

How to Develop a Sustainable Agroforest Marketing Strategy

Peter Calkins, CRÉA

Laval University, Canada

Abstract

In the past, product identification and promotion for market have been policy-led. This paper demonstrates how to develop an alternative, demand-led strategy. The approach is applied to sustainable social marketing channels for agroforest commodities, notably non-timber products and services. Their development will often benefit the poor social minorities living near or in forests but will not succeed unless other markets – for inputs, credit, labor, and even foreign exchange – exist and are free of inappropriate policies. The successive stages of developing a strategy are presented in turn. These include the acquisition of a new managerial outlook, the four p's, strategic targeting grids, verification of input and complementary markets, detailed market channel and margin analysis, and Bayesian decision trees to evaluate new information.

Key words: agroforestry, marketing strategies, social marketing, market research

Introduction

Undervalued strategic marketing tools in many economic analyses

Many government agencies and economic developers consider economics and marketing to be roughly synonymous. In reality, they reflect two very different, if reconcilable, mindsets that can be useful in overall socioeconomic development. More specifically, there are two key problems with limiting analysis of markets to that of standard economics: the conclusions are not normally strategic, and they are not normally based upon environmental and social sustainability. Standard economics approaches consumer behavior from the point of view of price and income elasticities of demand and the “Engel” share of the consumer’s income that goes to such commodity classes as food, clothing, housing, and so on.

While these measures are extremely useful and must continue to be estimated, business schools and private firms have developed other approaches to marketing which rely upon factorial and discriminate analysis, total quality analysis, contingent valuation, advertising and consumer surveys, focus groups, telephone and post-purchase interviews, multidimensional scaling, strength-weakness-opportunity-threat (SWOT) diagrams, strategic targeting grids, Bayesian decision trees, and other such techniques to first sound out and then modify the determinants of consumer satisfaction. Indeed, the four “p’s” of standard market analysis¹ include not just *products*, *prices*, and *place* but notably *promotion*. Similarly, they have developed marketing channel flowcharts and measures of physical and economic efficiency that are quite helpful in selecting the most advantageous market-supply mechanism.

Marketing science has also contributed (Kinneer and Taylor, 1991) the ideas of product testing, new product research, the four stages of the product life cycle (introduction, growth, maturity and decline), screening new product concepts, advertising research, package testing, name recognition, image and identity research, simulated sales testing, product positioning research, group interviews, and even research in the courtroom!

But perhaps most importantly, marketing science also formulates a clear strategy for social or cause marketing of agroforest goods and services which is patterned upon successful cases of effective market creation for more traditional commodities (Coddington, 1993, Fuller, 1999, Heal, 2000):

1. Establish management and operating procedures
2. Decide on the exact agroforest system and product mix
3. Define the consumer population(s)
4. Package and position the product
5. Establish prices
6. Set up an efficient distribution system
7. Advertise and promote
8. Assess impact and market share.

¹ These will be explained below.

The objective of this paper is to show how a typical subset² of the vast variety of such tools can be linked together to form a sequential strategy for market development. It will present step by step the successive stages of developing a strategy – the acquisition of a new managerial outlook, the four p's, strategic targeting grids, verification of input and complementary markets, detailed market channel and margin analysis, and Bayesian decision trees to evaluate new information .

Strategic marketing in sustainable agroforestry

One of the key research questions in agroforest marketing methodology is “*What is the best marketing strategy to promote sustainable agroforestry development?*” In this paper, we shall apply the above tools to explore in detail the location of demanders of potential timber and nontimber products and services, their characteristics and choices, how best to reach them geographically and emotionally, and how to set prices that permit environmental and social sustainability. Taken together, this information constitutes a ‘strategic marketing plan.’

The urgent need for such plans has received very little attention in the literature on agroforestry. While there has been progress in recognizing the key role of markets in sustainable development over the past 7 years, the percentages in the last two columns of Table 1 (in Calkins, this volume) are still far too low for this indissociable part of agroforest marketing systems and sustainable development³.

Nor is there much awareness of the urgent need to massively increase such studies in the future. Market impacts were cited by only 4% of experts as an “accomplishment” in agroforestry socioeconomic analyses from 1982 to 1996 (Mercer and Miller, 1998). For the future as well, only 3% of experts surveyed called for better market analysis and 9% call for non-market evaluation⁴. Other dimensions were given much stronger marks by the experts: traditional knowledge (13%), gender relations (11%), and participatory research (9%), all within a systemic vision (9%) of sustainable agroforestry (9%) under constraints (11%). *Much more must be done to integrate the input and output market dimensions, including exports, within future studies of agroforestry systems.*

Steps in developing a strategic marketing plan

1. The need for a new managerial perspective

It is first necessary for businessmen in both the private, cooperative and public sectors to acquire an entirely new perspective based on *social* or *cause* marketing (Coddington, 1993; Fuller, 1999; Heal, 2000). The seller in this case markets not only the good or service, but its ethical social content. A well-known example of this is “equitable” coffee purchased from low-income farmers using less chemicals and growing better quality, arabica coffee precisely because they have been driven to cultivate higher, less fertile land with fewer insects and tropical diseases by more dominant socioeconomic groups! This concept of social marketing could easily be extended to all non-wood forest products and services as part of a conserve-the-forest-and-ozone layer campaign, particularly if it could be emphasized that forest-dwellers are non-monopolistic, disadvantaged minority peoples with cultural wisdom worth preserving.

² Of course, other techniques can be added as well, but this would complicate the presentation.

³ Indeed, Table 1 in itself is eloquent justification for the present workshop!

⁴ These numbers are still low, and should be increased by the publishing of the proceedings of this workshop!

In addition to the goals of satisfying customers and managing marketing services and staff efficiently, social marketing demands that the products and services marketed be compatible with the ecosystem. As such, it is necessary to include the management of the product system life cycle in a long-term orientation and look for both green customers who are willing to pay a price that covers the costs of a 'total quality' product, and input suppliers or producers who must be forced to pay such costs through government policies. The environment must in a sense become a non-paying consumer of our output. Since it is much easier to avoid than to clean up a problem, preventive actions should be taken in the choice of products and services marketed and the marketing channels used.

2. *Updating the four p's*

The second step of developing a plan is to understand and update the four p's of marketing.

- a) **product** choice
- b) **place** of origin and sale joined by the most efficient channel
- c) **promotion** of benefits through advertising, and
- d) suitable market **price** to reflect time, place and form.

Twenty-five years ago, traditional marketing strategies were only concerned with the simple definitions given above. It seemed obvious, for example, that sellers had to adjust their prices to customers in different time periods to reflect the costs of *storage*, in different places to reflect *transportation* costs, and for different forms or levels of processing to reflect *quality* differences. But today "sustainable" (or "ecological" or "social") marketing enriches our definition and understanding of each of the four *p*'s. These changes will be explained briefly below.

Products

In addition to products with the characteristics or 'attributes' of good taste, high quality and low price; redefined products and services with ecological or poverty-reduction attributes have been added to the marketing mix. To form a better idea of the concept of attributes, we may imagine a four-quadrant grid with cost on the horizontal side and "greenness" (protection of both the environment and the consumer from harmful chemicals) on the vertical side (Figure 1). Each quadrant contains one example of the many products we might find in current and future agroforest systems. For example, we may find consumers today buying low-cost maize produced with high chemical use on slash and burn land in the lowest quadrant. We hope of course that consumers will choose to consume rare black mushrooms gathered in forests in the upper righthand corner of the box, to provide good revenues to poor woodland dwellers and to preserve a clean environment. *Social advertising* to create the demand for such new attributes may help to push their purchasing choices northeastward towards that area.

Figure 1: The product and service attributes sought by consumers

		<i>High environmental value</i>			
<i>Low</i>		Maize raised in forest gardens	Rare black mushrooms gathered in forests		<i>High</i>
<i>luxuriousness</i>		Maize with chemicals under slash-and-burn	Off-season tomatoes produced industrially		<i>luxuriousness</i>
		<i>Low environmental value</i>			

Place

If we wish to use a social or ecological marketing strategy for ‘greener’ forest products and services, we may wish to add a ‘green’ or socially responsible marketing *channel*. The concept of ‘green’ consumers has been extensively studied in the United States, and there is even an ascending scale of greenness used to categorize potential demanders for agroforest products and services based on their willingness to pay more for poverty-reducing, environment- and health-preserving production techniques :

True-blue

Greenbacks

Sprouts

Grouses

Basic browns

Research (Roper Starch Worldwide) has shown that females, college graduates, executive-professional workers, married couples, liberal thinkers, white -race, and part-time employed families with young children have a much stronger tendency to be true blues than basic browns. Thus, if anyone is going to choose to buy equitable coffee directly from poor Peruvian farmers or forest-gathered mushrooms from Vietnam, it is they. Our choice of marketing channel therefore must target cities and neighborhoods where that kind of consumer is more likely to dwell. In the case of non-timber agroforest products from Vietnam, ranging from coffee and tea to eco-tourism, the key demanders are likely to be foreigners from Australia, New Zealand, Europe and North America. Innovative channels must be created to export products and import tourists with as much effectiveness as possible.

Promotion

Promotion is a fancy word for advertising. Traditional advertising sought to communicate the direct practical and psychological benefits of goods and services. Sustainable marketing now adds environmental benefits and values in the long term. An appeal is made to people’s conscience, and new values are taught through social advertising.

Pricing

In addition to the costs of storage, transportation and marketing noted above, prices must now reflect the so-called ‘life-cycle’ costs of avoiding or cleaning up any environmental damage associated with the production of inputs, the production of outputs, and the marketing

and processing of final commodities. These waste outputs take up to five forms: water and air pollution, solid wastes, heat, and noise. Any price less than the full cost of such clean-up of such damage will clearly not be socially sustainable.

3. Grids for targeting market niches and increasing market share

In many countries in the past, and some today, marketing strategies have been ‘supply led’ or worse, ‘policy led’. This means that the agroforestry sector, often under strong pressure from government, tries to produce a lot of everything; then, if the farmer has a surplus of something or other, (s)he will desperately seek someone to buy it, even at a loss. The typical sequence of market development only makes things worse because it proceeds in the wrong order:

- a) a policy decision to promote a given product chosen by national administrators
- b) years of investment in costly research, development and extension of higher-yielding technologies;
- c) a frantic last-ditch search for markets.

Experts in environmental marketing believe in ‘demand-led market development’, which proceeds in the reverse order:

- a) exploration of markets to find out which products on which markets have the highest profit potential
- b) search for and extension of the best existing technologies (agronomic research is only done if no appropriate technologies exist), and
- c) government policies, to be added only if the market does not take care of itself. These commonly include input subsidies in the short run and land-use policies in the long run.

Ideally, neither research nor new policies will have to be implemented at all!

Step (a) above of exploring marketing niches and potential market share is often done with a ‘market-targeting grid’. Table 1 shows an example from Nepal. The Northwest quadrant (which shows strategies for *market penetration*) lists in descending order the most profitable commodities already being marketed on existing markets. This quadrant indicates to Nepalese market strategists in which commodities Nepal can likely increase its market share. The Northeast quadrant (*product development* strategies) indicates the new products or services which could be added on those same markets to ensure a more steady year-round flow of income, enjoy economies of size in the volumes handled by existing market agents, and reduce risk.

Table 1: High-Values Product Targeting Grid for Demand-Led Growth

PRESENT PRODUCTS			NEW PRODUCTS		
Market Code ^a	MARKET PENETRATION	Agro-ecol. Zone Code ^b	Market Code	PRODUCT DEVELOPMENT	Agro-ecol. Zone Code
P R E S E N T & N E W M A R K E T S	[⁰ Fish] [⁰ Meat Processing]	4,1,7, 10, 13	D, K, T	○ Non-cheese Dairy Products ○ Seed Potatoes * ○ Niger Seed	5, 4, 2, 8, 11, 14
		4, 5, 1,7, 10, 13	D, T		6, 3, 9
		1	D, U		5, 8, 11
D, L, K D, E, J, K, L, T D, K, T D D, E, K D, J, K ○ Cardamom ○ Ginger, Turmeric, Garlic, Chilli ○ Cabbage, Cauliflower D, L, T	MARKET DEVELOPMENT	2	4	PRODUCT DIVERSIFICATION	2,5,8,11,14 2,5,8,11,14 2,5,8,11,14 2,5,8,11,14 12,15
	○ Citrus	2,5,8,11	J E D,E H D,E,J D,E,K,T	○ Chemical-free Flowers, Fruit and Vegetables	
	○ Honey	2,5,8,11,14		○ Silk *	
	○ (yak) Cheese *	6,3,9		○ Angora Wool*	
	○ Edible	1,4,7,10,13		○ Canned Black Mushrooms	
	○ Tea *	2,1		○ Saffron	
	○ Apple Juice	9,12,15		○ Herbs* & Perfumes	
	○ [Noodles and Biscuits]	2,4,7,8			
○ Cabbage, Cauliflower	2,5,8,11,14				

Source: Original research by the author and collaborators for the Asian Development Bank, 1994.

a: D=Delhi and North India, E=Europe, H=Hong Kong, J=Japan, K=Kathmandu, and Hill Cities, L=Lhasa, T=Terai Cities, U=USA

b: 1 to 15. Please see map of Nepal, Figure 2.

*: Products in which Nepal enjoys an absolute locational advantage.

[]: Products to be produced primarily in the terai

The Southwest quadrant (strategies for *market development*), on the contrary, shows which new markets might be conquered for the commodities already being sold. As noted, these will often be overseas or more distant urban markets. Finally, the Southeast corner (*product-market diversification* strategies) combines both new products and new markets. The potential gains from penetrating a new market with hitherto unproduced products are often high, but so are the risks⁵. In each quadrant the location of the market and the agroecological zone targeted for production are also noted for discussion with businessmen, farmers and local officials. In this real-world example of demand-led growth for the hills of Nepal, citrus, honey, tea, apple juice, ginger (*product development*); and chemical-free vegetables, mushrooms, and herbs (*product-market diversification*) could be developed within sustainable agroforest systems.

4. *Verification of input and complementary markets*

Adding the economic dimension to our analyses (Figure 2), completes our picture of agroforest marketing systems as an object of study. We note counterclockwise from the upper left that *cooperatives* and *group marketing*, *credit markets* and *savings institutions* can all lead to equitable rural development and poverty reduction through income improvement and risk reduction. But they must be complemented in turn by employment opportunities on off-farm *labour markets*; the presence and smooth functioning of *input markets*⁶ and *output markets*; and the absence of *price-*, *payment mechanism*, *nonmarket valuation* or *other constraints* to adoption are non-negotiable conditions for sustainable production and marketing of wood and NTFP products. A full 53% of the socioeconomic articles between 1982 and 1996 addressed these issues as a whole (Mercer and Miller). In the past seven years, this trend has increased to 75% of all articles in *Agroforestry Systems* and 37% in all literature surveyed (please see Table 1 in Calkins b, this volume).

5 Unfortunately, policy-led traditional supply-led strategy often only looks at this last quadrant.

6 We often forget that markets must work to supply inputs to the household, not just to channel output away from the household.

* Coops, group marketing

* Credit

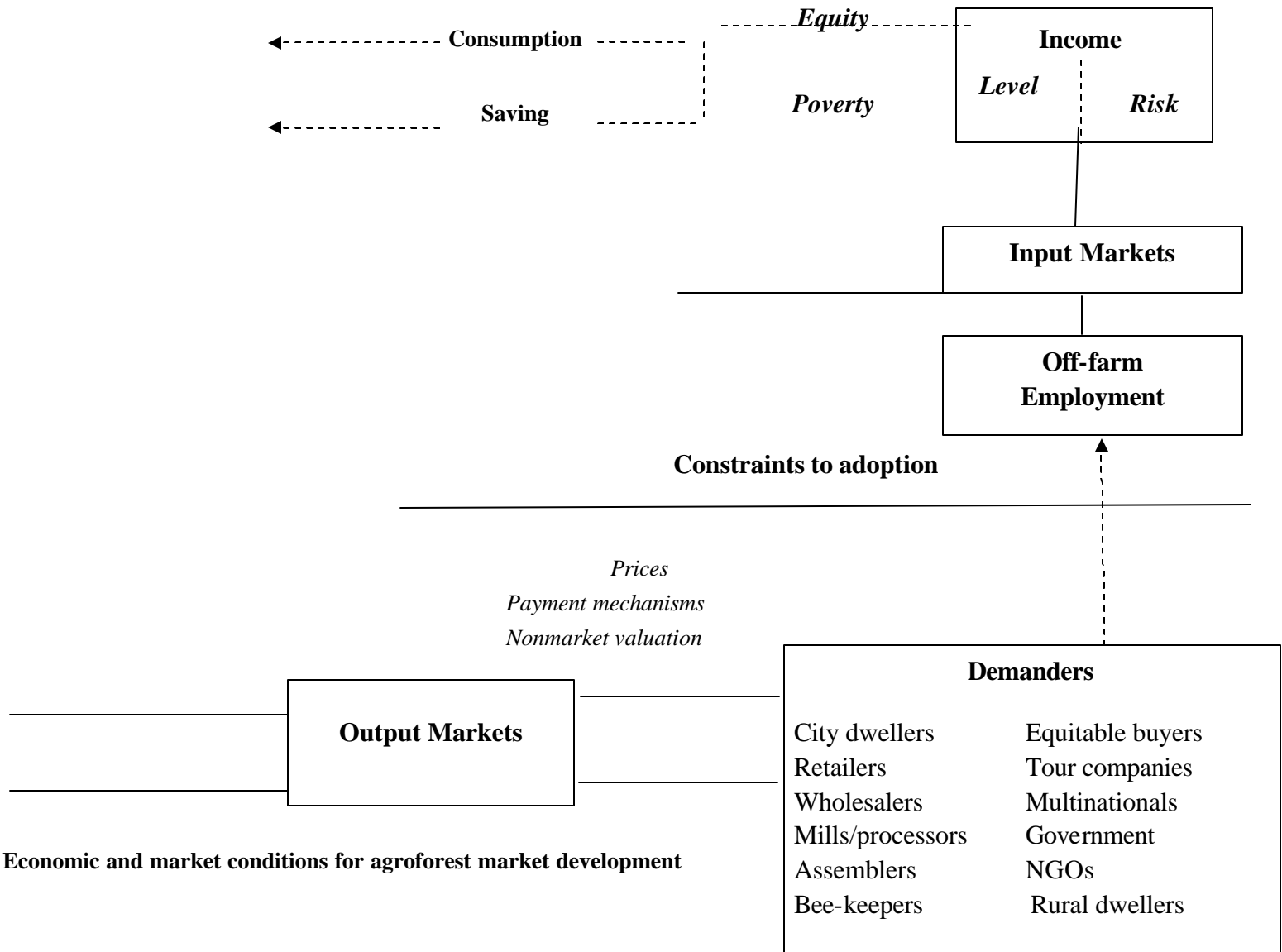
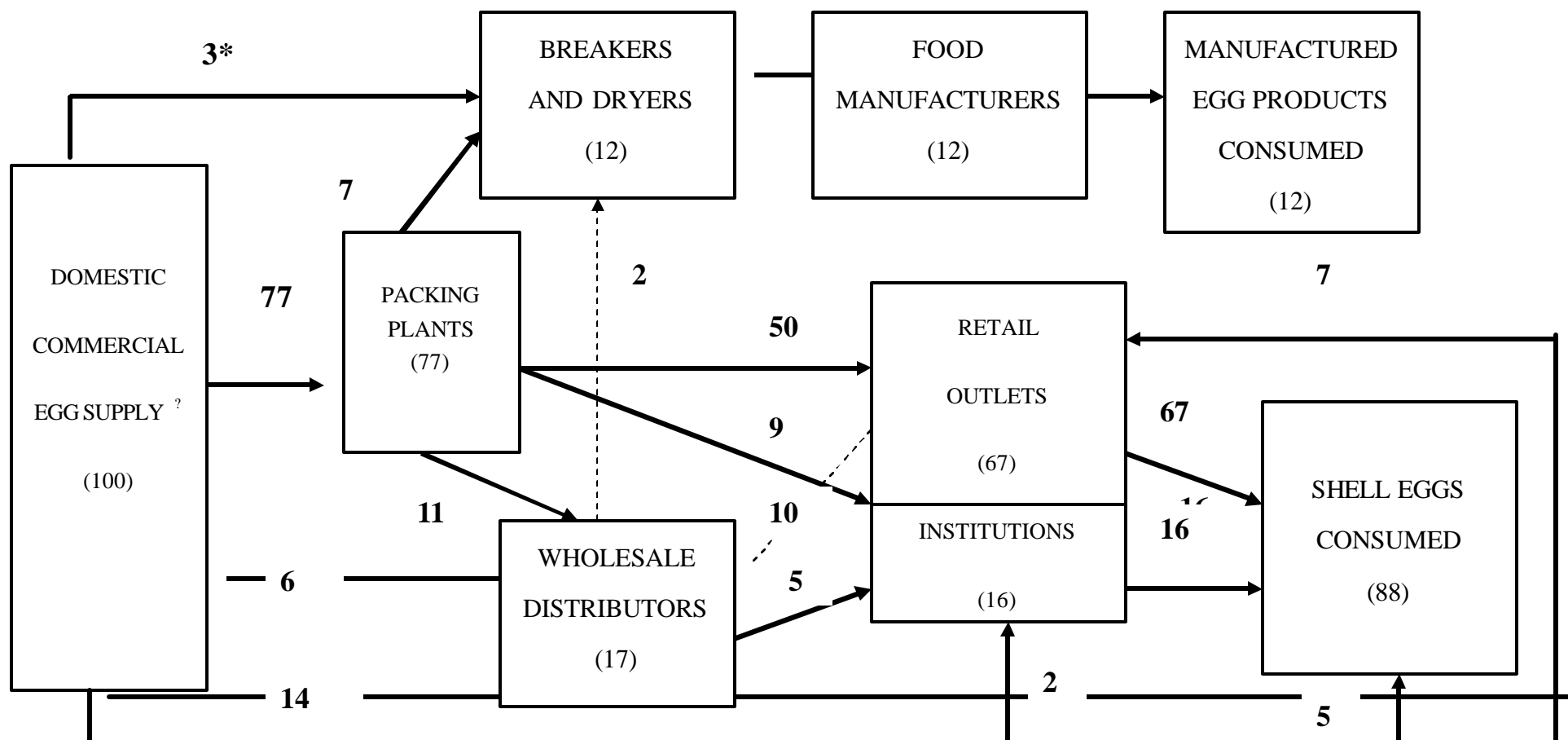


Figure 2: Economic and market conditions for agroforestry market development

5. Detailed analysis of marketing channels and marketing margins

Once the markets and commodities have been targeted, it is essential to analyze the most economically and technically efficient ways to get the products onto those markets. Figure 3 shows an example of the net movements of eggs through commercial marketing channels in the United States. Such charts are easy to understand and to use. The percentage of total market volume going through each stage can be clearly written on the corresponding arrow. Notably, key wholesale, retail or processing stages that seem to suffer from low market share can be targeted for expansion.

**NET MOVEMENTS OF EGGS THROUGH
COMMERCIAL MARKETING CHANNELS, 1971-1972**



? EXCLUDES EXPORTS, IMPORTS, EGGS CONSUMED ON FARMS WHERE PRODUCED, AND EGGS USED FOR HATCHING.

* PERCENTAGES OF DOMESTIC COMMERCIAL EGG SUPPLY.

Source: U.S. DEPARTMENT OF AGRICULTURE

NEG.ERS 205-73(5)

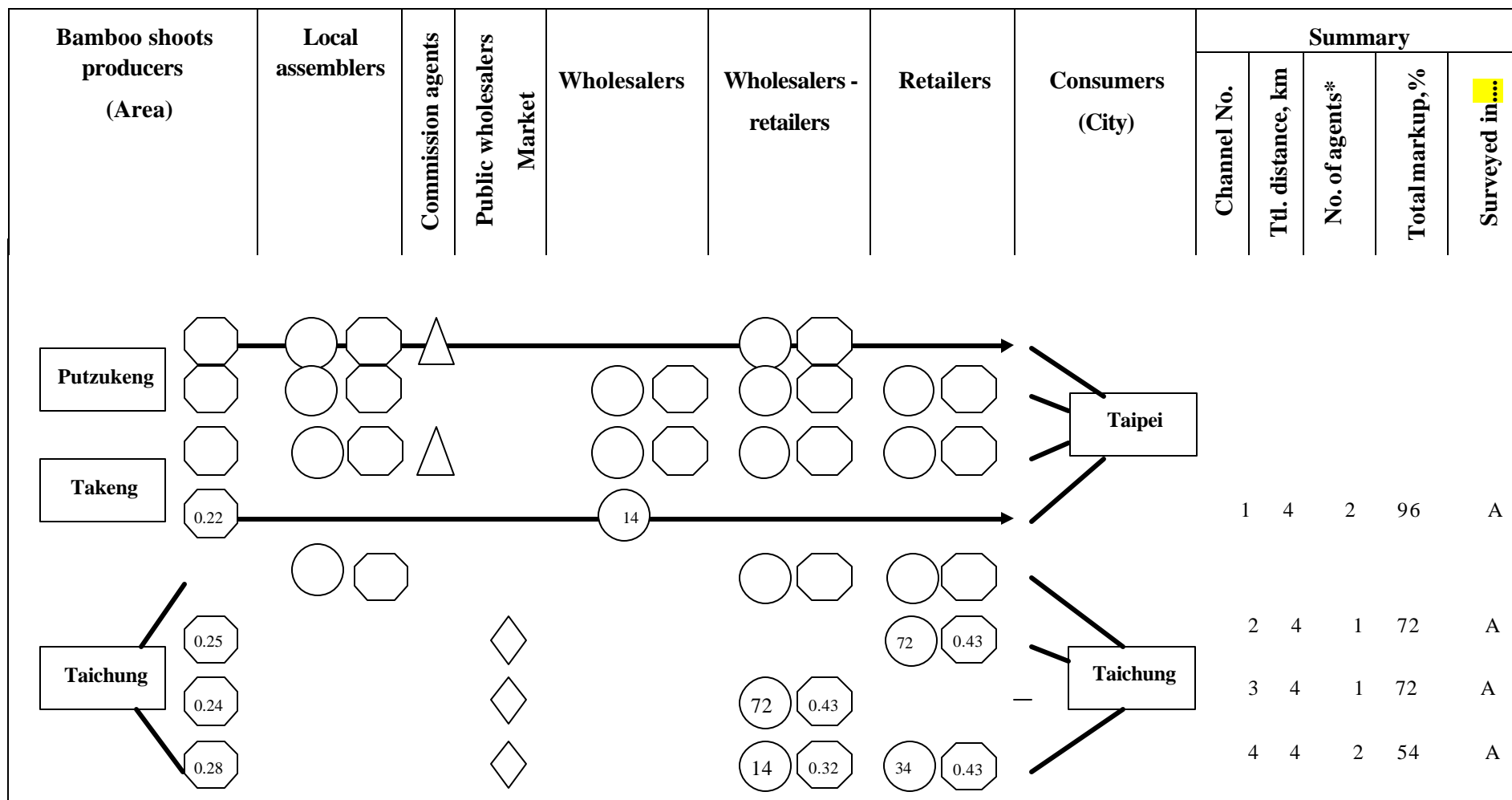
ECONOMIC RESEARCH SERVICE

Figure 3: Net Movement of Eggs Through Commercial Marketing Channels, 1971-72

Then one should study the marketing margins for each commodity. The ideal situation is for the total difference between the retail price and the forest-gate price to be as small a percentage of final consumer cost as possible, while assuring the forest dwellers the highest possible percentage of price, and the consumers a low price relative to other supplies. If the commodity is high-valued, a low marketing margin will still give good profit to marketing intermediaries.

Figure 4 shows a detailed comparison of the selling price, percent markup, commission, and final retail price of channels for the agroforest product, bamboo shoots in Taiwan. Clearly, the last channel is the most economically efficient because producers enjoy the highest price, consumers the lowest price compared with other channels. Because bamboo shoots are high valued, marketing agents also receive a good return to their time, management, and risks.

At this stage, our strategic question becomes: *To what extent should farmers try to vertically integrate, assuming more of the responsibility for post-harvest handling, marketing and processing, thereby increasing their profit and perhaps even being able to pass one some of the efficiency savings to the final consumer?* This question can only be answered by studying post-harvest handling budgets, as show in Table 2. Most farmers are familiar with production budgets, but it is just as important for them to measure and compare across commodities the net returns from further post-harvest handling, processing, and marketing. In this case from Taiwan, it is not profitable for farmers to vertically integrate in bamboo shoots, mungbean or chinese cabbage, but they do stand to gain in soybean, sweet potato, tomato and cabbage. Riskiness, as measured by the coefficient of variation, suggests that of the last four commodities, tomato is the most profitable and the riskiest; while sweet potato is much less profitable, but much less risky as well.



○ Selling price, \$/kg, left blank if not surveyed
 ○ Markup, % left blank if not surveyed
 △ Commission, % left blank if not surveyed
 ◇ Free charge service
 * Public wholesalers market excluded

Source: Calkins and Wang. 1978, p 51

Figure 4: Marketing Channels Identified (unnumbered) and Analyzed (numbered) for Bamboo Shoots, 1977; AVRDC, 1978.

Table 2: Post-harvest Handling Budgets for the Target Commodities, 1976-77; AVRDC, 1978.

	Mungbean	Soybean	Sweet potato	Bamboo shoots	Tomato	Cabbage	Chinese cabbage
Volume handled (kg/ha)	524	1,993	31,029	25,911	42,358	26,430	20,688
Price differential J ^a (US\$/t)	22	21	3	4	16	11	12
TOTAL POST HARVEST REVENUE (US\$)	11.5	41.9	93.9	103.6	677.7	290.7	248.3
TOTAL POST COSTS (US\$)	17.3	20.8	9.3	281.0	548.2	193.4	271.0
Capital (US\$)							
Machine use	0	0	4.6	1.7	106.5	4.9	23.5
Material	0.3	0	0	9.2	17.3	6.8	8.0
Market charge	0	0	0	42.4	140.1	47.9	36.1
Labor							
Self- hrs	37	20	10	293	511	200	300
US\$	15	10.4	4.3				
Hired- hrs	5	19	1	26	0	0	0.4
US\$	2	10.4	0.4	16.4	0	0	6.6
POST-HARVEST NET REVENUE (US\$/ha)							
Average	-5.8	21.1	84.6	-177.4	129.7	97.7	-22.7
Maximum	23.9	n.a.	134.3	1,481.4	2,330.4	1,250.0	526.3
Minimum	-123.9	n.a.	-14.3	-1,324.3	-1,904.6	-438.8	-1,165.1
Coefficient of Variation (%)	446	-	53	361	275	249	1,130
POST-HARVEST FARM INCOME (US\$/ha)							
Average	9.2	31.5	88.9	34.0	413.9	231.0	174.0
Maximum	37.1	n.a.	134.3	922.4	2,633.8	1,282.0	1,100.0
Minimum	-17.1	n.a.	- 3.6	-243.3	-302.0	-46.1	-361.5
Coefficient of Variation (%)	108	-	42	572	115	98	119

a Define as different between the price in the field and that when sold in the market

Source: Calkins and Wang, 1978, p 25

6. Bayesian decision trees for evaluating new information

Finally, we must always continue to improve and to update the marketing plan, provided the new information can be trusted. One convenient tool for improving management is to conduct a pilot marketing test of, say, chemical free vegetables from agroforest gardening. The problem is of course that such a test costs money, and the results are no sure guarantee that market demand will be high enough to assure final profitability. Figure 5 shows a *decision tree* of the type often used in 'Bayesian analysis' of such questions. If we do not do the market test (the uppermost branch of the figure) the best choice would seem to be to do the special promotion, which will net \$ 90,000 more than not doing the promotion. This \$ 90,000 is the net expected gain from \$ 300,000 with 40% chance of occurrence, \$ 100,000 with 30% chance and \$ 200,000 with a 30% chance. However, the lower part of the figure shows that it will be better overall to perform a marketing test, which will yield three possible market predictions: strong consumer response (T1), medium response (T2) and weak response (T3). Predictions T1 and T2 give expected profits of \$219,000 and \$115,000, significantly higher than the net \$90,000 expected from no marketing test. But if the market test returns prediction T3, it will be better **not** to go to the effort and expense of doing the special promotion of chemical free vegetables, because there will be a net expected loss of \$ -78,000. The larger the cost of the test and the size of the market, the more important such decision-tree analysis becomes.

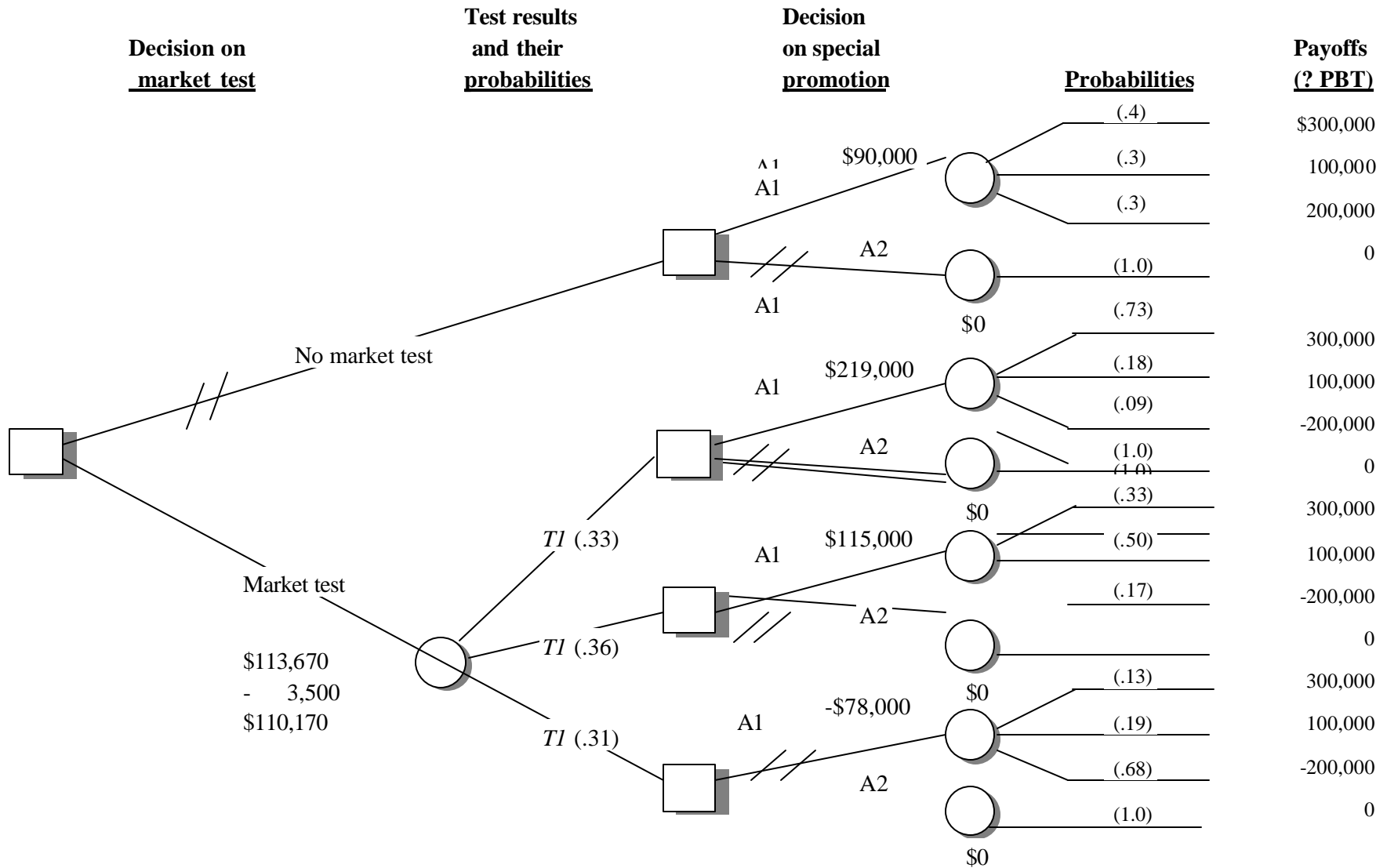


Figure 5: A Marketing Test Decision Tree

Source: Kinnear and Taylor, 1991.

Conducting such analysis is fairly straightforward and financially rewarding, yet managers to date have understated the importance of marketing studies in general. Pattanayak *et al* have shown through a comparison of 32 statistical studies of farmer adoption that only a third (34%) of studies actually bothered to include market incentives in the analysis! Of those that did, 58% found marketing to be a major determinant of adoption, especially the factor *distance to market*. This result suggests that road and market infrastructure development should be a key area of government policy, especially since it serves all products, including labor movements. Of the other factors, biophysical factors, and notably irrigation were all fairly common and highly significant determinants of the farmers' ability to adopt agroforest systems. Risk was also critical, with extension being the primary way to reduce it.

Conclusions

In many countries in the past, product identification and promotion have been policy-led, with the government deciding what will be produced and then investing in time-consuming technology development and extension. This paper demonstrates how to develop an alternative, demand-led strategy that has a much better chance of succeeding. The approach is applied to sustainable social marketing of agroforest commodities, notably non-timber products and services, because these have hitherto received so little attention in the marketing literature and because their development will often benefit the poor social minorities living near or in forests. Strategies for such commodities will not succeed unless other markets – for inputs, credit, labor, and even foreign exchange – exist and are liberated from inappropriate policies. The successive stages of developing a strategy – the acquisition of a new managerial outlook, the four p's, strategic targeting grids, verification of input and complementary markets, detailed market channel and margin analysis, and Bayesian decision trees to evaluate new information -- are presented in turn.

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