total farm use</th>
<th>Total production from Step B.1</th>
<th>Marketable surplus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a)</td>
<td>(b)</td>
<td>((a - b))</td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Form 7
Annual sales apart from rural markets (tonnes)

<table>
<thead>
<tr>
<th>Fresh produce</th>
<th>On-farm/farm-gate sales</th>
<th>Direct deliveries</th>
<th>Other markets</th>
<th>Total non-rural market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a)</td>
<td>(b)</td>
<td>(c)</td>
<td>((a + b + c))</td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Step B.6

**Estimating market throughput**

The last step is to estimate the throughput of the planned market. The basic calculation method, which is the same for both primary and assembly markets, is shown in Form 8.

If the market also trades in live animals then an allowance for this must be made. For an existing market the best guide would be what is presently traded, but for a new market an assumption will have to be made as to what proportion of the local livestock or poultry production might be sold in the market.

### Form 8

**Annual market throughput** (tonnes)

<table>
<thead>
<tr>
<th>Fresh Produce</th>
<th>Marketable surplus</th>
<th>Total non-rural market</th>
<th>Planned or existing market</th>
<th>Supplies from outside area to meet deficit</th>
<th>Total market throughput</th>
</tr>
</thead>
<tbody>
<tr>
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Annex C
Infrastructure design
and space standards

Roads and parking

- Single-lane road width: 3.5 m.
- One-way road width: 7 m.
- Two-way road width: 12 m.
- Size of parking space for 1 car: 4.8 × 2.4 m.
- Visitors’ car parking: 2 to 5 spaces per 100 m² of sales area.
- Visitors’ car parking: preferred maximum distance from market: 100 m (absolute maximum distance at peak periods: 200 m).
- Size of parking spaces for pickups: 8 × 3.6 m.
- Size of parking areas for trucks: 11 × 3.6 m.
- Parking for traders and delivery vehicles: 1 to 2 spaces per 4 stalls.
- Sidewalk widths: 2.5 m minimum (5.2 m if roadside stalls to be accommodated).
- Lamp standards: spaced at intervals of 15 to 25 m.

Public health

- Water supply standpipes or tube-wells at a maximum distance of 50 m from users (25 m preferred).
- Meat and fish stalls with immediate access to water supply (adjacent).
- Toilets (pit latrines and urinals) at a maximum distance of 100 m from users (50 m preferred). Space for latrines at 2 m² per 1 000 peak period market users.
- Toilet provision for staff: 2 m² per 25 market employees (male and female separate). Minimum of 2 m².
- Dustbins or garbage pits at a maximum distance of 50 m from users (25 m preferred).

Buildings and stalls

- Main thoroughfare of a market: a 6-metre width aisle between stalls to allow for seating and other uses.
- Aisles inside building: minimum of 3.5 m to allow a group of three people walking together to pass one person standing by a stall, or two people walking to pass two other people.
• Maximum distance between cross aisles inside buildings: 12 m.
• Minimum stall depth (trader standing behind): 2 m for standing and stacking of boxes, plus 1 m for the counter.
• Minimum stall depth (trader standing in front): between 1.2 and 1.5 m for the counter.
• Minimum stall depth (trader sitting on stall): 1.2 m.
• Minimum stall height (trader sitting on stall): 0.4 m.
• Minimum stall height (trader standing in front): 0.7 m.
• Minimum stall width: 1.8 m.
• Small lock-up stalls: between $2 \times 2$ m and $3 \times 4$ m, with sales space or table taking up from 30 to 50 percent of the area.
• Sales or table area per trader: between 0.8 and 1.2 m², excluding standing space;
• Ceiling height for market building: from 3.5 to 6 m.
• Outdoor seating/low walls: 400 mm high and between 300 and 500 mm deep.
• Central market space for trading in the open: maximum dimension between 20 and 25 m.
• Width of minor pedestrian routes: not to exceed the height of the surrounding buildings.

Animal handling in the market

• Cattle need comfortable climatic conditions, requiring between 2.5 and 3 m² of shade per head.
• Adequate space should be provided between stalls: a minimum of 2 m is desirable.
• Bull pens should have a resting area of between 12 and 15 m².
• Pig housing should be at a density of 0.6 m² per pig (porkers).
• Poultry (chickens and ducks) housing should be at a density of 1 m² per 6 to 8 birds.
• Slurry handling needs particular attention because of risks to animal and human health.
• Clean water supplies: allow between 60 and 70 centimetres of trough length per cow, with one trough for each herd of 50 animals. Typical water consumption is as follows:

  - upgraded beef cattle – 50 litres per day
  - local cattle – 20 litres per day
  - sheep – 5 litres per day
  - goats – 3 litres per day
Glossary

Accommodation or users’ brief is a schedule and tabulation listing the space and facility requirements for the market. The brief is prepared in consultation with market users.

Assembly markets are larger rural markets where quantities of produce are traded (either by the producers themselves or by traders) and assembled for further transport to other markets.

Baseline surveys are undertaken before a market development in order to review the “without change” circumstances. An example might be a survey of market throughput.

Catchment area or sphere of influence is the area surrounding a central place that is economically provided with services or goods.

Central place is a village or town, with markets and shops, which provides the population of the surrounding area with goods and services.

Economic analysis is a way of looking at the worth of a development from the viewpoint of the whole economy, i.e. the general public interest or public good. These costs are adjusted to account for any distortions, such as subsidies, taxes and transfer payments.

Environmental impact assessment (EIA) is a process undertaken before a development starts to predict the adverse effects it could have on the natural and human environment.

Financial analysis looks at the viability or commercial worth of a development from the viewpoint of a private investor.

Internal rate of return (IRR) is the discount rate at which the discounted values are equal to zero. If the IRR is higher than the rate of return required from the development (usually 10-12 percent) then the development is viable.

Investment or capital costs are initial costs needed to fund an investment, including land, buildings, equipment, professional fees and bank charges.

Participatory rural appraisal is a survey method where the surveyor works with the community to collect and analyse the information.

Pilot survey is a preliminary survey undertaken to test whether a survey questionnaire has been properly designed.

Pitches are defined areas laid out on the market floor from which individual traders sell their produce.
**Primary data** is information that has to be collected through field surveys to fill data gaps.

**Primary markets** are small markets where the trade is characterized by direct sales of small quantities of produce by farmers to village traders and by farmers and retailers to rural consumers.

**Rapid rural appraisal** is a survey method where the surveyor visits the community in order to obtain information, which is taken away to be analysed.

**Recurrent costs** are all costs required to finance the operation of an investment, including staff salaries, utility costs (water, fuel, etc.), land taxes, building and equipment maintenance, loan repayments and interest on capital borrowed.

**Secondary data** is information that has already been collected and published by others.

**Sustainability**, in the context of markets, is the capacity to continue operating the market after capital funding has finished. This is invariably an issue of access to resources (obtained from revenues) for the maintenance and operation of the market facilities.
Further reading


The following is a list of booklets published in the MARKETING EXTENSION GUIDE series:

A guide to MARKETING COSTS and how to calculate them
1993, 59 pp. (E F S)

A guide to MAIZE MARKETING for extension officers
1999, 111 pp. (E F)

Understanding and using MARKET INFORMATION
2000, 85 pp. (E F S)

MARKET RESEARCH for agroprocessors
2003, 114 pp. (E S)

Planning and designing RURAL MARKETS
2003, 120 pp. (E S)

Available in: E – English
             F – French
             S – Spanish

Series editor: Andrew W. Shepherd
For further copies of this publication and for information on FAO's activities related to agricultural marketing please contact:

Agricultural Marketing Group
Agricultural Support Systems Division
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Fax: (+39)-06 57056850
E-mail: AGS-Registry@fao.org
Upgrading rural markets is one way to improve access to marketing opportunities. This guide is designed to assist community planners, rural engineers and agricultural extension units to formulate and implement relevant market development plans.

The types of issues covered in this guide include designing markets that meet a community’s social and economic needs; working with communities to identify their marketing problems and to choose a site for a new market; using appropriate and simple methods to survey and plan the site layout and to design market buildings; preparing a market development proposal and making budget estimates; undertaking simple social and economic feasibility studies; looking for financing and constructing the market; and managing, operating and maintaining the market.