Agroforestry and Sustainable Vegetable Production in Southeast Asian Watershed: A Baseline Study

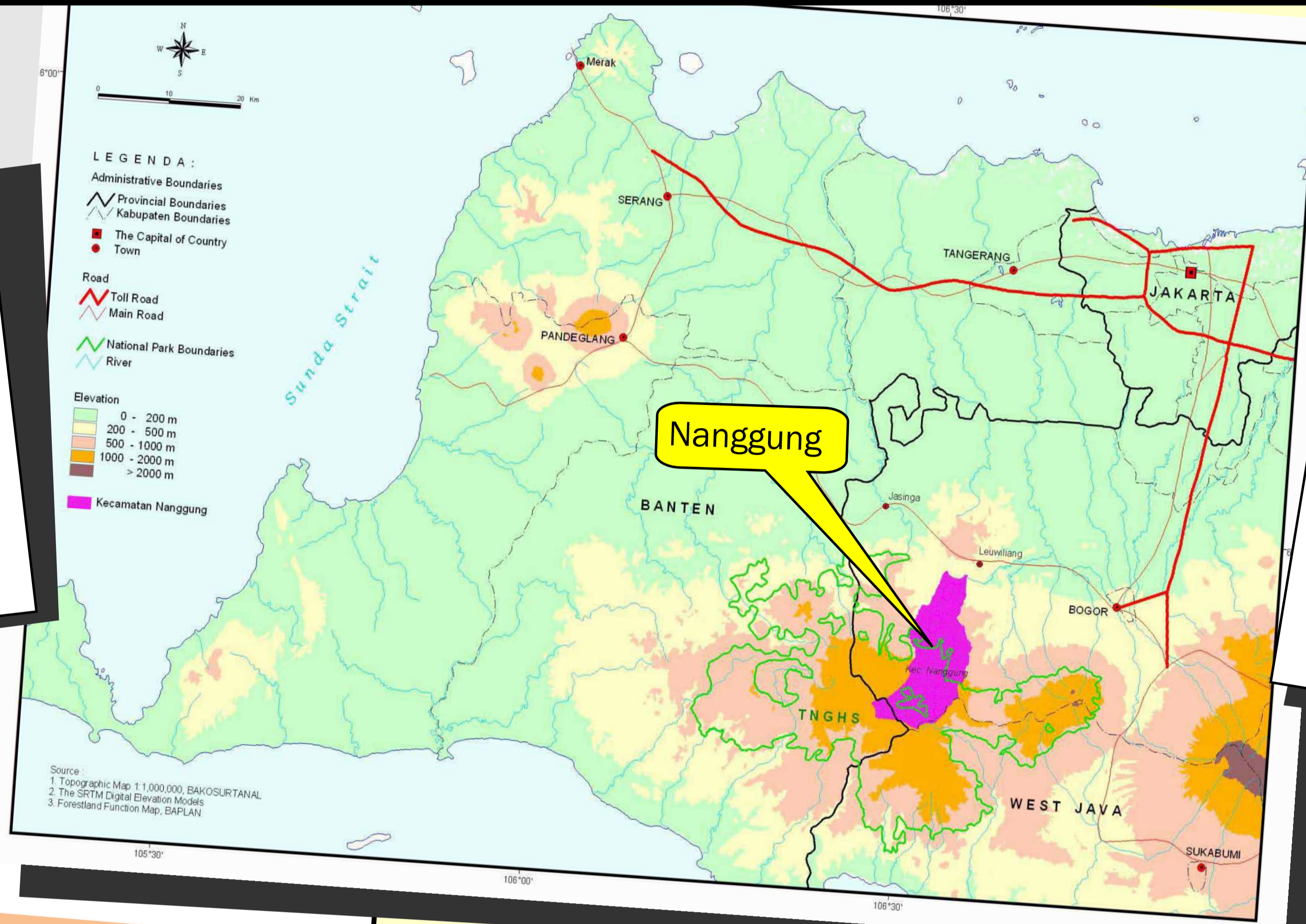Arif Rahmanulloh, Suseno Budidarsono and James Roshetko

Introduction

A baseline study was conducted to provide an analytical basis for socio-economic impact assessment of integrated vegetable-agroforestry systems. The data generated by this study is being used for economic analysis of vegetable farming, specifically: (a) analysis of the current of demographic data of farmers, and (b) analysis of the current of vegetable farm practices in social and economic.

Working hypothesis of the study is that the socio-economic characteristics of farmers' household influence the type of their vegetable farm system and its economic productivity

The Study Site

- The study was conducted in three villages (Hambaro, Parakan Muncang, Sukaluyu), in Nanggung sub-district, West Java, Indonesia
- Total area of 109.99 km², 70.223 km2 (63.8%) is arable land
- Elevation: 200-1800 masl
- Annual rainfall 3,000 to 4,000 mm
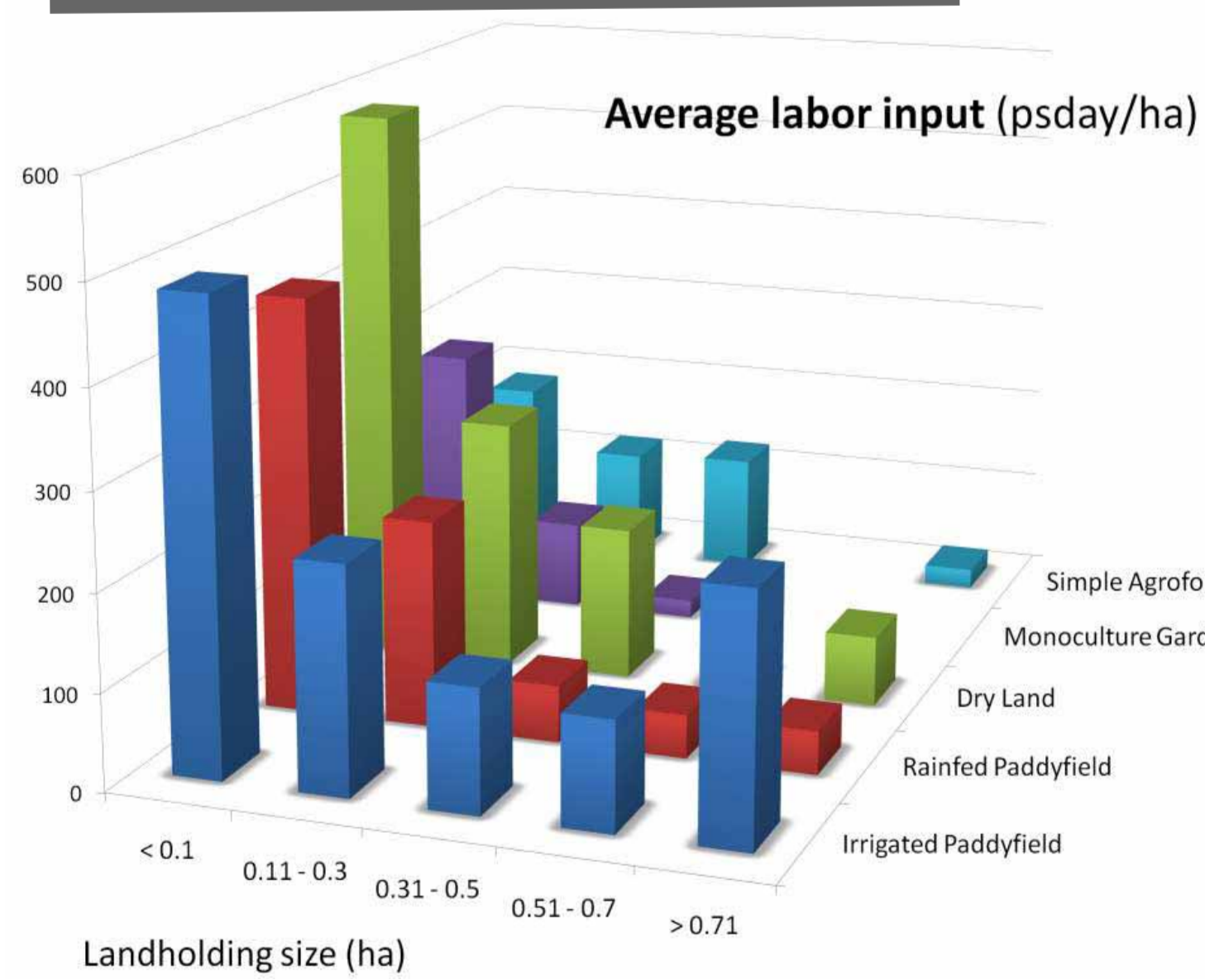- Average annual temperature 22° C and 34° C

Nanggung

Demography

	Hambaro	Parakan Muncang	Sukaluyu	Sample Villages
	n = 62	n = 63	n = 60	n = 185
Family member				
1. Total household members (persons)	343	328	289	960
2. Sex Ratio	112	105	98	105
3. Household Size				
1 4	34%	33%	48%	38%
5 8	52%	64%	43%	53%
> 9	15%	3%	8%	9%
4. Average family size	5.5	5.2	4.8	5.2
5. Nuclear Family Member	96%	95%	96%	96%
Age Structure				
< 15	35%	24%	34%	31%
15 65	63%	72%	63%	66%
> 65	2%	4%	4%	3%
Average labor force per household	3.5	3.8	2.9	3.4
Dependancy Ratio	59%	38%	59%	51%

- Most of the respondents (59.4%) engaged in agriculture as their main occupation
- About two-fifth of the respondents also engage in off-farm activities for additional income.
- Educational attainment, 5.9 % of the respondents were illiterate, and most of the respondents (87.6%) never went beyond elementary level. Primary school enrollment rate is also low (87.8%)

Landholding

	Hambaro	Parakan Muncang	Sukaluyu	Sample Villages
Land use				
Irrigated Paddyfield	60%	60%	40%	54%
Rainfed Paddyfield	37%	32%	35%	35%
Dry Land	40%	37%	58%	45%
Monoculture Garden	11%	3%	15%	10%
Simple Agroforest	16%	29%	25%	23%
Complex agroforest	2%	0%	0%	1%
Shrub	0%	2%	2%	1%
Land size by household (m²)				
< 0.1	45%	27%	38%	37%
0.11 - 0.3	18%	40%	12%	23%
0.31 - 0.5	15%	6%	17%	12%
0.51 - 0.7	16%	5%	3%	8%
> 0.71	6%	22%	30%	19%
Descriptive statistics of landholding size				
Total Land Size Surveyed (Ha)	20.6	27.05	29.22	76.88
Avg Land Size (Ha/Hh)	0.33	0.43	0.49	0.42
Land Size Range (Ha)	0.003 - 3	0.002 - 2	0.003 - 1.8	0.002 - 3
Std. Deviation	0.33	0.3	0.31	0.31

- Average landholding size 0.42 ha per household
- 60% household controlling less than 0.31 hectare of land
- 11% of total agricultural land belong to others and is cultivated by means of renting , sharecropping, or Numpang (cultivating others land free of charge)

Farming System

Average labor input (psday/ha)

- Agricultural land controlled by the surveyed household is comprise of rice fields, dryland agriculture, monoculture gardens (ex. cassava, cucumber), and traditional multispecies tree gardens
- Species mostly cultivated by farmer in dryland and simple agroforest plots : banana (*Musa* sp.), long bean (*Vigna sinensis*), cucumber (Trichosanthes cucumeroides maxim), *kucai* (*Allium tuberosum*) and string bean (*Phaseolus vulgaris*)
- Farmers who have larger area of agricultural land, without a sufficient amount of labor tend to practice less labor intensive agricultural systems, such tree-based systems
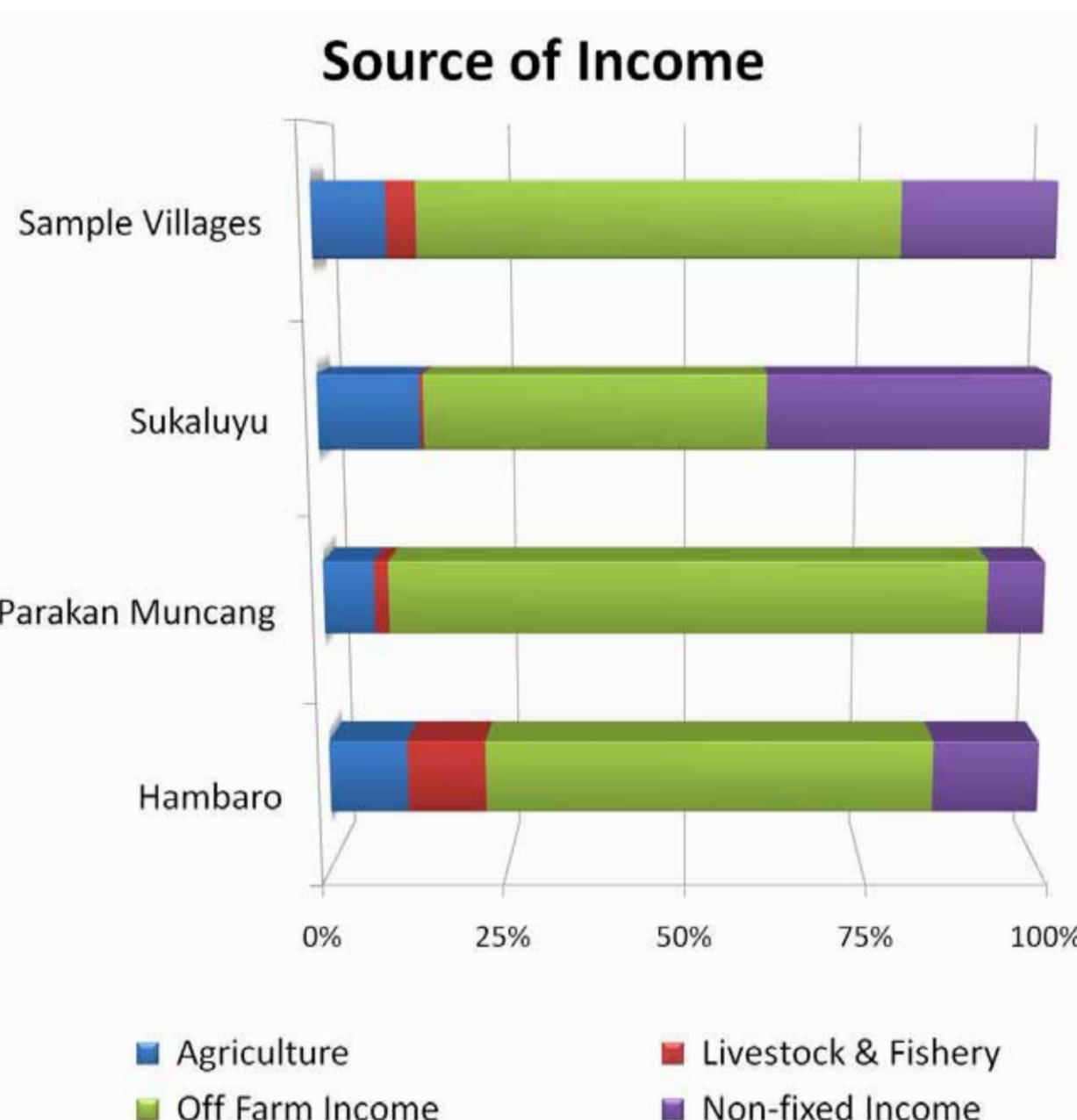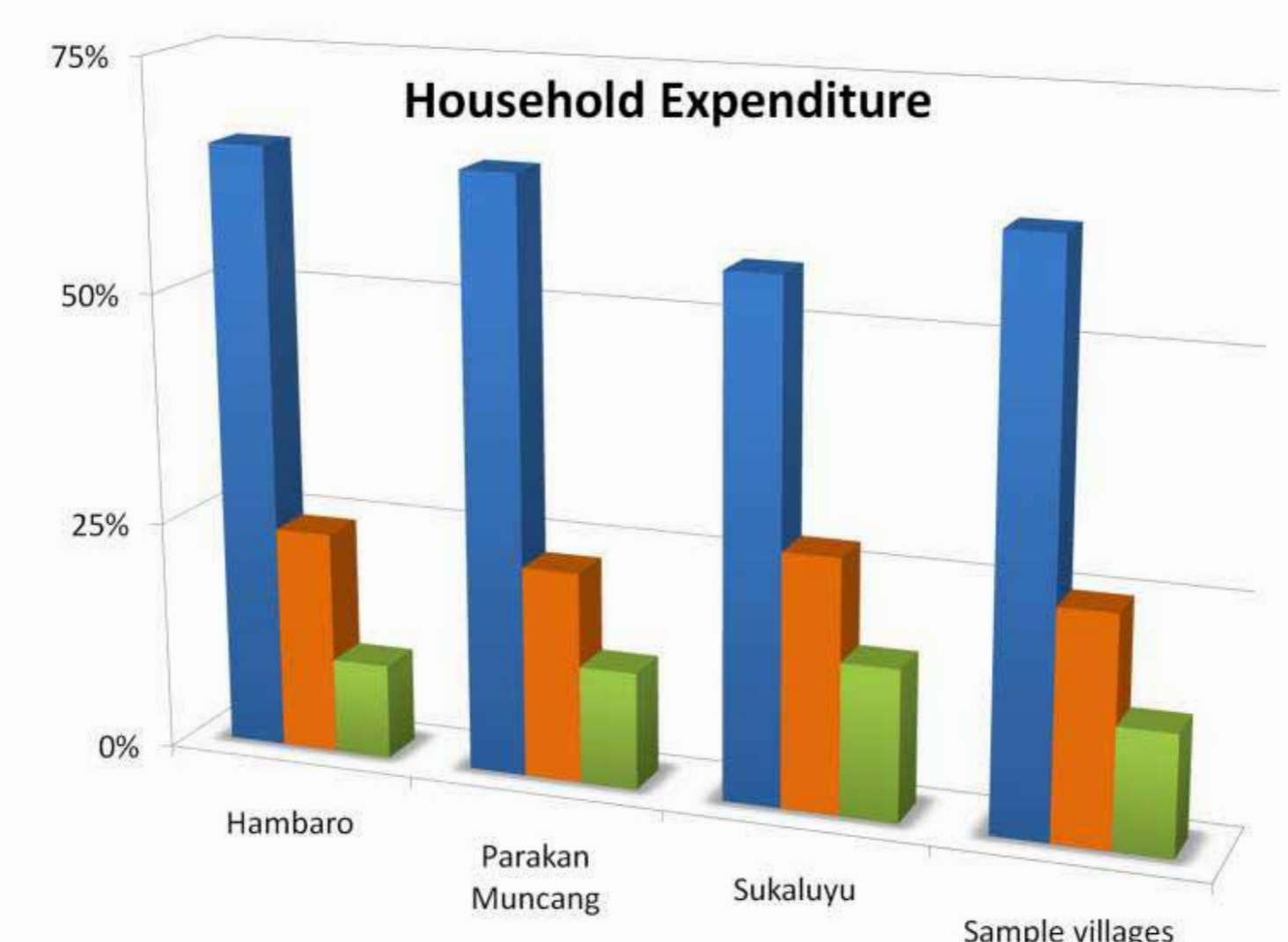
Fruit & vegetable marketing channels

Income & Expenditure

Source of Income

Household Expenditure

- Agricultural activities alone contribute 14% to the total households' income
- More than half (52%) of the surveyed household are below poverty line
- Average expenditure per households is lower than average family income