World Agroforestry Centre

TRANSFORMING LIVES AND LANDSCAPES

REPORT 3

Baseline household survey in Southeast Sulawesi

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Background

The Agroforestry and Forestry in Sulawesi: Linking Knowledge with Action project (the 'AgFor Sulawesi project') has been developed for implementation in three provinces of the island of Sulawesi, Indonesia (South Sulawesi, Southeast Sulawesi and Gorontalo), from 2011 until 2016. The ultimate outcome of the project is to enhance the agroforestry and forestry livelihood systems of rural communities in Sulawesi. In order to support the project, a baseline survey was conducted. One of the main objectives of the survey was to study the general characteristics of types of livelihoods in the community, local farming systems and the existing land-use systems in the area based on community perspectives.

Two unit analyses were used in the livelihood baseline study: a) household level, and b) community level. This report provides the baseline data of household units in South Sulawesi.

Site characteristics and typologies

Southeast Sulawesi province lies in the south-eastern peninsula of Sulawesi, and consists of several small islands including Buton and Muna, and islets including Wowoni and Kabaena. The mainland of Southeast Sulawesi is approximately 38 140 km^2 and the small island area is estimated at 114 876 km^2. Konawe, Kolaka, Bombana are the main districts of the mainland, and Kendari is the capital city. The AgFor Sulawesi project focused on the Konawe and Kolaka districts of the mainland (Figure 1).

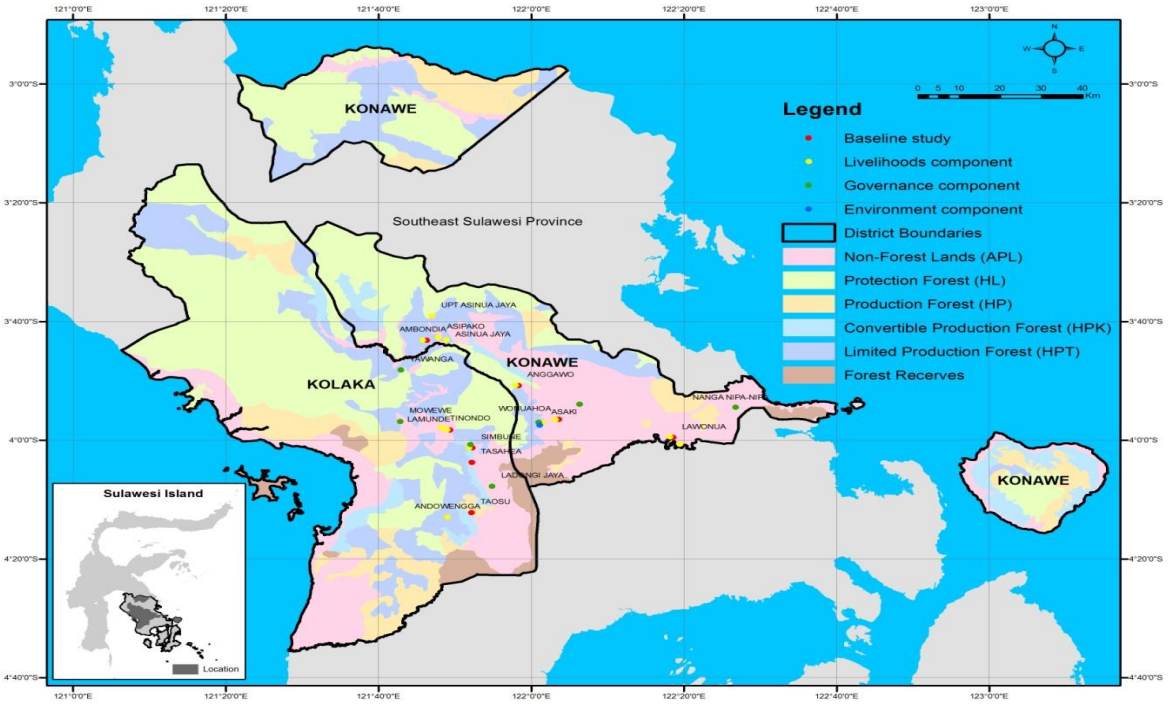

Figure 1. Study site in Southeast Sulawesi

In 2007, the agricultural sector of Southeast Sulawesi contributed 38% of the region's economic growth from cassava and corn crops, and commodities of cocoa, coffee, coconut, cloves, cashew nut, pepper and oil palm. Data from the same year showed that from approximately 15 000 ha of cassava, almost 240 000 t of cassava was produced, and from 40 975 ha of maize, approximately 97 037 t of maize was produced. Of the total cassava production, Konawe district contributed nearly 5%, while Kolaka contributed 3.3%. Buton produced the highest amount of cassava, with approximately 76 709 t from 4 795 ha. The highest maize producer in Southeast Sulawesi was Buton (13 990 t), followed by Kolaka (6 454 t), Buton Utara (5 863 t), Kendari (3 569 t) and Konawe (3 297 t). http://regionalinvestment.bkpm.go.id/newsipid/id/area.php?ia=74

Oil palm production in Southeast Sulawesi is concentrated in Kolaka, from an area covering approximately 21 033 ha, and a production of approximately 7 220 t. Cacao productivity in Southeast Sulawesi in 2010 was approximately 137 833 t, with the largest area of cacao production in Kolaka (91 259 ha), and Kolaka Utara (82 206 ha). The other districts also produced cacao but from areas less than 10 000 ha. The highest production was in Kolaka Utara which produced 63 101 t in 2009, and Kolaka which produced 29 297 in 2009. In 2010, pepper production in Southeast Sulawesi was 5 371 t, from a total area of 11 775 ha, with approximately 99% produced by smallholders. Konawe contributed 1 317 t (24.5%) from 3 661 ha, and Konawe contributed nearly 40% of the total production of Southeast Sulawesi.

Livelihood aspects of the people of Southeast Sulawesi closely relate to population dynamics of history and migration. People with different ethnic backgrounds, native people and immigrants possessed different livelihood sources and strategies. In order to define community typologies in this province migration issues were considered, as illustrated in Table 1.

Table 1. Village typologies and detail of household surveys held in Southeast Sulawesi

Districts	Village typologies				Total respondents
	Local	Local and long-established migrant	Long-established transmigrant	Migrant villages	
Konawe	Wonua Hoa Ambondiaa	Lawonua	-	Lalobite	120
Kolaka	Simbune	-	Tasahea	-	60
Number of samples	30	30	30	30	180

Method

Information was collected from 30 household of random stratification per village, from six sampled villages in Southeast Sulawesi (Table 1). As much as possible, both the husband and wife of each household were interviewed together. Data was sought on family characteristics, such as: household demography (house condition, schooling of the household head, wife and children, number of family members, age of household head, age of household member, number of males/females in household and ethnicity of household head); history of land use (slope of land, location of land, walking time from home to the field, years of land acquisition, status of land management, manner of land ownership, source of land, current land tenure status, current land use, land use before acquisition, land use one year after acquisition and previous land use); plot size for all crops; costs, hired labour use and revenue of land-use types (such as cacao agroforest, mixed-gardens, rice fields). Income data for each household was used to assess levels of poverty. Gender, collective/group marketing and agricultural technical assistances were also assessed.

Findings

1. Household demography in Southeast Sulawesi

House condition

The condition of farmer's houses can be used as a proxy of their welfare. We assessed the condition of houses using four variables: type of house walls, roofs, floors and lighting, presented in Table 2–5 and Figure 2–5. The condition of houses for farmers in migrant villages was poorer compared with other farmers. The condition of the houses were relatively similar in local villages, local and migrant villages and transmigrant villages.

Data capturing the condition of housing is summarized in Table 2–5 and Figure 2–5. The majority of the house floors in local villages and transmigrant villages were made of cement (90%), in all local and migrant villages they were made of wood and cement, while in migrant villages they were made of wood (73%).

The majority of the house walls in the local, migrant, and local and migrant villages were made of wood (67%–100%). It was only in the transmigrant village that the house walls were made of cement (63%).

The majority of the house roofs in the local, migrant, and local and migrant villages were made of sago palm (47%–77%). It was only in the transmigrant village that the roofs were made of tiles (60%).

For lighting, the local villages used the public supply of electricity (83–100%), however Ambondiaa used solar (83%). The local and migrant village used kerosene lanterns (60%) and electricity generators (40%). All farmers in the transmigrant village used the public supply of electricity (100%). In comparison, in the migrant village 77% of lighting was provided by kerosene lanterns and the public supply electricity was used at 23%.

Education

The levels of education of respondents in the migrant village were the lowest compared with the other respondents. Education levels were relatively similar in the local villages, local and migrant village and transmigrant village. The level of the education of females was slightly lower than males. From statistical analysis there was no significant difference in education levels between males and females

in all villages. It was only in the migrant villages that there were significant differences in education levels between male and female children.

We found that most of the respondents in Southeast Sulawesi, including both husbands and wives, had middle education levels (Table 6 and Figure 6). The mean length of schooling in local villages was 8.2–9.1 years for males and 7.0–9.1 years for females. In the local and migrant village, the average length of schooling was 6.4 years for males and 5.7 years for females. In the transmigrant village it was 4.8 years for males and 4.5 years for females. In the migrant village it was 6.8 years for males and 6.7 years for females. The highest illiteracy rate was in the transmigrant village (14% for males and 17% for females). Results from data analysis using the 't test', showed that there was no significant difference in education levels between males and females.

We also calculated the distribution of the education of respondents' children in Southeast Sulawesi (Table 7 and Figure 7). The mean length of schooling in local villages was 6.8–8.5 years for males and 7.5–7.7 years for females. In the local and migrant village, the average length of schooling was 6.9 years for males and 7.2 years for females. In the transmigrant village it was 10.0 years for males and 9.9 years for females. In the migrant village it was 5.3 years for males and 8.2 years for females. Results from data analysis using with the t test, showed there was no significant difference in education level between males and females. It was only in the migrant village that there were significant differences in education levels between males and females.

Household members

The average family size was similar in the local villages, local and migrant village, transmigrant village and migrant village. In the migrant village the size of families was slightly lower than in the other villages. The range of the average family size in all villages was 3.8–4.7 members, presented in Table 8 and Figure 8.

Age of household head

The age of the household heads in the migrant village were the youngest compared with the other villages. Most of the household heads in the local villages, local and migrant village, and transmigrant village were similarly aged between 40–60 years.

Table 9 and Figure 9 show that most of the household heads in the local villages were aged between 40–60 years (53–73%). Farmers in the local and migrant village were aged 40–60 years (57%), while 37% were below 40 years. In the transmigrant village, most of the household heads were aged between 40–60 years (73%) and over 60 years (27%). In the migrant village they were aged below 40 years (53%), while 40% were aged between 40–60 years**.**

Age of household members

The age of the household members in the local villages, local and migrant village, transmigrant village and migrant village were relatively similar, with the majority aged between 15–60 years (adults).

Table 10 and Figure 10 show the age of household members in local villages, with 56–64% between 15–60 years (adults) and 30–41% aged below 15 years (children). In the local and migrant village, 63% of household members were aged between 15–60 years (adults) and 35% aged below 15 years (children). In the transmigrant village 74% were aged 15–60 years (adults), and in the migrant village 64% were aged 15–60 years (adults), and 32% below 15 years (children).

Number of males and females in household

The number of male and female household members in the local villages was relatively similar to the local and migrant village, transmigrant village and migrant village. In all villages, males were slightly higher than females, except for in the local village Wonua Hoa, where males were slightly lower than females**.**

Table 11 and Figure 11 shows the number of male and female household members in local villages was 49–56% male and 44–51% female. In the local and migrant villages it was 54% male and 46% female. In the transmigrant village it was 52% male and 48% female, and in the migrant village it was 55% male and 45% female.

Ethnicity of household head

The ethnicities of the household head were different among the local villages, local and migrant village, transmigrant village and migrant village. The majority of household heads in local villages were Tolaki, in the local and migrant village they were Tolaki and Bugis, in the transmigrant village they were Balinese, and in the migrant village they were Bugis.

Data on the ethnicity of household heads is summarized in Table 12 and Figure 12. In local villages all of the household heads were Tolaki (100%). In the local and migrant village they consisted of Tolaki (50%) and Bugis (50%). In comparison, in the transmigrant village the ethnicity of household heads was Balinese (67%) and Javanese (33%). In the migrant village they were Bugis (83%) and Toraja (17%).

2. History of land use in Southeast Sulawesi

Slope of land

Most of the slope of the land in the local villages, local and migrant village, transmigrant village and migrant village differed. In local villages of the majority of the slope of the land was flat, and in the local and migrant village it was sideways. In the transmigrant village and migrant village the land slope was relatively similar—sideways and flat, with sideways rating slightly higher than flat.

Table 13 and Figure 13 depict the slope of land in Southeast Sulawesi. The slope of land in the local villages was flat (59–74%) and sideways (26–41%). In comparison, in the local and migrant village it was sideways (72%) and flat (28%). In the transmigrant and migrant villages it was relatively similar—flat and sideways (51% sideways and 49% flat).

Location of land

The location of land use in the local villages, local and migrant village, transmigrant village and migrant village was relatively similar, with most of the land in located in private land in the village.

Most of the location of land use in Southeast Sulawesi was private land in the villages (Table 14 and Figure 14). In the local villages, the location of land was in private land in the village (79–96%), and private land outside of the village (4–21%). In the local and migrant village, most of the location of land

was in private land in the village (91%). In the transmigrant villages most of the land was also located in private land in the village (80%), while 20% was in private land outside of the village. In the migrant village, the location of land was in private land in the village (91%) and private land outside of the village (9%).

Walking time from home to the field

The average walking time from home to the field in local villages was longer than in the other villages. The average walking time from home to the field was relatively similar in the local and migrant village, transmigrant village and migrant village (≤15 minutes).

Table 15 and Figure 15 show that the average walking time from home to the field in the local villages was ≤30 minutes (49–75%). In the local and migrant village it was ≤15 minutes (56%), while in the transmigrant village it was also ≤15 minutes (55%). In the migrant village, the average walking time from home to the field was ≤15 minutes (67%).

Year of land acquisition

The distribution of plot holdings by year of land acquisition was different among the local villages, local and migrant village, transmigrant village and migrant village. Most of the plot holdings by year of land acquisition in local villages were obtained after 2000. In both the local and migrant village and the migrant village, the plot holdings were obtained after 2000. However, in the transmigrant village they were obtained before 1980.

Table 16 and Figure 16 show that in local villages the distribution of plot owned holdings were obtained after 2000 (33–51%), and from 1990 to 1999 (21–32%). In the local and migrant village 35% of the plots owned were obtained from 1990 to 1999, and 47% after 2000. In comparison, most of the land in the transmigrant village was obtained before 1980 (59%). In the migrant village, most of the land was obtained before 2000 (68%).

Status of land management

Most of the recent status of land management was relatively similar in the local villages, local and migrant village, transmigrant village and migrant village. The majority of land in all villages was owned and self-cultivated, and owned but not operated.

Table 17 and Figure 17 show the most recent status of land management in local villages was owned and self-cultivated (53–69%), and owned but not operated (30%). In the local and migrant village, 62% of the recent status of land management was owned and self-cultivated, and owned but not operated (22%). In the transmigrant village it was owned and self-cultivated (85%), while in the migrant village it was owned and self-cultivated (57%) and owned not operated (31%).

Manner of land ownership

The majority of the manner of land ownership was different in the local villages, local and migrant village, transmigrant village and migrant village. In the local villages it was inherited (66–70%), in the local and migrant village it was purchased (59%), and in the migrant village it was also purchased (80%). However in the transmigrant village it was sourced from government programs (62%).

Most of the manner of land ownership in Southeast Sulawesi was inherited and purchased (Table 18 and Figure 18). In local villages it was inherited (66–70%) and purchased (9–32%). In the local and migrant village it was purchased (59%) and inherited (33%). In comparison, most of the land ownership in the transmigrant village was from government programs (62%) and purchased (37%), and in the migrant village it was purchased (80%).

Source of land

The distribution of plot holdings by the source from which land was obtained was different in the local villages, local and migrant village, transmigrant village and migrant village. The main source of land in the local villages was the husband's parents, in the local and migrant village it was other people, in the transmigrant village it was the government, and in the migrant village it was other people.

Table 19 and Figure 19 show the distribution of plot holdings by the source from which land was obtained. In local villages, 55–62% of the plots were from the husband's parents, followed by other people (16%), relatives (14%) and the wife's parents (11%). In the local and migrant village it was sourced from other people (51%), followed by the wife's parents (18%), the husband's parents (16%) and others (15%). In the transmigrant village 52% was from the government, followed by other people (37%), and secondary forest (10%). In comparison, most of plot holdings in migrant village were from other people (90%).

Current land tenure status

Most of the current land tenure status in local villages was different compared with other villages. The majority of current land tenure status was relatively similar in the local and migrant village, transmigrant village and migrant village. The majority of current land tenure status in the local villages was owned by the husband. However in the local and migrant village, transmigrant village and migrant village it was owned by the wife and husband together.

Table 20 and Figure 20 show current land tenure status in local villages, with most owned by the husband (56–62%), followed by the wife and husband (24–28%), wife (13–17%) and then other people (1-3%). In the local and migrant village, most of the current land tenure status owned by the wife and husband (49%), followed by the husband (29%) and wife (20%). However the most current land tenure status in the transmigrant village, was owned by wife and husband (67%), and then by the husband (28%). In the migrant village it was also owned by wife and husband (63%), and then by the husband (22%).

Current land use

The current land use in the local villages was different compared with the other villages. The main current land use was also different between the local villages, local and migrant village, transmigrant village and the migrant village. The main current land use in the local villages was cacao agroforest, in the local and migrant village it was mixed-gardens/agroforest, and in the transmigrant village and the migrant village it was cacao agroforest.

The main current land use in the local villages was cacao agroforest (16–48%) and bush fallow (26–30%) (Table 21 and Figure 21). In the local and migrant village it was mixed-gardens/agroforestry (25%), cacao agroforest (22%) and bush fallow (22%). In comparison, current land use in the transmigrant village was cacao agroforest (37%), pepper agroforest (27%) and mixed-gardens (13%). In the migrant village it was cacao agroforest (36%), bush fallow (27%) and vegetable fields (14%).

Land use before acquisition

The land use before acquisition was different in the local villages, local and migrant village, transmigrant village and migrant village. The main land use before acquisition in the local villages,

local and migrant village, and migrant village was relatively similar, being bush fallow. However in the transmigrant village the main land use was secondary forest.

Most of the land use before acquisition in local villages was bush fallow (40–71%), cacao agroforest (3–18%) and secondary forest (8–20%), (Table 22 and Figure 22). Land use before acquisition in the local and migrant village was bush fallow (71%) and secondary forest (11%). In the transmigrant village it was secondary forest (66%) and bush fallow (24%), and in the migrant village it was bush fallow (53%) and secondary forest (25%).

Land use one year after acquisition

The land use one year after acquisition was different in the local villages, local and migrant village, transmigrant village and migrant village. The major land use one year after acquisition in the local villages, local and migrant village and migrant village was relatively similar, being bush fallow. In comparison in the transmigrant village, it was vegetable fields.

Table 23 and Figure 23 show that majority of land use one year after acquisition in local villages was bush fallow (18–37%), cacao agroforest (8–31%) and in Wonua Hoa it was mixed-gardens (22%). Land use one year after acquisition in the local and migrant village was bush fallow (34%), cacao agroforest (23%) and mixed-gardens (18%). Land use one year after acquisition in the transmigrant village was vegetable fields (46%) and secondary forest (16%). In the migrant village it was bush fallow (28%), vegetable fields (24%) and cacao agroforest (23%).

Previous land use

The previous land uses were different in the local villages, local and migrant village, transmigrant village and migrant village. The main previous land use in the local villages, local and migrant village and migrant village was relatively similar, being bush fallow. In comparison, the main previous land use in the transmigrant village was vegetable fields.

Table 24 and Figure 24 show that most of the previous land use in local villages was bush fallow (35–45%), cacao agroforest (5-24%) and mixed-gardens (9-22%). Previous land use in the local and migrant village was bush fallow (49%), mixed-gardens/agroforest (16%) and cacao agroforest (15%). Previous land use in the transmigrant village was vegetable fields (46%), bush fallow (15%) and secondary forest

(15%). In the migrant village it was bush fallow (39%), secondary forest (20%), cacao agroforest (15%) and vegetable fields (15%).

Five type proportions were planted by farmers with different conditions in each village. The average total of trees per hectare in Southeast Sulawesi is summarized in Table 25 and Figure 25. In Southeast Sulawesi, the entire amount of plot gardens were planted with perennial crops, multipurpose trees (MPTs) such as fruit, timber, banana and shading trees (other). However, all villages were dominated by perennial crops (cacao and coffee). Local villages were dominated by perennial crops (cacao and coffee) (60–68%), followed by timber (5–15%) and shading trees (12–25%). In the local and migrant village, 54% of trees were perennial crops (cacao and coffee), followed by MPTs (26%) and shading trees (18%). In the transmigrant village, 59% of trees were perennial crops (cacao and coffee), followed by shading trees (29%) and MPTs (7%). The migrant village was dominated by perennial crops (cacao and coffee) (77%), followed by shading trees (14%) and MPTs (6%).

3. Land holdings, income and income per capita

Land holdings

The average land holding per household in local villages (3.65 ha) was larger than the migrant village (3.47 ha), local and migrant village (3.10 ha) and transmigrant village (2.80 ha), (Table 26 and Figure 26). The compositions of land holdings by land-use types were different across the sites (Table 27 and Figure 27).

In local villages, the major land use of land holding was bush fallow (1.09–1.86 ha), cacao agroforest (0.71–1.21 ha) and mixed-gardens/agroforest (0.27–0.80 ha), with other land use very low. While in the local and migrant village, the major land use of land holding per household was mixed-gardens/agroforestry (0.93ha), cacao agroforest (0.79 ha) and bush fallow (0.75 ha) with other land uses very low. In the transmigrant village, the major land use of land holding per household was cacao agroforest (1.07 ha), pepper agroforest (0.69 ha) and mixed-gardens/agroforest (0.32 ha). In the migrant village, the major land use of land holding per household was cacao agroforest (1.45 ha), bush fallow (1.20 ha), vegetable fields (0.33 ha) and mixed-gardens/agroforest (0.29 ha).

The major land use in a number of the villages in Southeast Sulawesi was bush fallow. The major reason for not cultivating this land in the local villages was lack of capital (50–88%) and lack of labour (8–

37%). In the local and migrant village the farmers were waiting to use the land for palm oil (35%) as well as having a lack of labour (29%). In the transmigrant village the reasons were a lack of capital (69%) and unproductive land (15%). 60% of the respondents in the migrant village gave the reason of a lack of labour and 33% cited a lack of capital (Table 28 and Figure 28).

The majority of the length of bush fallow cultivation across all villages was less than 15 years (27–37%), more than 15 years (20–47%), and 6–10 years (15–23%), (Table 29 and Figure 29). In the local and migrant village it was less than 15 years (61%) and 11–15 years (26%). In the migrant village, 67% of fallow was less than 15 years and 20% was 6–10 years. Whereas in the transmigrant village, 38% of fallow was less than 15 years, 38% was more than 15 years and 23% of fallow was 11–15 years.

Income

The average total of income per year per household in the local villages was lower than in the local and migrant village, transmigrant village and migrant village. The major sources of income for farmers in all villages were also different. For farmers in local villages it was cacao agroforest, labour and entrepreneurial work. In the local and migrant village it was cacao agroforest, labour and mixed-gardens. In the transmigrant village it was pepper agroforest, cacao agroforest and mixed-gardens, while in the migrant village it was cacao agroforest.

The calculation of income included the value of consumed commodities. However, most of the income came from cash crops. The average total of income per year per household in the local villages was lower compared with the other farmers (Table 30 and Figure 30). The source of income for farmers in local villages was cacao agroforest (23.9–52.7%), followed by labour (8.5–12.1%) and entrepreneurial work (4.8–18.6%), with other sources of income being mixed-gardens, pepper agroforest, professional and others. In the local and migrant village, the sources of income were cacao agroforest (19.9%), followed by labour (19.7%) and mixed-gardens/agroforest products (18.4%), with other sources of income being pepper agroforest, entrepreneurial work and others. In the transmigrant village, the average total of income per year per household was higher compared with the other farmers. The main source of income for the farmers in the transmigrant village was pepper agroforest (24.1%), cacao agroforest (22.1%) and mixed-gardens/agroforest product (11.4%). Other sources of income were labour, rice fields and others. In the migrant village, the major sources of income were cacao agroforest (51.6%), followed by entrepreneurial work (14.1%), vegetable fields (9.2%) and labour (8.8%).

Figure 31 shows that the share of income per household in local villages was relatively similar from on-farm/agriculture (56–61%) and off-farm/non-agriculture (39–44%). While in the local and migrant village on-farm/agriculture was 54% and off-farm/non-agriculture 46%. In the local villages and local and migrant village the share of income from on-farm/agriculture was slightly higher than off-farm/non-agriculture. In the transmigrant village, the share of income from on-farm/agriculture (67%) was higher than off-farm/non-agriculture (33%), and in the migrant village, the share of income from on-farm/agriculture (69%) was also higher than off-farm/non-agriculture (31%).

The calculation of the share of income from forest products included the value of commodities consumed. Only in Ambondiaa did this category apply, with villagers able to access the forest located near to the village. 62% of their income from forest products was from honey, 24% from fuelwood, 10% from rattan and 4% from plants (Table 31 and Figure 32).

Income per capita

The daily income per capita of farmers in the local villages was lower than in the local and migrant village, transmigrant village and migrant village. The daily income per capita of farmers in local villages was poorer compared with the other farmers, meanwhile farmers in the transmigrant village were richer than the farmers from the other villages. The daily income per capita of farmers in the transmigrant village was almost twice that of the farmers from the local village.

The daily income per capita of farmers in Southeast Sulawesi is presented in Table 32 and Figure 33). The daily income per capita of farmers in local villages was IDR 18 632 (USD 2.12), IDR 19 710 (USD 2.24), IDR 15 986 (USD 1.82). In the local and migrant village was IDR 20 098 (USD 2.28)[1], in the transmigrant village it was 30 116 (USD 3.42), and in the migrant village it was IDR 23 611 (USD 2.65). Meanwhile the average family size ranged from 3.83 to 5.67 members at both sites. Using the international poverty line standard of USD 1 a day, the percentage of farmers' income was above the international poverty line in Southeast Sulawesi. Thus we can conclude that farmers in all villages were living above the international poverty line of USD 1 per day.

[1] The average exchange rate in 2010 was USD $1 = IDR 9 000.

4. Gender, agricultural technical assistances, collective/group marketing

Gender roles in farm management activities

Information about gender was collected from 30 households per village, from six sampled villages in Southeast Sulawesi. Household survey result show that in local villages, 97% of respondents said that there were roles for women in land management. In the local and migrant village, the role of women in land management was as much as 90% of respondents. In the transmigrant villages, the role of women in land management was as much as 100% of respondents. Overall across all villages, the role of women in land management was much as 83% of respondents (Table 33 and Figure 34).

Table 34 and Figure 35 depict gender roles in farming system activities in Southeast Sulawesi. The involvement of women in farming system activities was quite prominent, with women having roles in more than 80% of the activities in all surveyed villages. In all villages, the high proportion of women in farming system activities were mainly in post-harvesting and marketing. Women were relatively similar to men in harvesting activities. Other activities (land preparation, planting and crop care) were dominated by men, with the involvement of women in these activities lower than men in general.

Table 35 and Figure 36 show the role of women in decision making about land activity in Southeast Sulawesi. The high proportion of women involved in making decisions about land activity was mainly in relation to marketing crop products. Women were usually able to obtain higher prices than men in marketing crop products. This is due to the fact that women were considered to possess good bargaining skills. Decision making regarding other activities (such as the types of plants to be planted, the time to start planting, planting other plants and applying fertilizer and medicine), were dominated by men with the women less involved than men.

The five main activities were cacao agroforest, mixed-gardens (agroforest), rice fields, vegetable fields and other gardens. Similar to the gender roles within the farming system activities, men and women were involved in each activity. But the various types of land activities (cacao agroforest, mixed-gardens (agroforest), rice fields, vegetable fields and other gardens) were dominated by men. The involvements of women in the various types of land activities were lower than men's. However, in the local and migrant village, vegetable field activity was equal between women and men (Table 36 and Figure 37).

Results from data analysis (quantitative data) of labour use in farming system activity for various types of land use from the six sampled villages in Southeast Sulawesi can be seen in Table 37.

For rice field activities, it was only in Tasahea, Wonua Hoa and Lalobite villages, that land was used for rice fields. The proportion of female involvement (22–29%) was lower than male for all labour uses. Labour use from the family was also dominated by men (79–97%).

In vegetable field activities, the proportion of female involvement (26–31%) was lower than male for all labour uses; it was only in Ambondiaa that female involvement (45%) was almost equal to male. Labour use from the family was also dominated by men (70–100%), apart from Ambondiaa which had 58% female involvement in this activity.

In cacao agroforest activities, the proportion of female involvement (18–32%) was lower than male for all labour uses. Labour use from the family was also dominated by men, at 68–85% in all villages.

In mixed-garden activities, the proportion of female involvement (13–37%) was lower than male for all labour uses. Only in the transmigrant village was the involvement of women (46%) relatively similar to men. Labour use from the family was also dominated by men (59–86%), however, in the transmigrant village the involvement of women (46%) was almost the same as men.

In trees activity, the proportion of female involvement (3–21%) was very low compared with men for all labour use. Labour uses from family were also dominated by men (82–97%).

In pepper agroforest activity, the proportions of female involvement (4–32%) were lower than male for all labour uses. Labour uses from the family also were dominated by men (67–96%).

Collective/group marketing in Southeast Sulawesi

Information about collective/group marketing was collected from 30 households per village, from 30 respondents from six sampled villages in Southeast Sulawesi. In local villages, 20–40% of respondents had heard of the term ‘group marketing’, while in the local and migrant village, 43% of respondents had heard of the term. In the transmigrant village 33% of respondents had heard of the term ‘group marketing’, whereas in the migrant village, only 23% of respondents had heard of the term (Table 38 and Figure 38).

In Southeast Sulawesi, more than 87% of the respondents from all villages were interested in learning more about group marketing (Table 39 and Figure 39). In local villages, 87–90% of respondents was interested to learn more about group marketing, and in the local and migrant village and the migrant village 93% of respondents was interested. In the transmigrant village 90% of respondents were interested to learn more about group marketing.

However, 27–50% of the respondents in the local village were not interested to market together as a group (Table 40 and Figure 40). In the transmigrant village and migrant village, 43–50% of the respondents were also not interested to market together as a group. In comparison in the local and migrant village, 90% of the respondents were interested to market together as a group.

More than 86% of the respondents in all villages were interested in forming small-scale enterprises (Table 41 and Figure 41). In local villages it was 86–100% of respondents interested in forming small-scale enterprises, and in the local and migrant village it was 100% of respondents. In the transmigrant village it was 88% of respondents interested in forming small-scale enterprises, and in the migrant village it was 87% of respondents.

Moreover, all respondents in the local villages, local and migrant village and migrant village were interested in learning about how to form enterprises (100%), (Table 42 and Figure 42). Meanwhile in transmigrant village 93% of respondents were interested in learning about how to form enterprises.

Technical assistance or extension services in Southeast Sulawesi

Household access to agricultural technical assistance or extension services in Southeast Sulawesi

Information on agricultural technical assistance was collected from 30 households per village. Discussion of the findings about household access to agricultural assistance or extension services was divided into two sections, a) the existing agricultural extension services that have been received by villagers, and b) the expected agricultural extension services received through the AgFor Sulawesi project.

Existing agricultural extension services

From 30 respondents from six sampled villages in Southeast Sulawesi, four sampled villages (Lawonua, Simbune, Tasahea and Ambondiaa) indicated that more than 73% of the respondents had received agricultural extension services (Table 43 and Figure 43). Wonua Hoa received the most with 43% of respondents receiving agricultural extension services and Lalobite received the least with 13% of respondents. In fact, 57–87% of the Lalobite and Wonua Hoa respondents never received agricultural extension services. However, 10–27% of the respondents in Ambondiaa, Lawonua, Simbune, and Tasahea had never received agricultural extension services until now.

Moreover, of the respondents who had received agricultural extension services, more than 45% had received physical agricultural aids such as planting materials (seeds, seedlings) and fertilizer (Table 44 and Figure 44). The numbers of respondents were lowest in the cross-visit activities. The only respondents who had received support for cross-visit activities were in Lawonua. Besides agricultural aids and cross-visits, farmers also received services such as training and in-class activities. 53% of the respondents in Lawonua received agricultural extension services to enhance their skills through in-class activities and training. Respondents in Ambondiaa received the lowest number of in-class activities compared with the other three villages, as a result of the poor condition of the road to the village. For training, respondents in Wonua Hoa received the least percentage.

Subjects that were provided to farmers in the agricultural extension services greatly depended on the sources of livelihood and the biophysical conditions of the area (Table 45 and Figure 45). Cacao was the popular subject for agricultural extension services in all villages, except for Wonua Hoa. In Wonua Hoa, the two subjects most covered in the agricultural extension services were timber tree management and agricultural inputs (such as fertilizing techniques). The second most popular subject for agricultural extension services in all villages was agricultural inputs. Subjects covering fruit species were only covered in Lawonua, Simbune and Ambondiaa, and subjects covering vegetables were only covered in Lawonua, Tasahea and Wonua Hoa.

Most agricultural extension services at village level were provided by government agencies (Table 46 and Figure 46). 80% of the respondents listed government agencies as the source of the agricultural extension services that they received. Agricultural extension services covering fruit species, vegetables, staple food species and estate crop species (cacao, rubber) were mostly provided by Dinas Pertanian and Dinas Perkebunan (The Agricultural Government Agency). Dinas Kehutanan (The Forestry Government Agency) mainly provided extension services on subjects that relate to timber trees and forestry sectors. Local non-government organizations (NGOs) provided extension services on subjects related to the project they were working on. The private sectors provided extension services on subjects that they were concentrating on as part of their business, e.g. Mars Company and cacao. It was only in Lawonua that respondents received agricultural extension services from NGOs. In comparison, respondents in Lalobite, Tasahea, Simbune and Lawonua received agricultural extension services from private sectors. In Wonua Hoa and Ambondiaa, agricultural extension services were only received from government agencies (Dinas Pertanian and Dinas Kehutanan).

Table 47 and Figure 47 clearly demonstrate the diverse proportion of agricultural extension services received from year to year per village. Respondents in Lawonua, Ambondiaa, Tasahea and Wonua Hoa received more extension services in 2011, and received the least in 2008 and 2012. While in Simbune and Lalobite, respondents received more extension services in 2009, with the least in 2008.

The respondents who were registered to receive agricultural extension services were male, due to the extension agencies recording the head of family to be the receiver. Females would be registered as the receiver, if they were widowed. Thus, it is sometimes difficult to separate the gender status of the agricultural extension receivers. From the survey interviews, respondents grouped the agricultural recipients as male and female (Table 48 and Figure 48). More than 85% of the respondents in all villages agreed that males received more extension services than females. Female extension recipients were the most in Tasahea, and the least in Lalobite.

Levels of advantages received by respondents from agricultural extension services were diverse between villages (Table 49 and Figure 49). However, more than 60% of respondents were agreed that agricultural extension services provided many advantages to their livelihood. Only respondents in Lawonua, Tasahea and Ambondiaa clearly stated that agricultural extension services didn't provide them any advantage.

Expected agricultural extension services

Respondents who had, or had not received agricultural extension services were asked whether they wished to receive them in the coming years, and more than 80% of the respondents did wish to receive extension services (

Table **50** and Figure 50). However, 23% of the respondents in Wonua Hoa, 20% in Tasahea, 17% in Simbune, 10% in Lawonua and 3% in Ambondiaa did not wish to receive agricultural extension services. Unfortunately, the particular reasons for the respondents' refusal of the provision of agricultural extension services could not be identified during this baseline survey.

The respondents who were expecting to receive agricultural extension services in the coming years, were asked about the subjects they would like to learn, and the priority species they wanted to focus on. The agricultural extension services that were most requested by respondents were classified into three activities, a) in-class activities, b) training activities, and c) the distribution of superior planting materials from priority species.

Respondents who wished to receive agricultural extension services in the future, listed their requested topics for in-class extension services, presented in Table 51. Cultivation, garden management, pest and disease handling, general agricultural information and vegetative propagation were the top five topics requested by the respondents for in-class topics.

Respondents listed four popular topics that were requested for in-class activities to also be included in training activities: cultivation, garden management, pest and disease handling and vegetative propagation, presented in Table 52. Besides those four topics, post-harvest handling and tree maintenance were also interesting topics that respondents wished to learn about. However, both for in-class activities and training these topics may require being implemented differently per village depending on the priority species of each village. Lawonua focused upon rubber, cacao, and pepper. Simbune focused on cacao, patchouli, pepper, and timber trees. Tasahea focused on pepper, cacao, rubber and patchouli. Wonua Hoa focused on paddy, pepper, cacao, clove, rubber and patchouli. Lalobite focused on cacao, pepper, rubber, durian and clove. And Ambondiaa focused on cacao, rubber, clove and durian.

Superior planting materials are an important investment for farmers, as good planting materials will produce optimum production, which will enhance their livelihoods. However, in the six villages the access of farmers to good planting materials remains limited. Thus, respondents were also expecting to receive superior planting materials for the species that they prioritized as important for their livelihood.

Each village had a diverse proportion of priority species that they requested for planting materials. In Southeast Sulawesi, respondents requested not only plant but also fish species (Table 53). In Ambondiaa, cacao was the most requested species followed by rubber, teak, durian, pepper, clove, gaharu and mango. In Lalobite, durian was the most requested species, followed by clove, rubber, cacao, pepper, rambutan, teak, oil palm, and mango. In Lawonua, rubber was the most requested species, followed by pepper, cacao, durian, maize, timber trees (teak, gmelina, paraserianthes), rambutan, patchouli, vegetables, chili, coconut, longbean, peanut and fishes species (catfish and fish-mujaer). In Simbune, cacao and teak were the most requested species, followed by pepper, durian, clove, timber trees (jabon, paraserianthes, and gmelina), oil palm and patchouli. In Tasahea, pepper was the most demanded species priority, followed by cacao, durian, rambutan, rubber, oil palm and timber trees (teak, gmelina, paraserianthes and vitex). And in Wonua Hoa, durian was the most demanded species priority, followed by cacao, rubber, pepper, clove, timber trees (teak, gmelina, paraserianthes),

patchouli, fruit species (guava, longan, rambutan), short-term crops (spinach, vegetables, chili, kangkung, broccoli, paddy, maize).

Hence, reflecting upon the situation of the former agricultural extension services, most of the respondents expected the AgFor Sulawesi project to facilitate the improvement of the agricultural extension services either from in-class activities, training, or through the distribution of good/superior planting materials.

Appendix

1. Household demography in Southeast Sulawesi

Table 2. House condition by house floor in Southeast Sulawesi

Village typologies	Villages	n	House floor							
			Dirt		Wood		Cement		Ceramics	
			n	%	n	%	n	%	n	%
Local village	Wonua Hoa	30	2	7	0	0	27	90	1	3
	Ambondiaa	30	2	7	1	3	27	90	0	0
	Simbune	30	0	0	3	10	27	90	0	0
Local and migrant	Lawonua	30	2	7	15	50	12	40	1	3
Transmigrant	Tasahea	30	0	0	0	0	27	90	3	10
Migrant	Lalobite	30	1	3	22	73	7	23	0	0

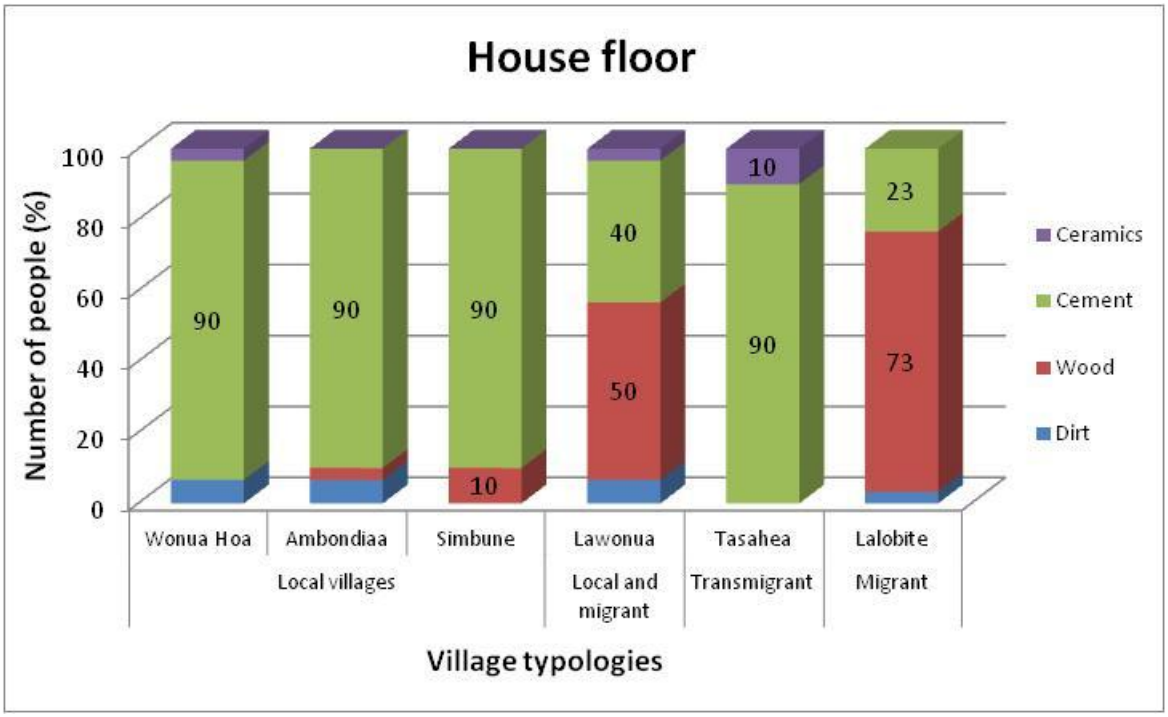

Figure 2. House condition by house floor in Southeast Sulawesi

Table 3. House condition by house wall in Southeast Sulawesi

Village typologies	Villages	n	House wall			
			Wood		Cement	
			n	%	n	%
Local village	Wonua Hoa	30	20	67	10	33
	Ambondiaa	30	29	97	1	3
	Simbune	30	27	90	3	10
Local and migrant	Lawonua	30	26	87	4	13
Transmigrant	Tasahea	30	11	37	19	63
Migrant	Lalobite	30	30	100	0	0

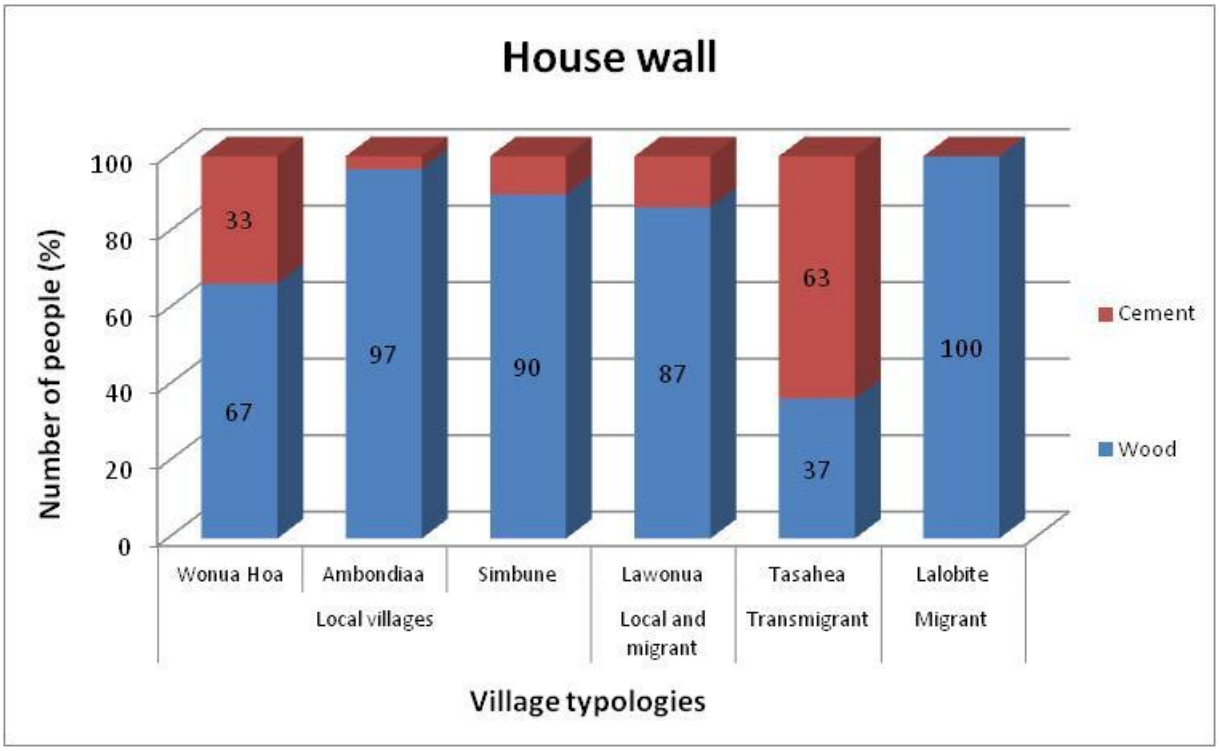

Figure 3. House condition by house wall in Southeast Sulawesi

Table 4. House condition by house roof in Southeast Sulawesi

Village typologies	Villages	n	House roof					
			Iron sheeting		Tiles		Sago palm	
			n	%	n	%	n	%
Local village	Wonua Hoa	30	6	20	1	3	23	77
	Ambondiaa	30	16	53	0	0	14	47
	Simbune	30	16	53	0	0	14	47
Local and migrant	Lawonua	30	8	27	0	0	22	73
Transmigrant	Tasahea	30	12	40	18	60	0	0
Migrant	Lalobite	30	7	23	0	0	23	77

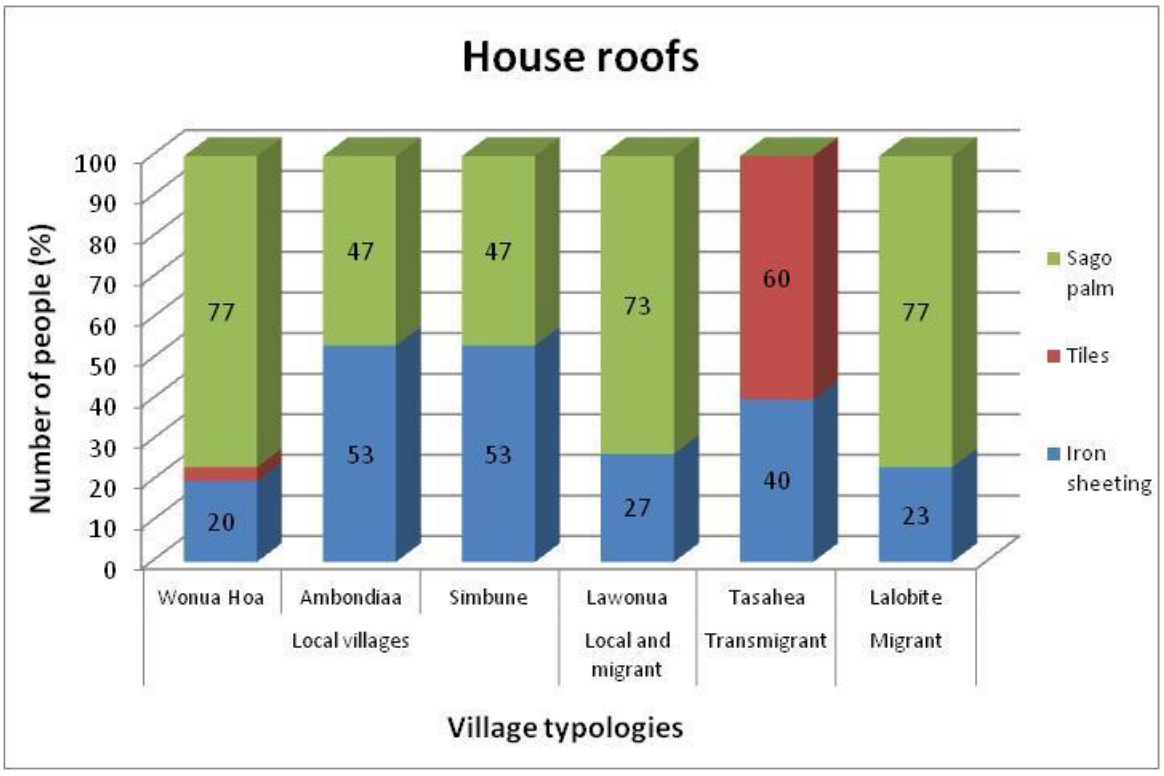

Figure 4. House condition by house roof in Southeast Sulawesi

Table 5. House condition by house lighting in Southeast Sulawesi

Village typologies	Villages	n	House lighting							
			No supply		Generator		Public supply		Solar	
			n	%	n	%	n	%	n	%
Local village	Wonua Hoa	30	0	0	0	0	30	100	0	0
	Ambondiaa	30	5	17	0	0	0	0	25	83
	Simbune	30	0	0	5	17	25	83	0	0
Local and migrant	Lawonua	30	18	60	12	40	0	0	0	0
Transmigrant	Tasahea	30	0	0	0	0	30	100	0	0
Migrant	Lalobite	30	23	77	0	0	7	23	0	0

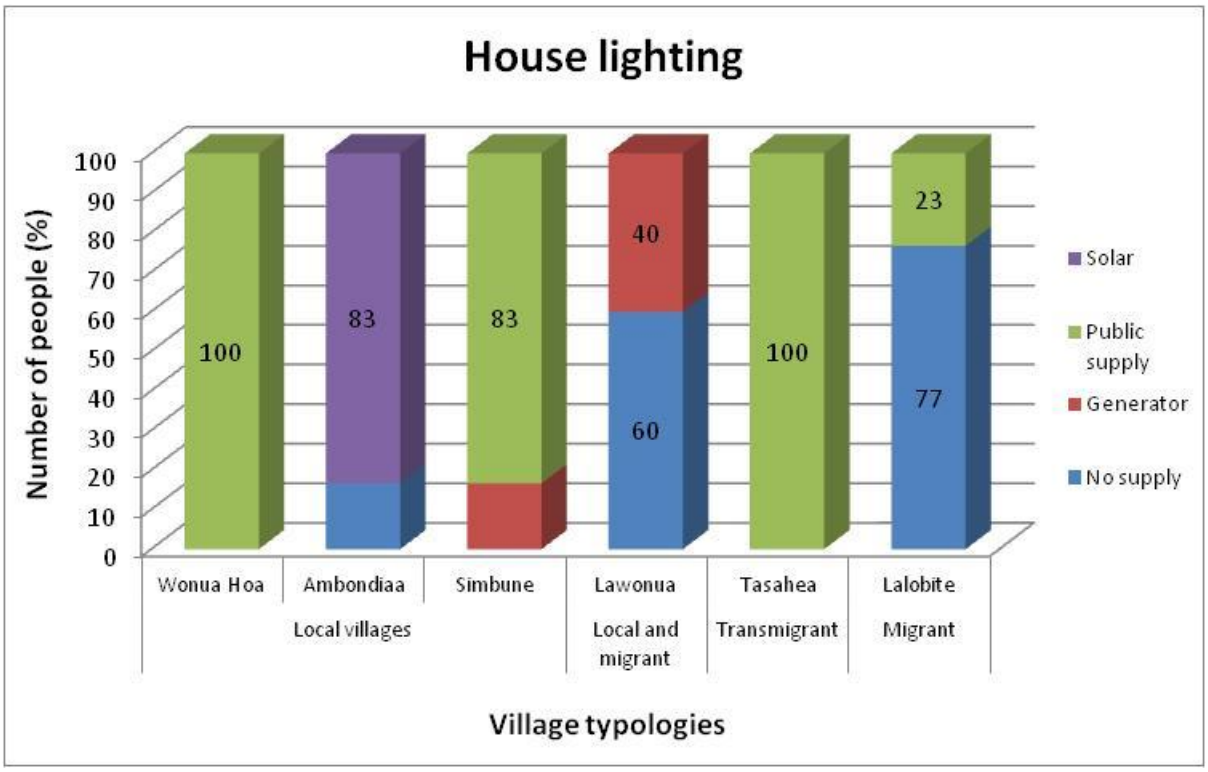

Figure 5. House condition by house lighting in Southeast Sulawesi

Table 6. Distribution of population by years of schooling in Southeast Sulawesi

Village typologies	Village	n	Years of schooling										Mean years of schooling	t test
			Illiteracy		Primary school		Junior high school		Senior high school		Pass senior high school			
			n	%	n	%	n	%	n	%	n	%		
Local village	**Wonua Hoa**													
	Male	28	0	0	10	36	7	25	7	25	4	14	9.11	t stat= -0.025 (P>|t|= 0.584)
	Female	30	0	0	10	33	7	23	9	30	4	13	9.13	
	Ambondiaa													
	Male	29	1	3	11	38	8	28	6	21	3	10	8.24	t stat= 1.408 (P>|t|= 0.201)
	Female	28	1	4	16	57	8	29	2	7	1	4	6.96	
	Simbune													
	Male	28	0	0	12	43	9	32	7	25	0	0	8.25	t stat= 0.927 (P>|t|= 0.359)
	Female	28	0	0	15	54	11	39	1	4	1	4	7.68	
Local and migrant	**Lawonua**													
	Male	29	2	7	12	41	9	31	6	21	0	0	6.41	t stat= 0.723 (P>|t|=0.022)
	Female	28	4	14	14	50	9	32	1	4	0	0	5.71	
Transmigrant	**Tasahea**													
	Male	29	4	14	24	83	1	3	0	0	0	0	4.79	t stat= 0.496 (P>|t|= 1.000)
	Female	29	5	17	23	79	1	3	0	0	0	0	4.48	
Migrant	**Lalobite**													
	Male	29	3	10	14	48	9	31	3	10	0	0	6.76	t stat= 0.018 (P>|t|= 0.191)
	Female	27	3	11	12	44	9	33	3	11	0	0	6.74	

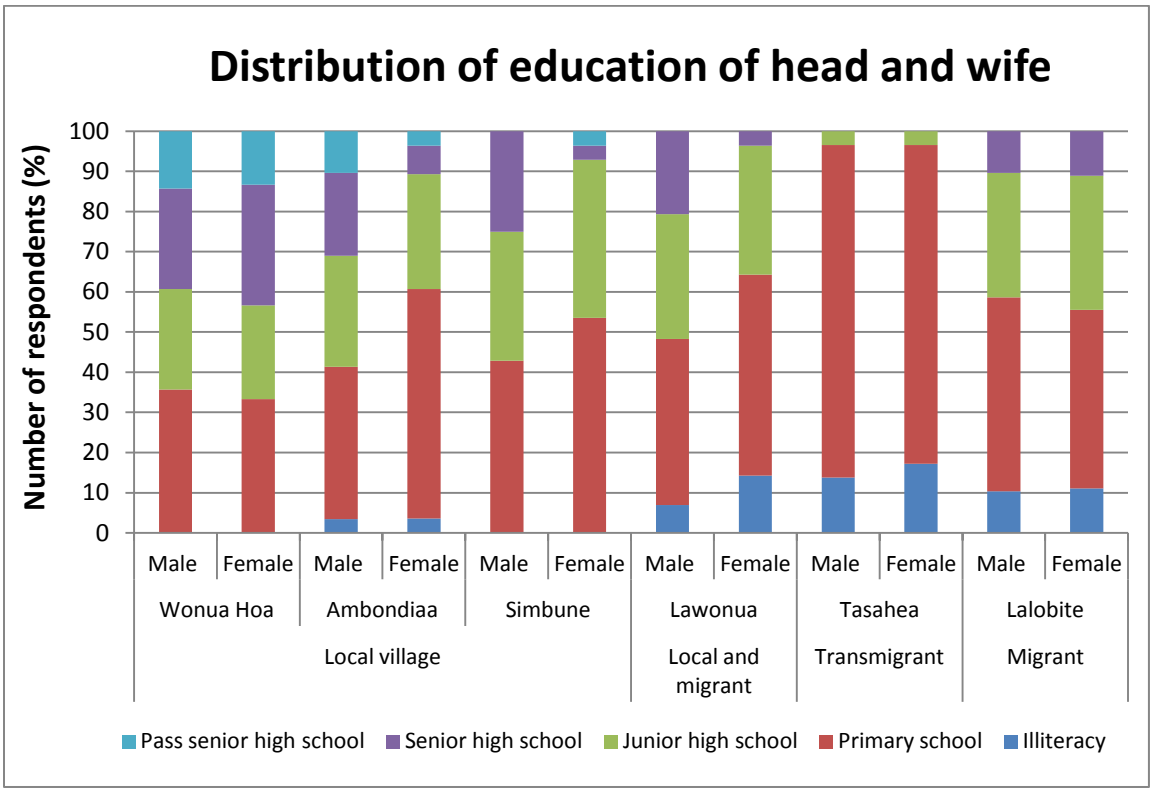

Figure 6. Distribution of household head and wife by years of schooling in Southeast Sulawesi

Table 7. Distribution of child population by years of schooling in Southeast Sulawesi

Village typologies	Village	n	Years of schooling (children)										Mean years of schooling	t test
			Illiteracy		Primary school		Junior high school		Senior high school		Pass senior high school			
			n	%	n	%	n	%	n	%	n	%		
Local village	**Wonua Hoa**													
	Male	25	0	0	14	56	4	16	6	24	1	4	6.76	t stat= -0.852 (P>|t|= 0.408)
	Female	27	0	0	11	41	5	19	10	37	1	4	7.67	
	Ambondiaa													
	Male	33	0	0	11	33	5	15	15	45	2	6	8.55	t stat= 0.801 (P>|t|= 0.779)
	Female	16	0	0	8	50	3	19	3	19	2	13	7.56	
	Simbune													
	Male	54	0	0	23	43	14	26	12	22	5	9	8.20	t stat= 0.709 (P>|t|= 0.136)
	Female	28	0	0	13	46	7	25	3	11	5	18	7.54	
Local and migrant	**Lawonua**													
	Male	35	0	0	16	46	7	20	12	34	0	0	6.97	t stat= -0.183 (P>|t|=0.309)
	Female	24	0	0	11	46	8	33	4	17	1	4	7.17	
Transmigrant	**Tasahea**													
	Male	30	0	0	5	17	8	27	14	47	3	10	10.03	t stat= 0.081 (P>|t|= 0.080)
	Female	16	0	0	6	38	2	13	4	25	4	25	9.94	
Migrant	**Lalobite**													
	Male	25	0	0	17	68	7	28	1	4	0	0	5.28	t stat= -2.206 (P>|t|= 0.017)
	Female	13	0	0	6	46	3	23	0	0	4	31	8.15	

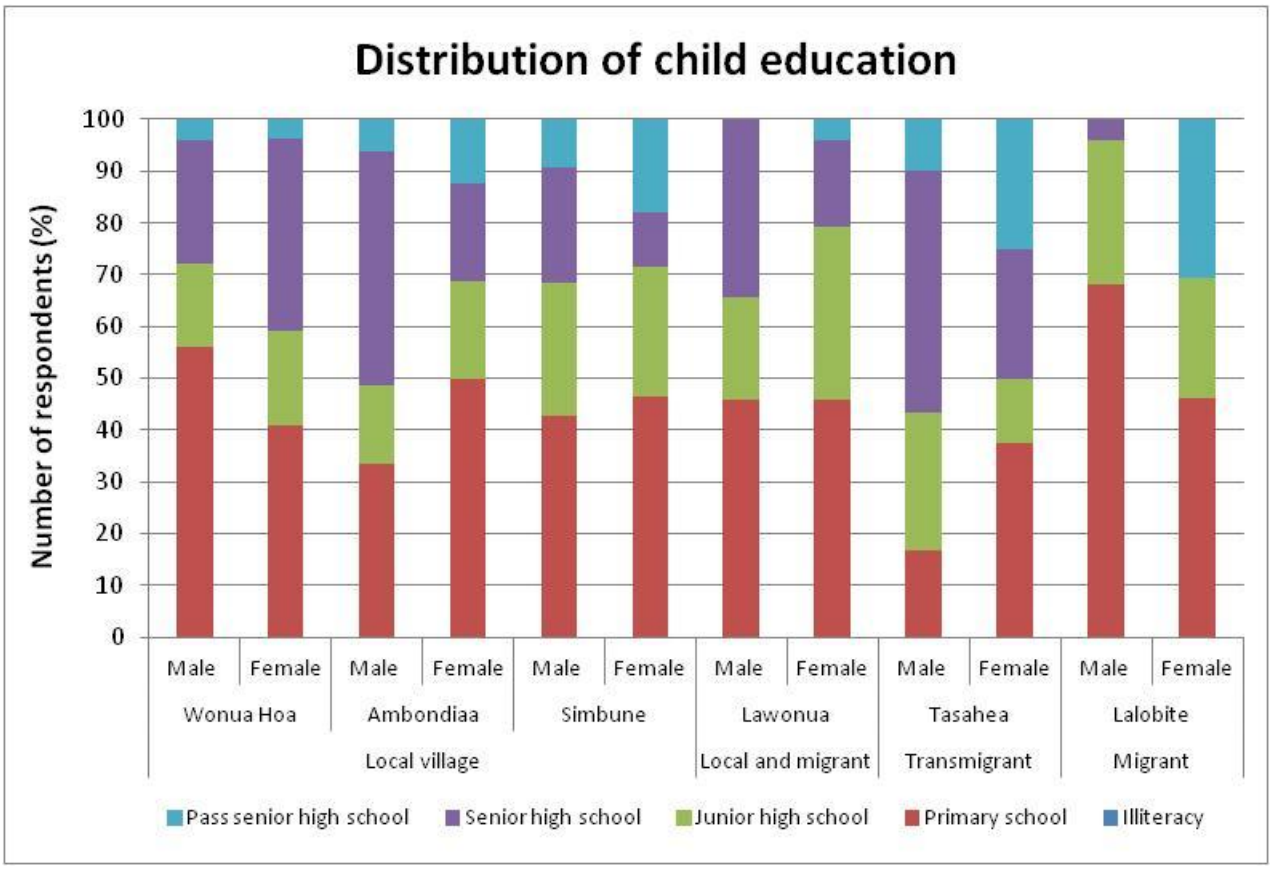

Figure 7. Distribution of child population by years of schooling in Southeast Sulawesi

Table 8. Average number of household members in Southeast Sulawesi

Village typologies	Villages	Average number of household members
Local village	Wonua Hoa	4.60
	Ambondiaa	4.73
	Simbune	5.67
Local and migrant	Lawonua	4.73
Transmigrant	Tasahea	4.47
Migrant	Lalobite	3.83
Total average		4.67

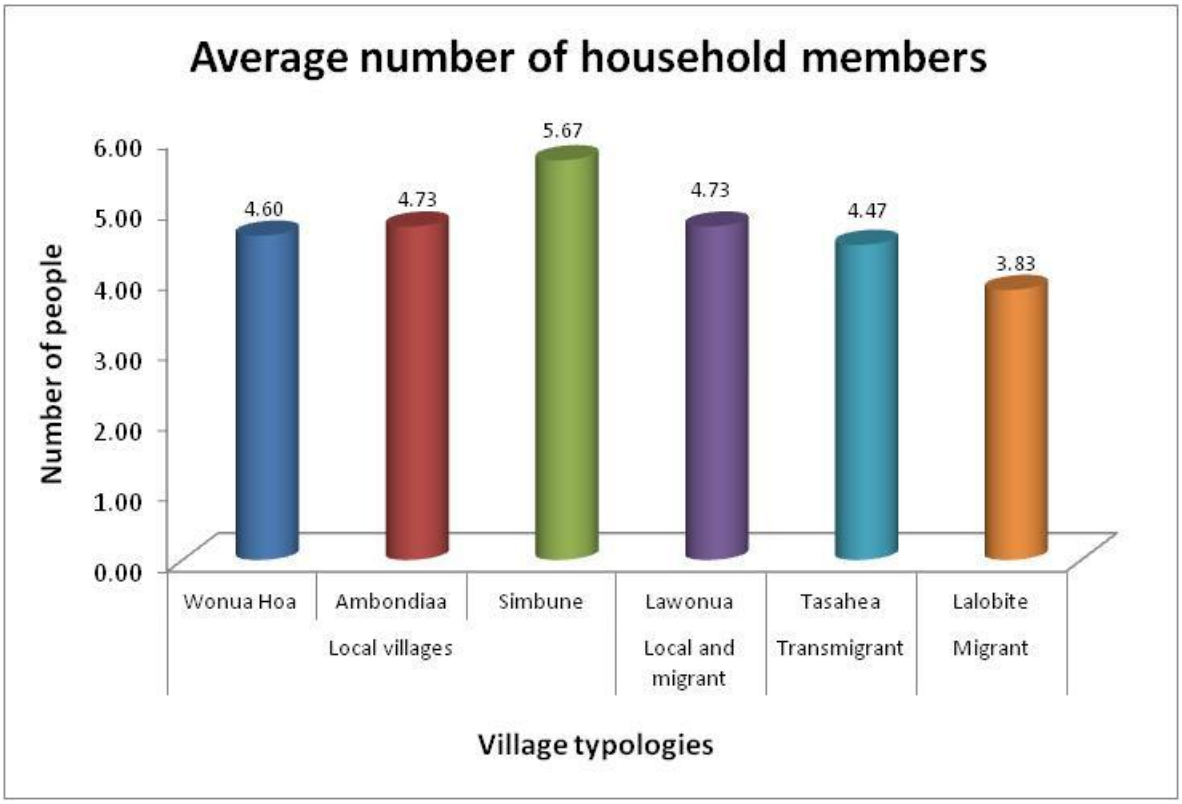

Figure 8. Average number of household members in Southeast Sulawesi

Table 9. Number of household head age in Southeast Sulawesi

Village typologies	Villages	n	Number of household head age					
			< 40		40–60		> 60	
			n	%	n	%	n	%
Local village	Wonua Hoa	30	10	33	18	60	2	7
	Ambondiaa	30	10	33	16	53	4	13
	Simbune	30	7	23	22	73	1	3
Local and migrant	Lawonua	30	11	37	17	57	2	7
Transmigrant	Tasahea	30	0	0	22	73	8	27
Migrant	Lalobite	30	16	53	12	40	2	7

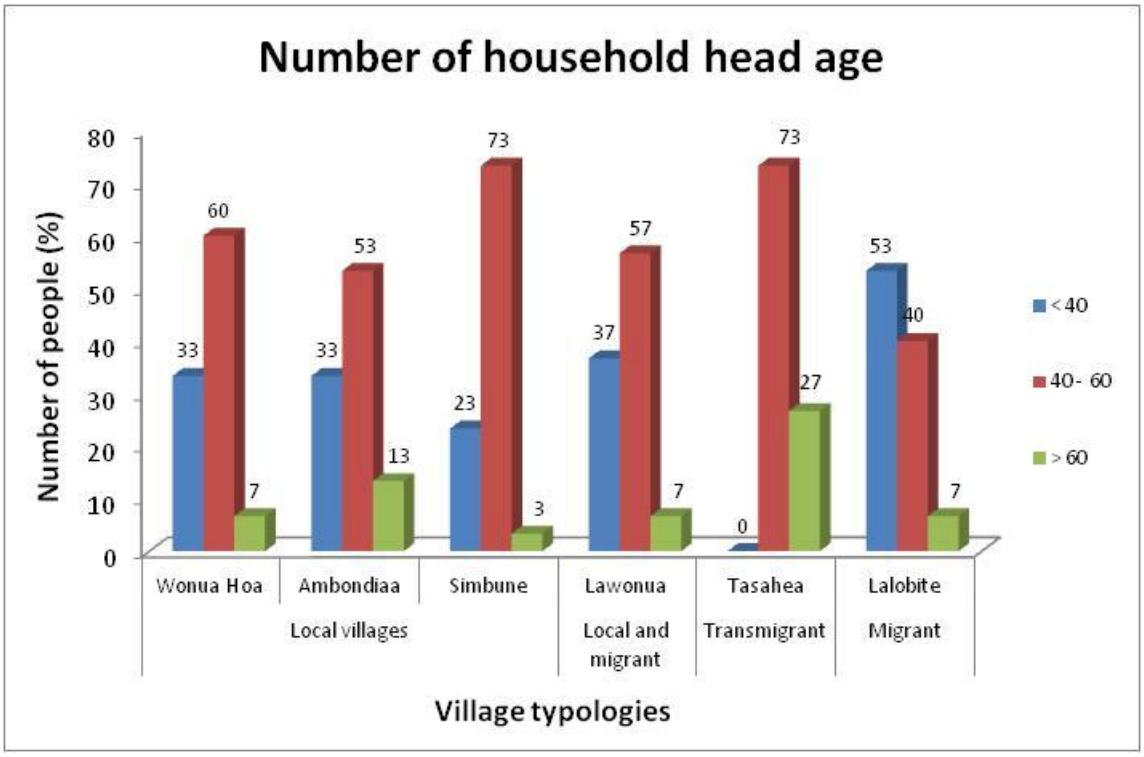

Figure 9. Number of household head age in Southeast Sulawesi

Table 10. Average age of household members in Southeast Sulawesi

Village typologies	Villages	n	Average age of household members					
			Children (<15)		Adults (15-60)		Elders (>60)	
			n	%	n	%	n	%
Local village	Wonua Hoa	138	57	41	77	56	4	3
	Ambondiaa	142	42	30	91	64	9	6
	Simbune	170	58	34	107	63	5	3
Local and migrant	Lawonua	142	50	35	89	63	3	2
Transmigrant	Tasahea	134	23	17	99	74	12	9
Migrant	Lalobite	115	37	32	74	64	4	3

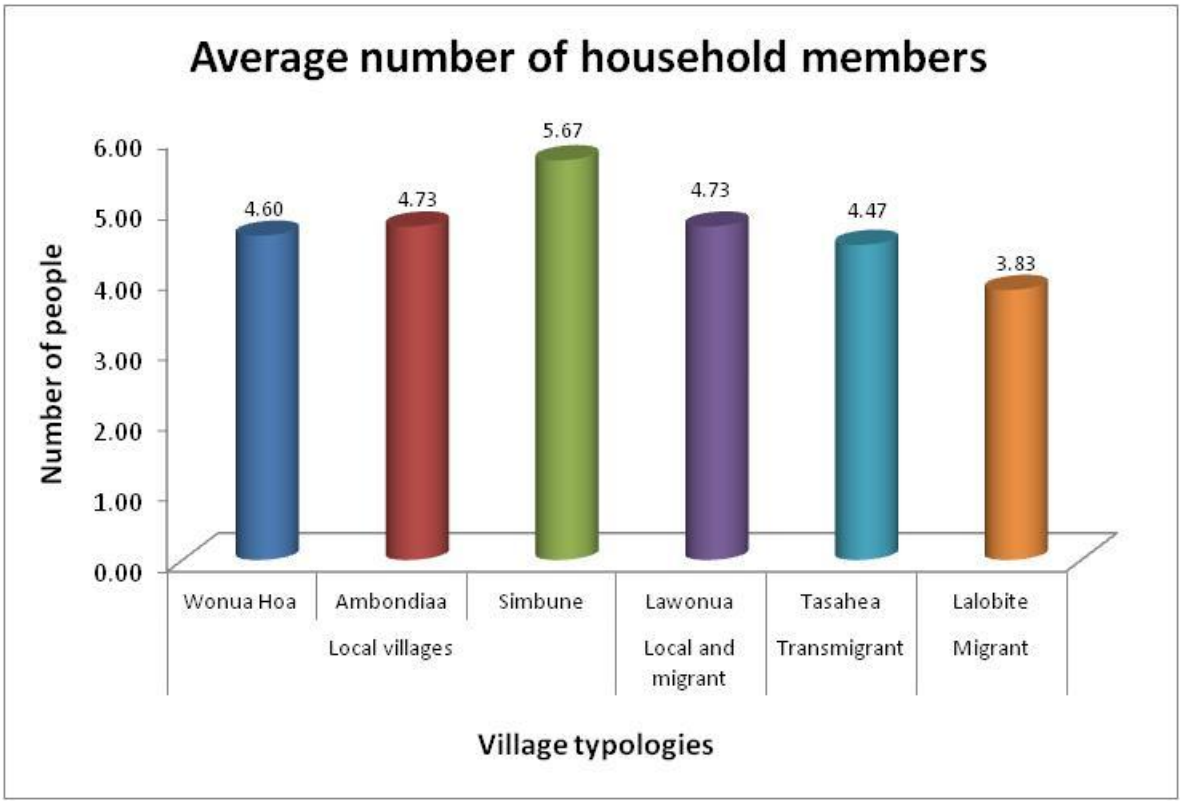

Figure 10. Average age of household members in Southeast Sulawesi

Table 11. Number of males and females in households in Southeast Sulawesi

Village typologies	Villages	n	Number of males and females in household			
			Male		Female	
			n	%	n	%
Local village	Wonua Hoa	138	67	49	71	51
	Ambondiaa	142	80	56	62	44
	Simbune	170	96	56	74	44
Local and migrant	Lawonua	142	76	54	66	46
Transmigrant	Tasahea	134	70	52	64	48
Migrant	Lalobite	115	63	55	52	45

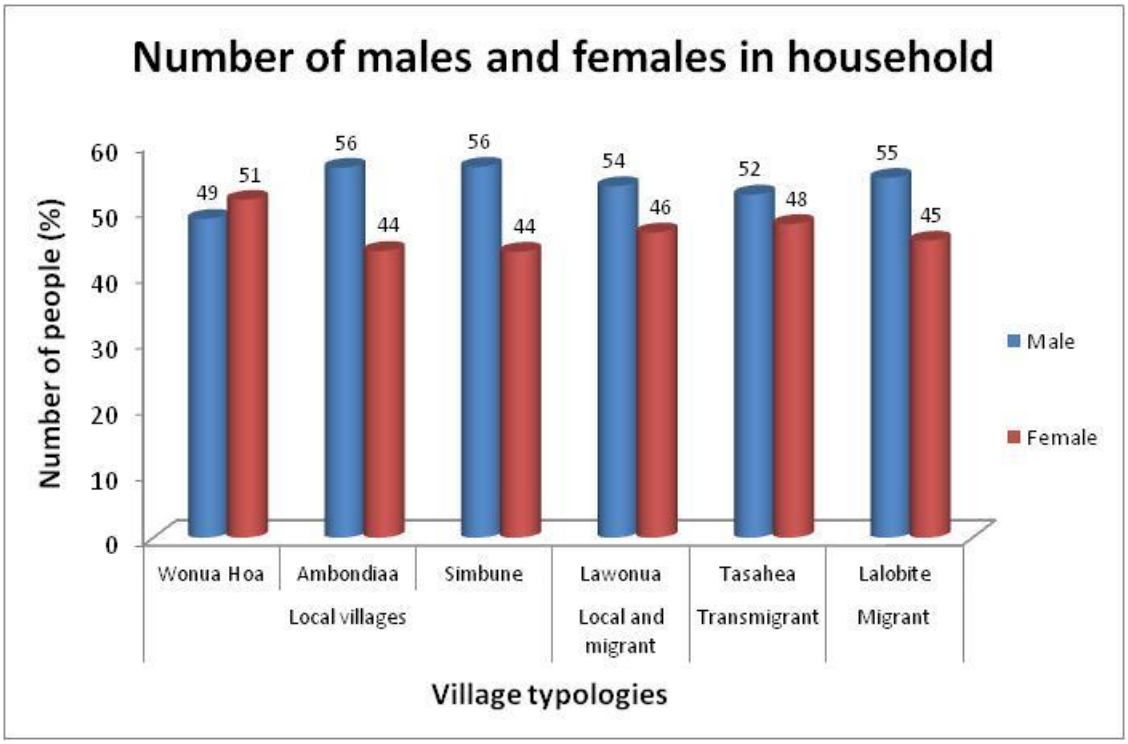

Figure 11. Number of males and females in households in Southeast Sulawesi

Table 12. Ethnicity of household head in Southeast Sulawesi

Village typologies	Villages	n	Ethnicity of household head									
			Tolaki		Bugis		Javanese		Balinese		Toraja	
			n	%	n	%	n	%	n	%	n	%
Local village	Wonua Hoa	30	30	100	0	0	0	0	0	0	0	0
	Ambondiaa	30	30	100	0	0	0	0	0	0	0	0
	Simbune	30	30	100	0	0	0	0	0	0	0	0
Local and migrant	Lawonua	30	15	50	15	50	0	0	0	0	0	0
Transmigrant	Tasahea	30	0	0	0	0	10	33	20	67	0	0
Migrant	Lalobite	30	0	0	25	83	0	0	0	0	5	17

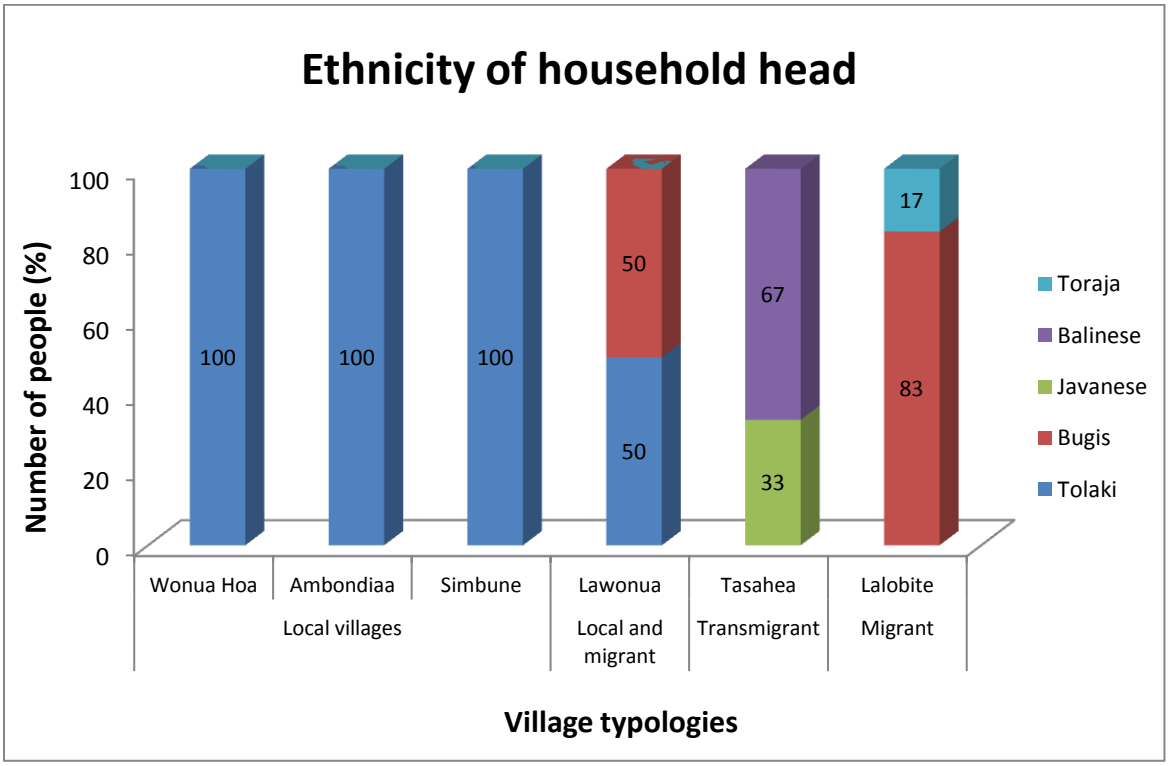

Figure 12. Ethnicity of household head in Southeast Sulawesi

2. History of land use in Southeast Sulawesi

Table 13. Slope of land in Southeast Sulawesi

Village typologies	Villages	n	Slope of land			
			Flat		Sideways	
			n	%	n	%
Local village	Wonua Hoa	98	62	63	36	37
	Ambondiaa	115	85	74	30	26
	Simbune	87	51	59	36	41
Local and migrant	Lawonua	93	26	28	67	72
Transmigrant	Tasahea	123	60	49	63	51
Migrant	Lalobite	97	48	49	49	51

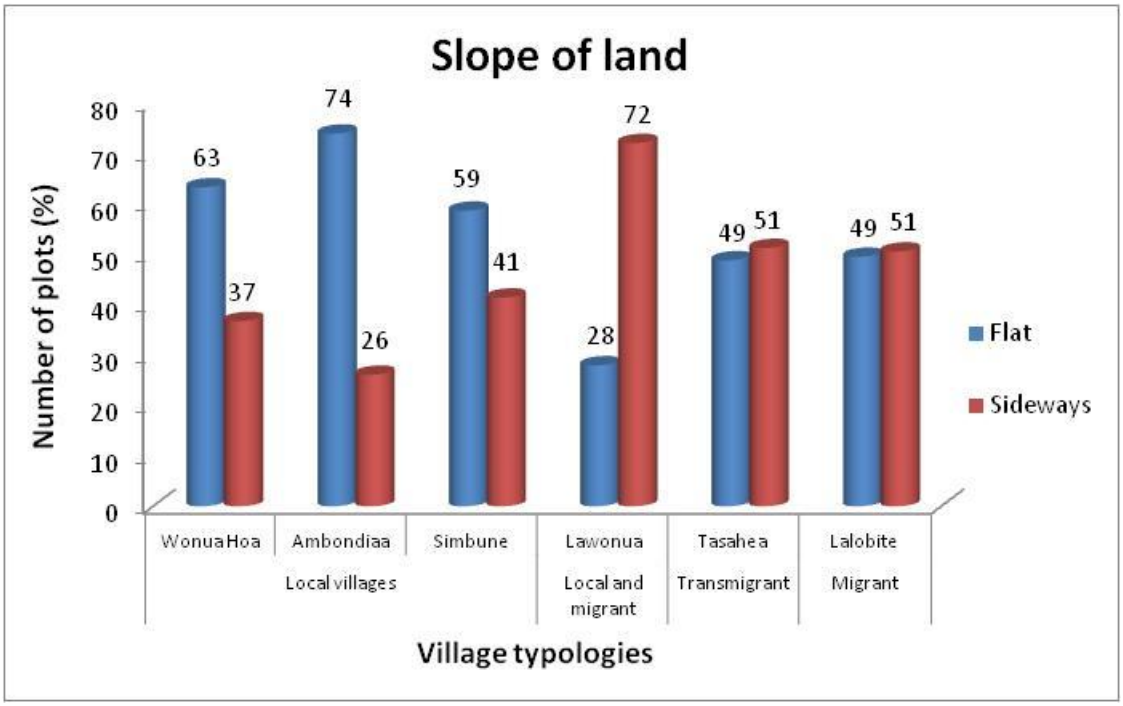

Figure 13. Slope of land in Southeast Sulawesi

Table 14. Location of land in Southeast Sulawesi

Village typologies	Villages	n	Location of land			
			Private land in the village		Private land outside the village	
			n	%	n	%
Local village	Wonua Hoa	98	77	79	21	21
	Ambondiaa	115	110	96	5	4
	Simbune	87	79	91	8	9
Local and migrant	Lawonua	93	85	91	8	9
Transmigrant	Tasahea	123	98	80	25	20
Migrant	Lalobite	97	88	91	9	9

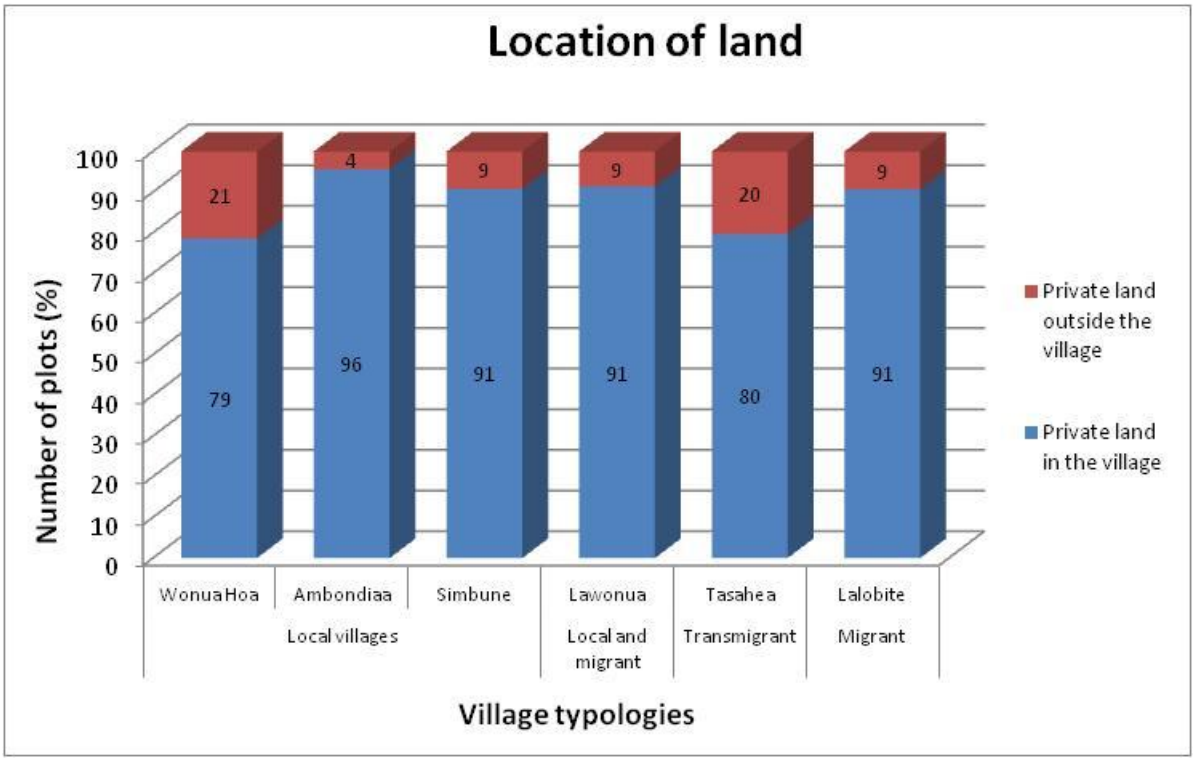

Figure 14. Location of land in Southeast Sulawesi

Table 15. Walking time from home to the field in Southeast Sulawesi

Village typologies	Villages	n	Walking Time From Home to The Field							
			≤15 Minutes		16-30 Minutes		31-60 Minutes		>60 Minutes	
			n	%	n	%	n	%	n	%
Local village	Wonua Hoa	98	21	21	27	28	16	16	34	35
	Ambondiaa	115	56	49	30	26	22	19	7	6
	Simbune	88	35	40	18	21	23	26	11	13
Local and migrant	Lawonua	93	52	56	25	27	12	13	4	4
Transmigrant	Tasahea	123	68	55	27	22	19	15	9	7
Migrant	Lalobite	97	65	67	16	16	7	7	9	9

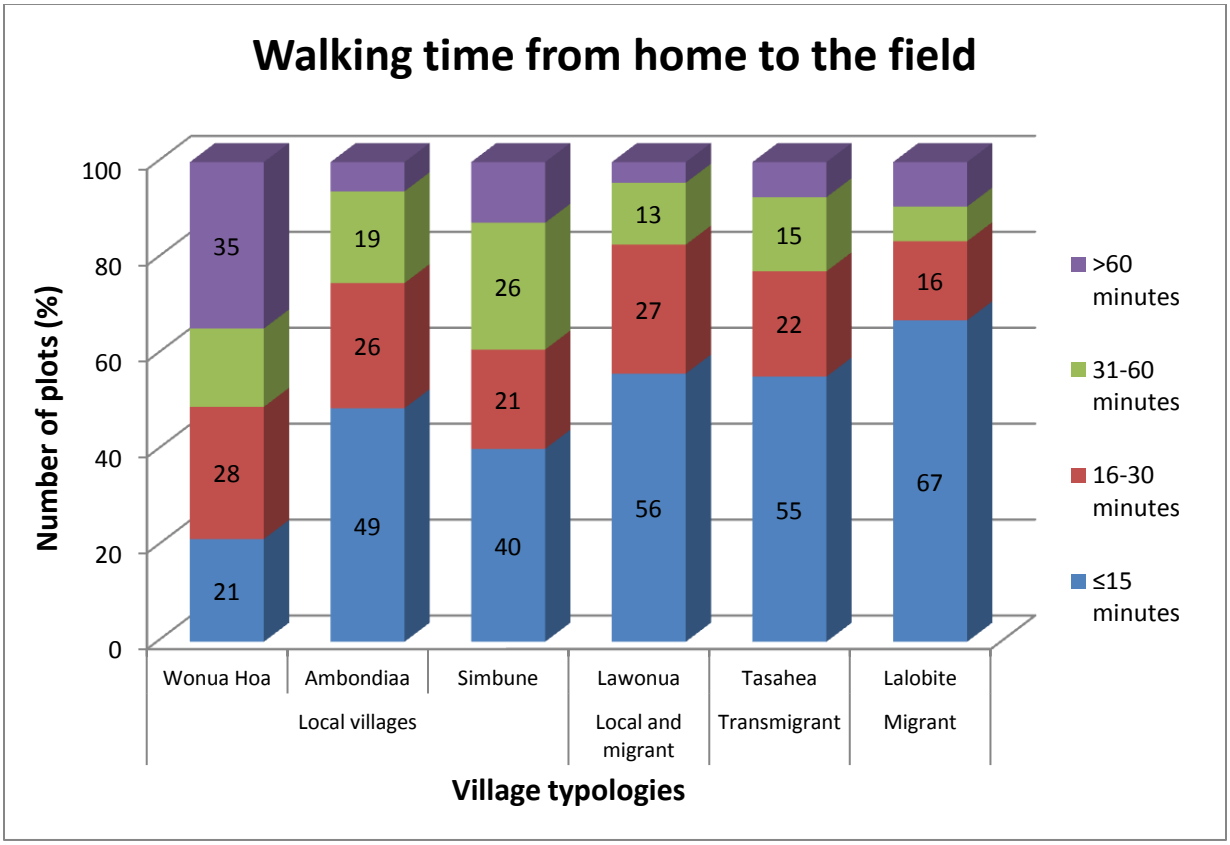

Figure 15. Walking time from home to the field in Southeast Sulawesi

Table 16. Year of land acquisition in Southeast Sulawesi

Village typologies	Villages	n	Year of land acquisition									
			<1980		1980-1989		1990-1999		2000-2005		>2005	
			n	%	n	%	n	%	n	%	n	%
Local village	Wonua Hoa	98	9	9	18	18	21	21	34	35	16	16
	Ambondiaa	115	24	21	13	11	28	24	17	15	33	29
	Simbune	87	10	11	21	24	28	32	11	13	17	20
Local and migrant	Lawonua	93	2	2	14	15	33	35	25	27	19	20
Transmigrant	Tasahea	123	73	59	12	10	22	18	5	4	11	9
Migrant	Lalobite	97	0	0	0	0	11	11	20	21	66	68

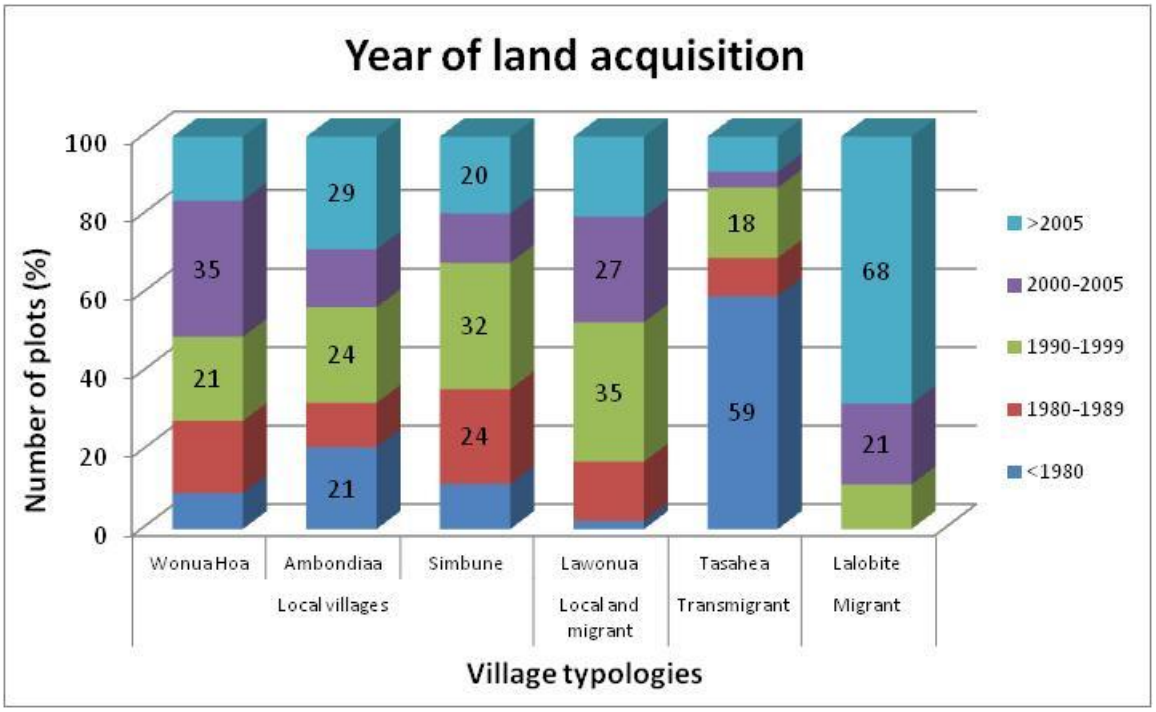

Figure 16. Year of land acquisition in Southeast Sulawesi

Table 17. Status of land management in Southeast Sulawesi

Village typologies	Villages	n	Status of land management																			
			Owned and self-cultivated		Operating other's		Pawned from others		Borrowed from others		Owned and sharecropping		Rented out to others		Pawned to others		Borrowed to others		Owned but not operated		Prepared for oil palm	
			n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Local village	Wonua Hoa	98	52	53	1	1	0	0	2	2	14	14	0	0	0	0	0	0	29	30	0	0
	Ambondiaa	115	76	66	1	1	0	0	1	1	0	0	0	0	0	0	2	2	35	30	0	0
	Simbune	87	60	69	0	0	0	0	0	0	0	0	1	1	0	0	0	0	26	30	0	0
Local and migrant	Lawonua	93	58	62	0	0	1	1	0	0	1	1	0	0	1	1	1	1	20	22	12	12
Transmigrant	Tasahea	123	104	85	2	2	0	0	0	0	4	3	0	0	0	0	0	0	13	11	0	0
Migrant	Lalobite	97	55	57	6	6	0	0	3	3	2	2	0	0	1	1	0	0	30	31	0	0

Table 18. Manner of land ownership in Southeast Sulawesi

Village typologies	Villages	n	Manner of land ownership															
			Inherited		Purchased		Opened forest		Share-cropping		Pawned		Borrowed		Grant		Shared land	
			n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Local village	Wonua Hoa	98	65	66	31	32	0	0	1	1	0	0	1	1	0	0	0	0
	Ambondiaa	115	80	70	10	9	2	2	0	0	0	0	2	2	21	18	0	0
	Simbune	87	60	69	19	22	6	7	0	0	0	0	1	1	1	1	0	0
Local and migrant	Lawonua	93	31	33	55	59	6	6	0	0	1	1	0	0	0	0	0	0
Transmigrant	Tasahea	123	0	0	46	37	0	0	1	1	0	0	0	0	76	62	0	0
Migrant	Lalobite	97	7	7	78	80	0	0	7	7	0	0	3	3	0	0	2	2

Table 19. Source of land in Southeast Sulawesi

Village typologies	Villages	n	Source of land											
			Husband's parents		Wife's parents		Relative		Other people		Secondary forest		Government	
			n	%	n	%	n	%	n	%	n	%	n	%
Local village	Wonua Hoa	98	57	58	11	11	14	14	16	16	0	0	0	0
	Ambondiaa	115	63	55	17	15	14	12	0	0	3	3	18	16
	Simbune	87	54	62	6	7	15	17	6	7	6	7	0	0
Local and migrant	Lawonua	93	15	16	17	18	8	9	47	51	6	6	0	0
Transmigrant	Tasahea	123	0	0	1	1	1	1	45	37	12	10	64	52
Migrant	Lalobite	97	4	4	5	5	1	1	87	90	0	0	0	0

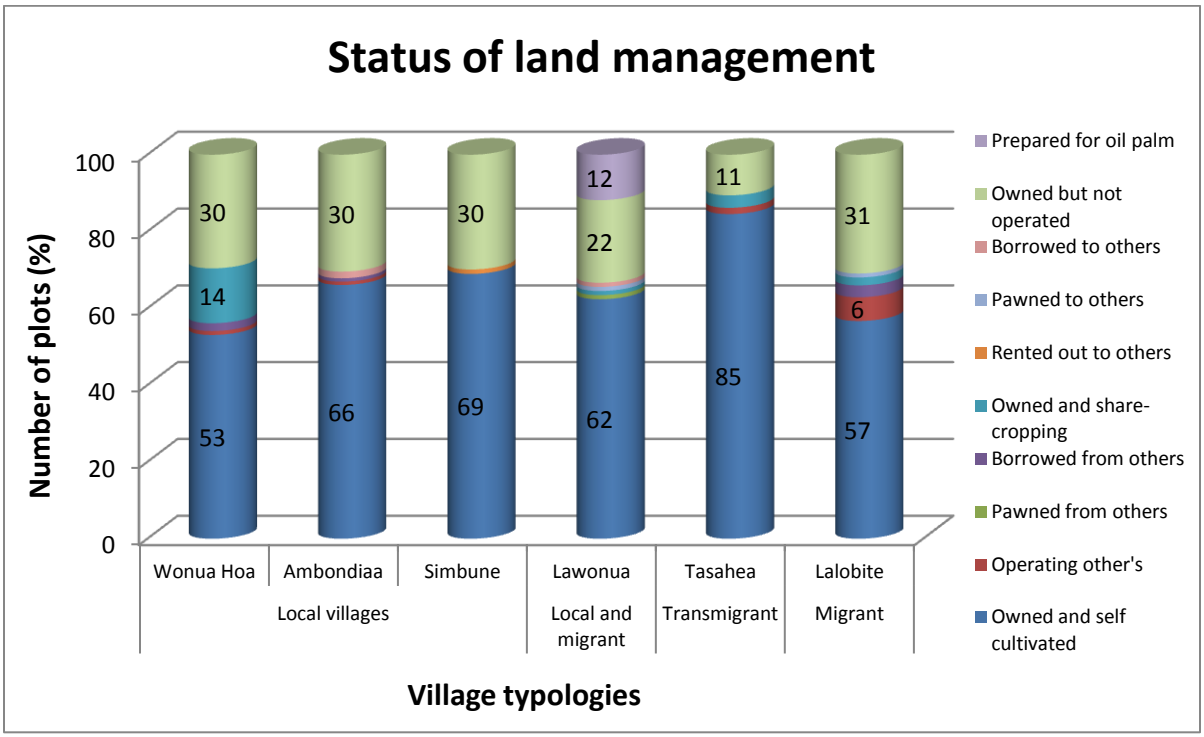

Figure 17. Status of land management in Southeast Sulawesi

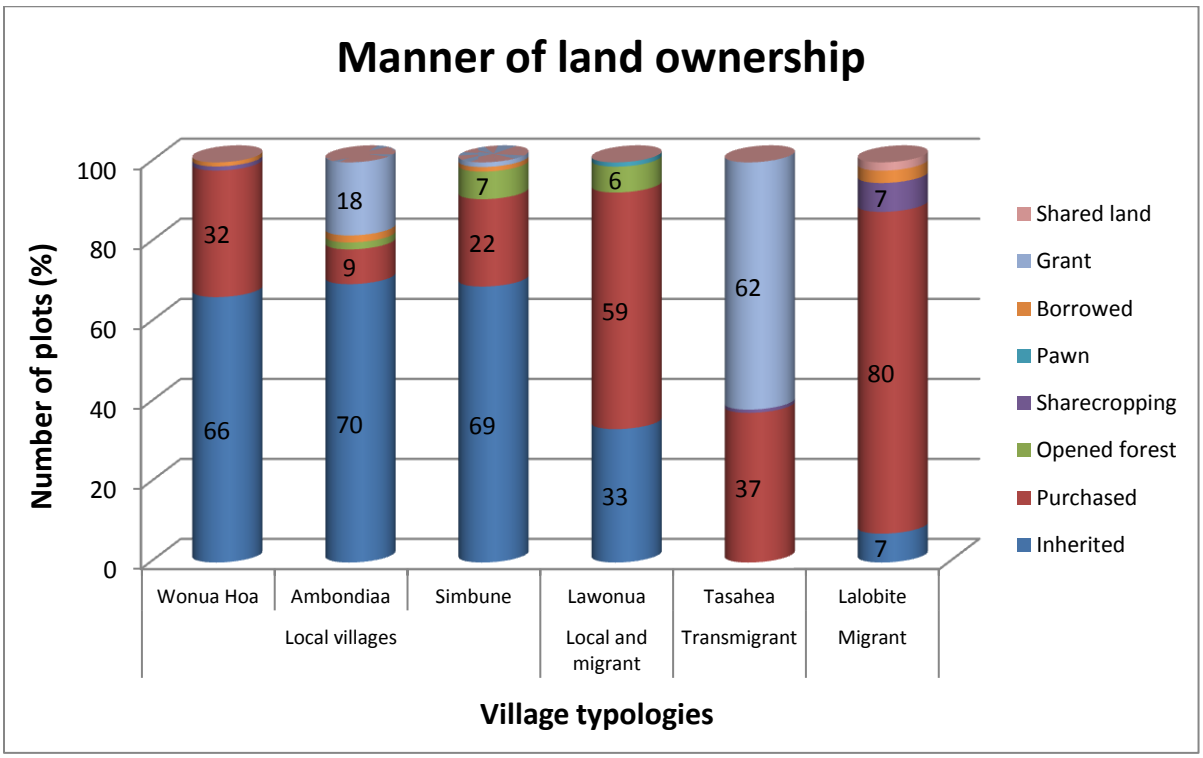

Figure 18. Manner of land ownership in Southeast Sulawesi

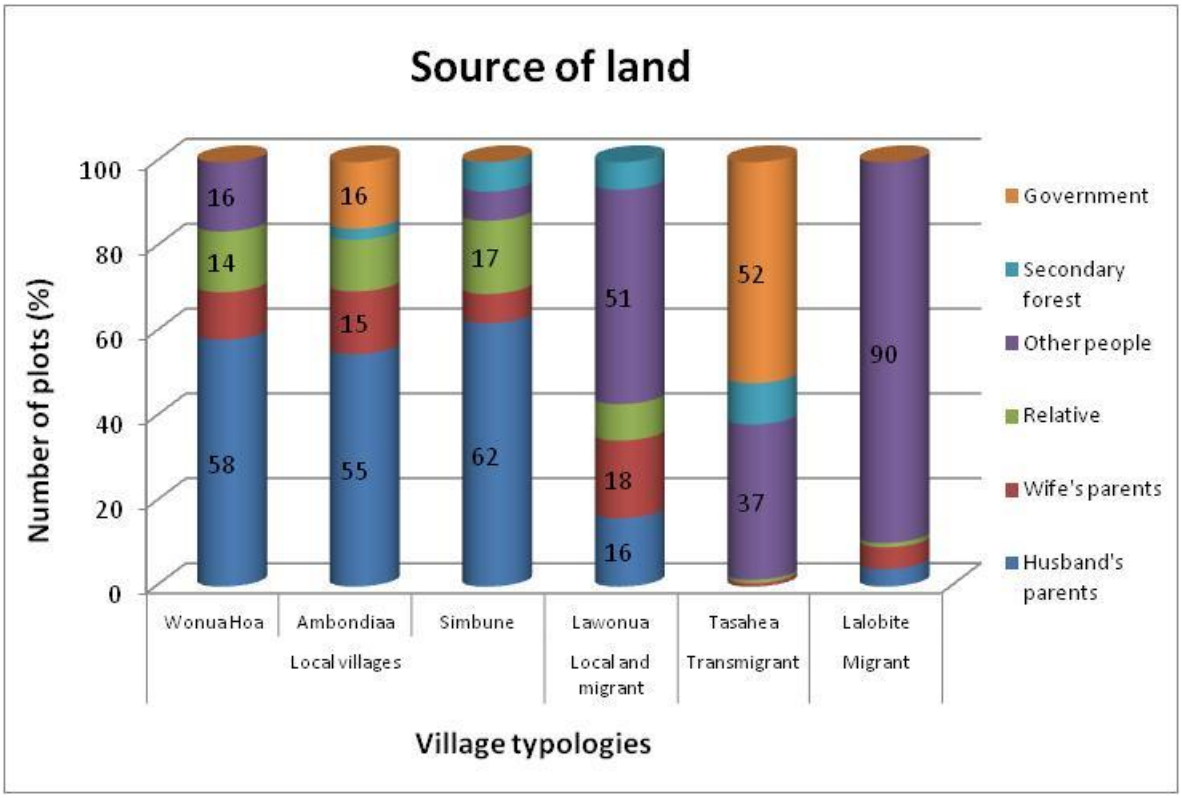

Figure 19. Source of land in Southeast Sulawesi

Table 20. Current land tenure status in Southeast Sulawesi

Village typologies	Villages	n	Current land tenure status							
			Owned by wife and husband		Owned by husband		Owned by wife		Other people	
			n	%	n	%	n	%	n	%
Local village	Wonua Hoa	98	27	28	55	56	13	13	3	3
	Ambondiaa	115	29	25	65	57	19	17	2	2
	Simbune	87	21	24	54	62	11	13	1	1
Local and migrant	Lawonua	93	46	49	27	29	19	20	1	1
Transmigrant	Tasahea	123	83	67	35	28	3	2	2	2
Migrant	Lalobite	97	61	63	21	22	7	7	8	8

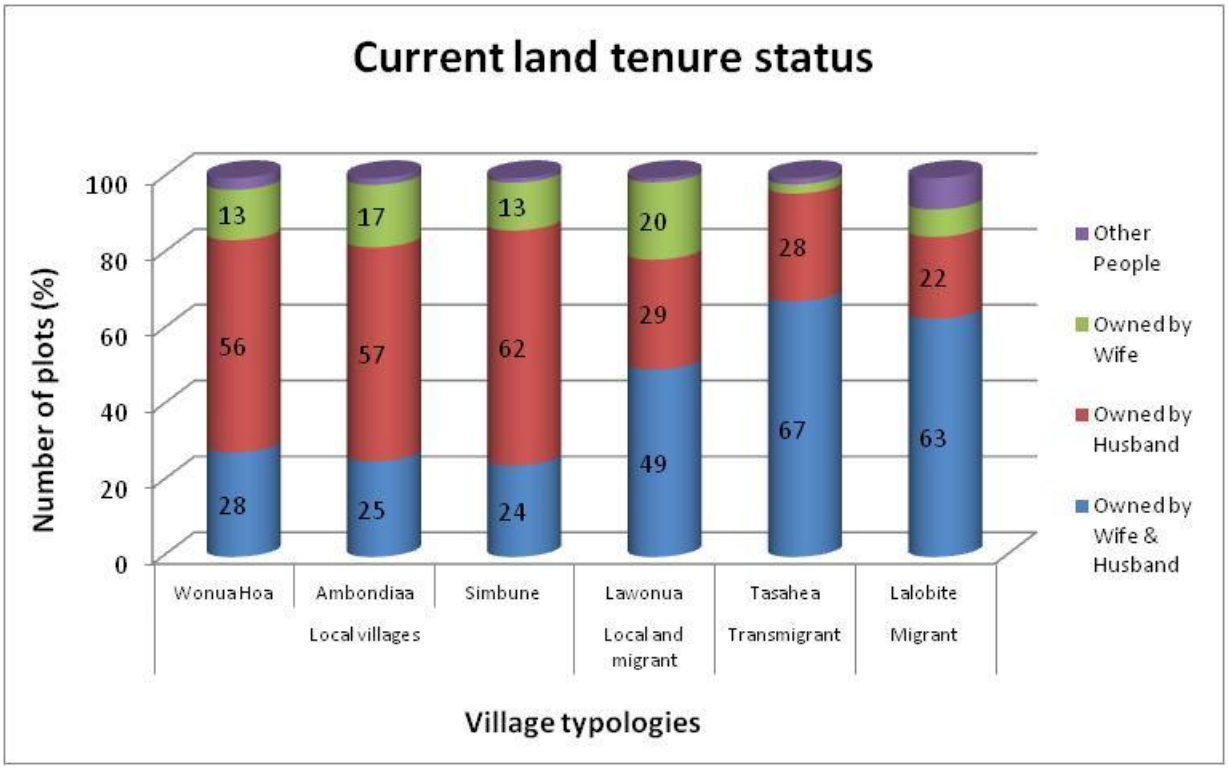

Figure 20. Current land tenure status in Southeast Sulawesi

Table 21. Current land use in Southeast Sulawesi

Village typologies	Village	n	Current land use																	
			Rice fields		Vegetable fields		Cacao agroforest		Trees		Mixed-gardens		Bush fallow		Secondary forest		Pepper agroforest		Bush fallow (oil palm)	
			n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Local village	Wonua Hoa	96	19	20	12	13	15	16	4	4	9	9	28	29	2	2	7	7	0	0
	Ambondiaa	115	0	0	5	4	55	48	12	10	9	8	30	26	4	3	0	0	0	0
	Simbune	87	1	1	1	1	40	46	3	3	9	10	26	30	0	0	7	8	0	0
Local and migrant	Lawonua	93	0	0	7	8	20	22	2	2	23	25	20	22	0	0	10	11	11	12
Transmigrant	Tasahea	124	12	10	1	1	46	37	5	4	16	13	11	9	0	0	33	27	0	0
Migrant	Lalobite	98	4	4	14	14	35	36	0	0	11	11	26	27	4	4	4	4	0	0

Table 22. Land use before acquisition in Southeast Sulawesi

Village typologies	Villages	n	Land use before acquisition															
			Rice fields		Vegetable fields		Cacao agroforest		Trees		Mixed-gardens		Bush fallow		Secondary forest		Pepper agroforest	
			n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Local village	Wonua Hoa	98	14	14	4	4	3	3	0	0	18	18	39	40	20	20	0	0
	Ambondiaa	115	0	0	0	0	15	13	0	0	5	4	82	71	13	11	0	0
	Simbune	87	1	1	0	0	16	18	1	1	2	2	60	69	7	8	0	0
Local and migrant	Lawonua	93	0	0	0	0	8	9	1	1	7	8	66	71	10	11	1	1
Transmigrant	Tasahea	123	7	6	0	0	2	2	0	0	2	2	30	24	81	66	1	1
Migrant	Lalobite	97	4	4	1	1	13	13	0	0	2	2	51	53	24	25	2	2

Table 23. Land use one year after acquisition in Southeast Sulawesi

Village typologies	Villages	n	Land use one year after acquisition															
			Rice fields		Vegetable fields		Cacao agroforest		Trees		Mixed-gardens		Bush fallow		Secondary forest		Pepper agroforest	
			n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Local	Wonua Hoa	98	27	28	12	12	8	8	1	1	22	22	18	18	5	5	5	5
	Ambondiaa	115	0	0	28	24	26	23	3	3	13	11	39	34	5	4	1	1
	Simbune	87	1	1	11	13	27	31	2	2	9	10	32	37	0	0	5	6
Local and migrant	Lawonua	93	0	0	14	15	21	23	1	1	17	18	32	34	2	2	6	6
Transmigrant	Tasahea	123	12	10	57	46	10	8	3	2	1	1	11	9	20	16	9	7
Migrant	Lalobite	97	7	7	23	24	22	23	0	0	4	4	27	28	11	11	3	3

Table 24. Previous land use in Southeast Sulawesi

Village typologies	Villages	n	Previous land use															
			Rice fields		Vegetable fields		Cacao agroforest		Trees		Mixed-gardens		Bush fallow		Secondary forest		Pepper agroforest	
			n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Local	Wonua Hoa	98	14	14	9	9	5	5	0	0	22	22	34	35	11	11	3	3
	Ambondiaa	115	0	0	24	21	21	18	0	0	17	15	43	37	8	7	2	2
	Simbune	87	1	1	10	11	21	24	1	1	8	9	39	45	3	3	4	5
Local and migrant	Lawonua	93	0	0	11	12	14	15	1	1	15	16	46	49	5	5	1	1
Transmigrant	Tasahea	123	9	7	56	46	10	8	0	0	9	7	19	15	18	15	2	2
Migrant	Lalobite	97	6	6	15	15	15	15	0	0	2	2	38	39	19	20	2	2

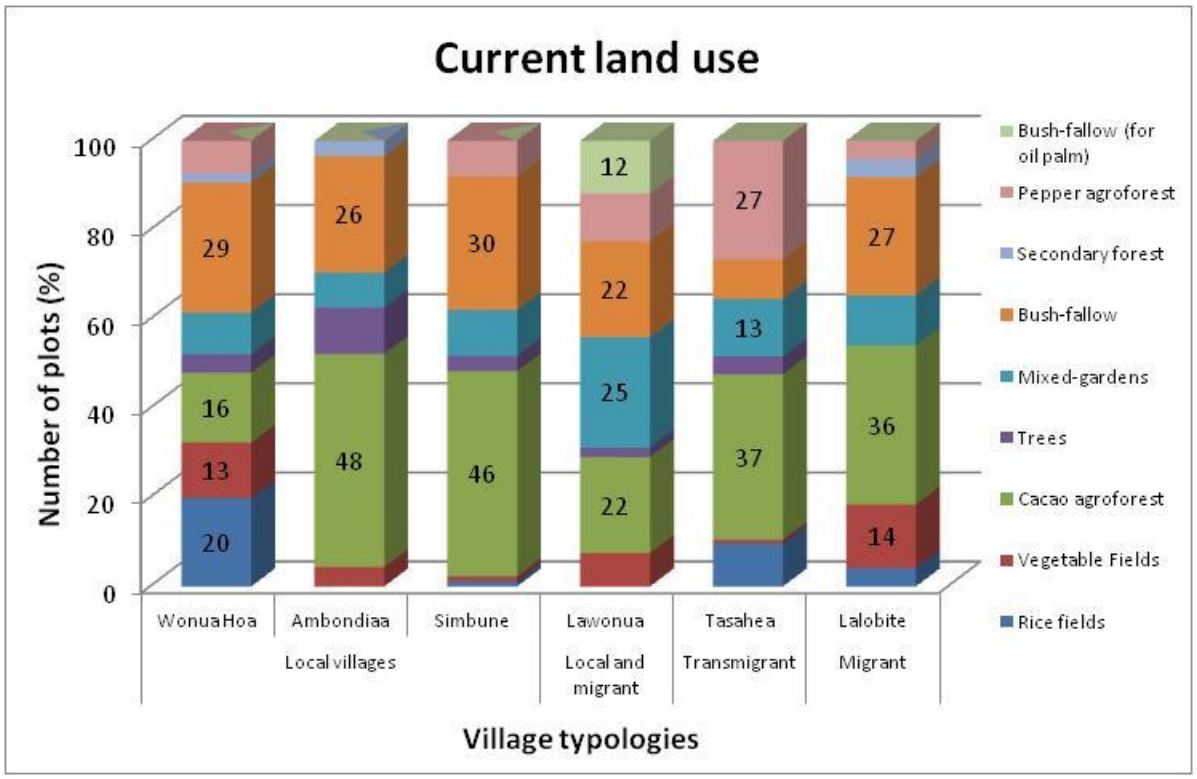

Figure 21. Current land use in Southeast Sulawesi

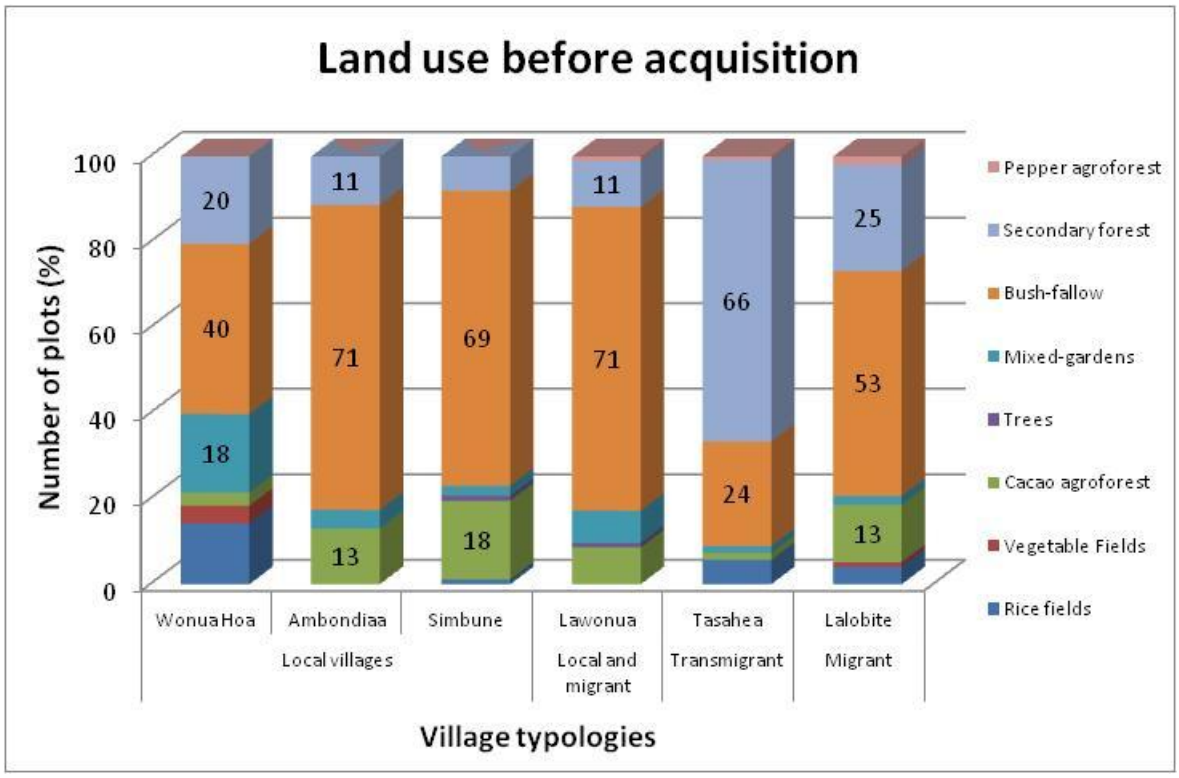

Figure 22. Land use before acquisition in Southeast Sulawesi

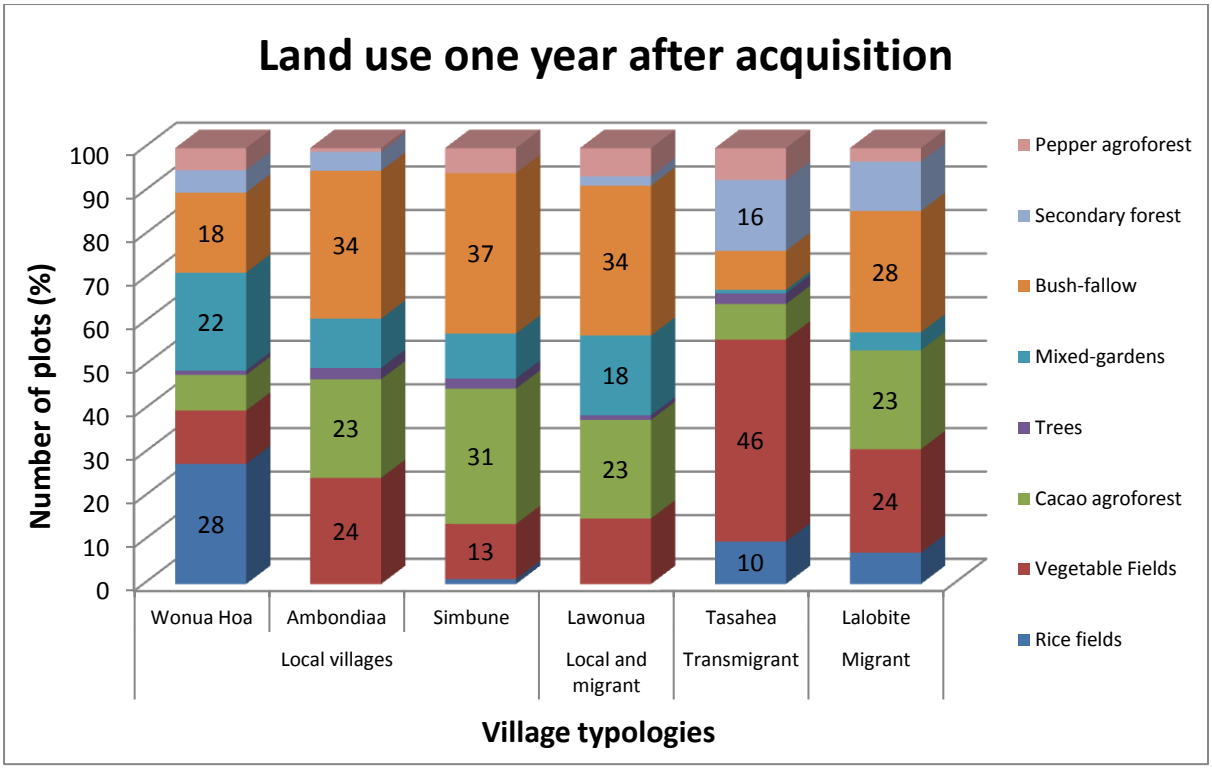

Figure 23. Land use one year after acquisition in Southeast Sulawesi

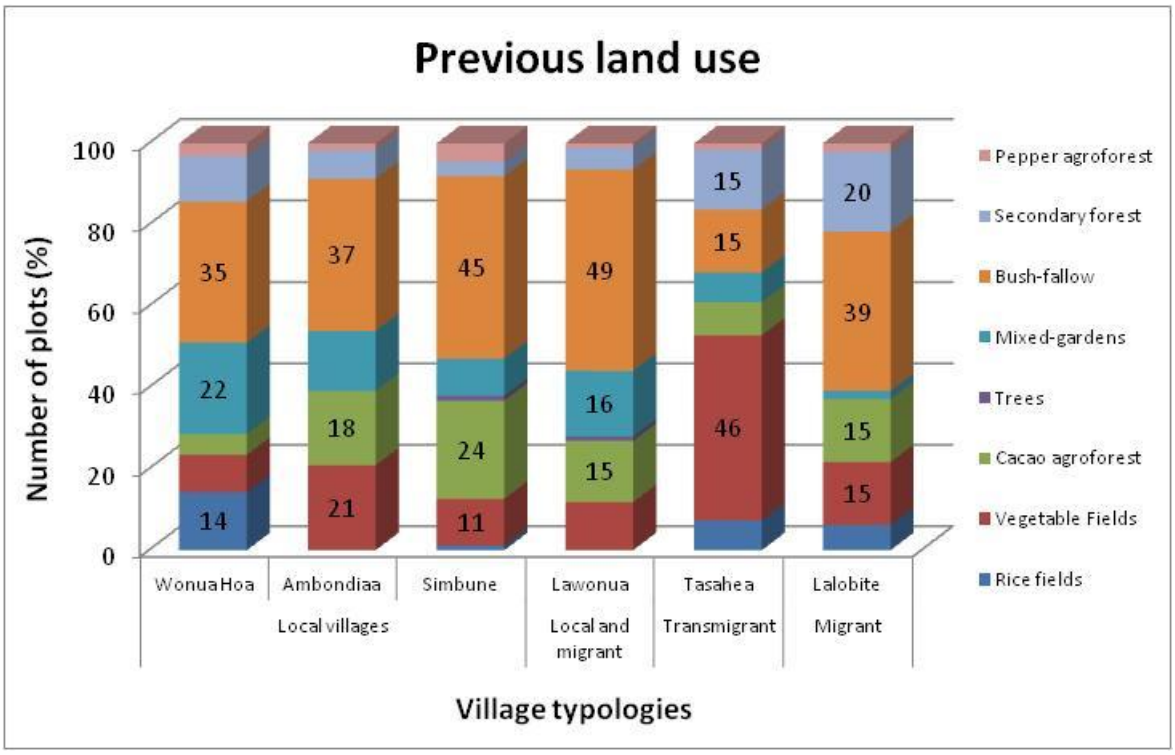

Figure 24. Previous land use in Southeast Sulawesi

Table 25. Average total of trees per hectare in Southeast Sulawesi

Village typologies	Villages	n	Average total of trees per hectare									
			Perennial crop		MPTs		Timber		Banana		Others (shading trees	
			n	%	n	%	n	%	n	%	n	%
Local	Wonua Hoa	1072	643	60	49	5	108	10	6	1	266	25
	Ambondiaa	1156	737	64	83	7	172	15	25	2	140	12
	Simbune	1088	735	68	30	3	55	5	7	1	262	24
Local and migrant	Lawonua	1457	788	54	382	26	13	1	9	1	265	18
Transmigrant	Tasahea	1090	642	59	75	7	46	4	7	1	319	29
Migrant	Lalobite	818	628	77	48	6	11	1	19	2	113	14

Others: Gamal, Bamboo

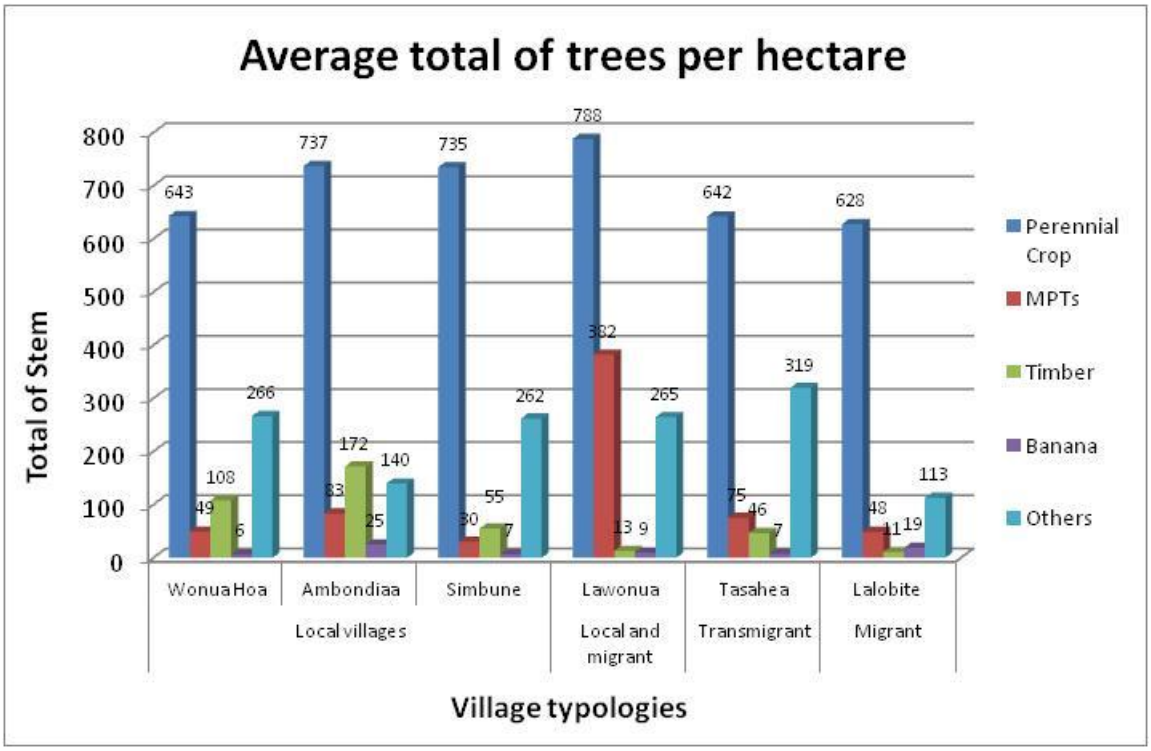

Figure 25. Average total of trees per hectare in Southeast Sulawesi

3. Land holdings, income, income per capita

Land holdings

Table 26. Land holding per household in Southeast Sulawesi

Village typologies	Villages	Land holding per household (ha)
Local	Wonua Hoa	4.88
	Ambondiaa	3.44
	Simbune	2.63
Local and migrant	Lawonua	3.10
Transmigrant	Tasahea	2.80
Migrant	Lalobite	3.47

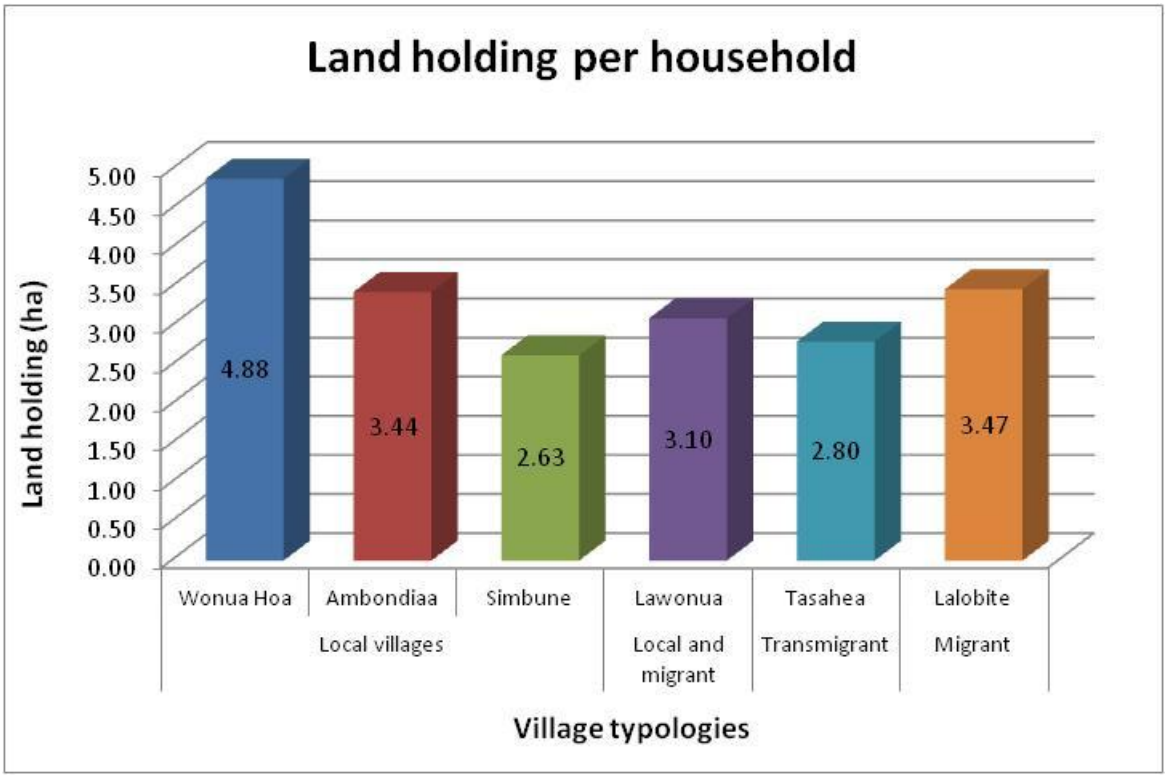

Figure 26. Land holding per household in Southeast Sulawesi

Table 27. Average land holding by land use in Southeast Sulawesi

Village typologies	Villages	Average land holding by land use (ha)							
		Rice fields	Vegetable fields	Cacao agroforest	Mixed-gardens	Trees	Pepper agroforest	Bush fallow	Bush fallow (oil palm)
Local	Wonua Hoa	1.01	0.22	0.71	0.80	0.09	0.19	1.86	0.00
	Ambondiaa	0.00	0.04	1.21	0.33	0.22	0.00	1.64	0.00
	Simbune	0.02	0.02	1.11	0.27	0.03	0.09	1.09	0.00
Local and migrant	Lawonua	0.00	0.13	0.79	0.93	0.09	0.18	0.75	0.23
Transmigrant	Tasahea	0.23	0.00	1.07	0.32	0.11	0.69	0.38	0.00
Migrant	Lalobite	0.09	0.33	1.45	0.29	0.00	0.11	1.20	0.00

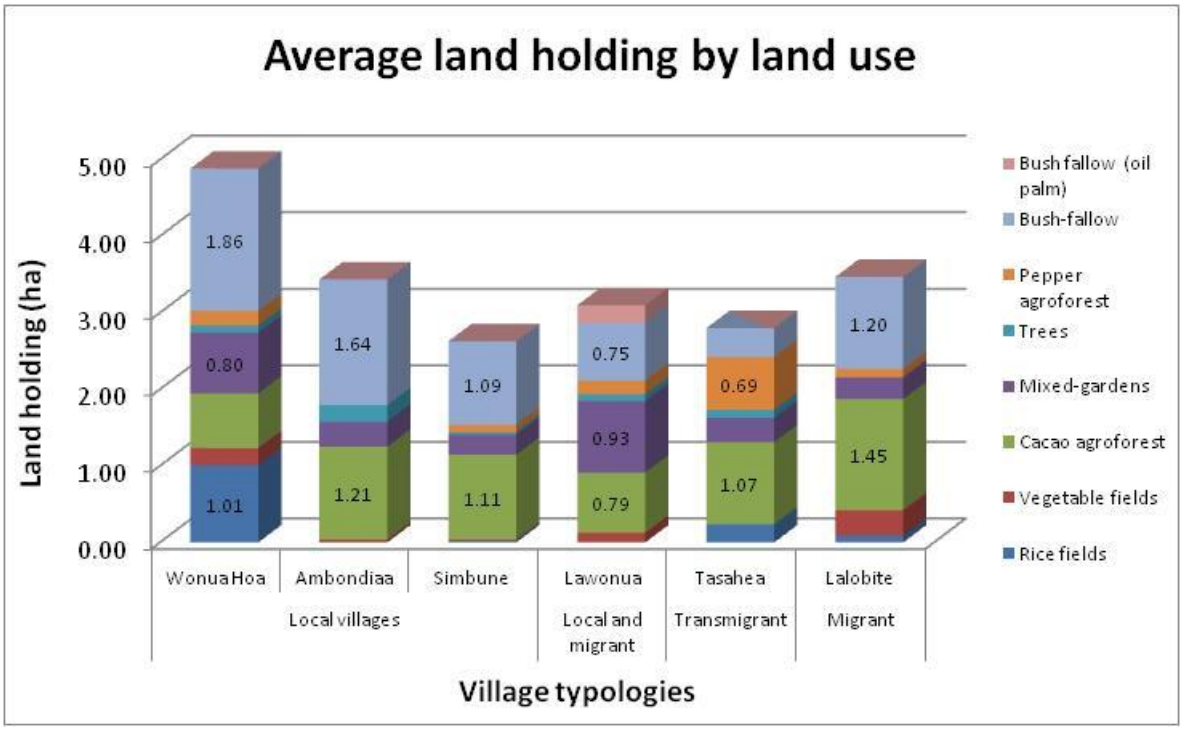

Figure 27. Average land holding by land use in Southeast Sulawesi

Table 28. Reasons for not cultivating the fields in Southeast Sulawesi

Village typologies	Villages	n	Reason for not cultivating the fields													
			Land tenure problem		Unproductive land		Pest and disease		Lack of labour		Submerged land		Lack of capital		Planning for oil palm	
			n	%	n	%	n	%	n	%	n	%	n	%	n	%
Local	Wonua Hoa	30	0	0	1	3	3	10	11	37	0	0	15	50	0	0
	Ambondiaa	34	1	3	2	6	2	6	10	29	1	3	18	53	0	0
	Simbune	26	0	0	0	0	1	4	2	8	0	0	23	88	0	0
Local and migrant	Lawonua	31	0	0	0	0	4	13	4	13	3	10	9	29	11	35
Transmigrant	Tasahea	13	1	8	2	15	0	0	1	8	0	0	9	69	0	0
Migrant	Lalobite	30	0	0	0	0	1	3	18	60	1	3	10	33	0	0

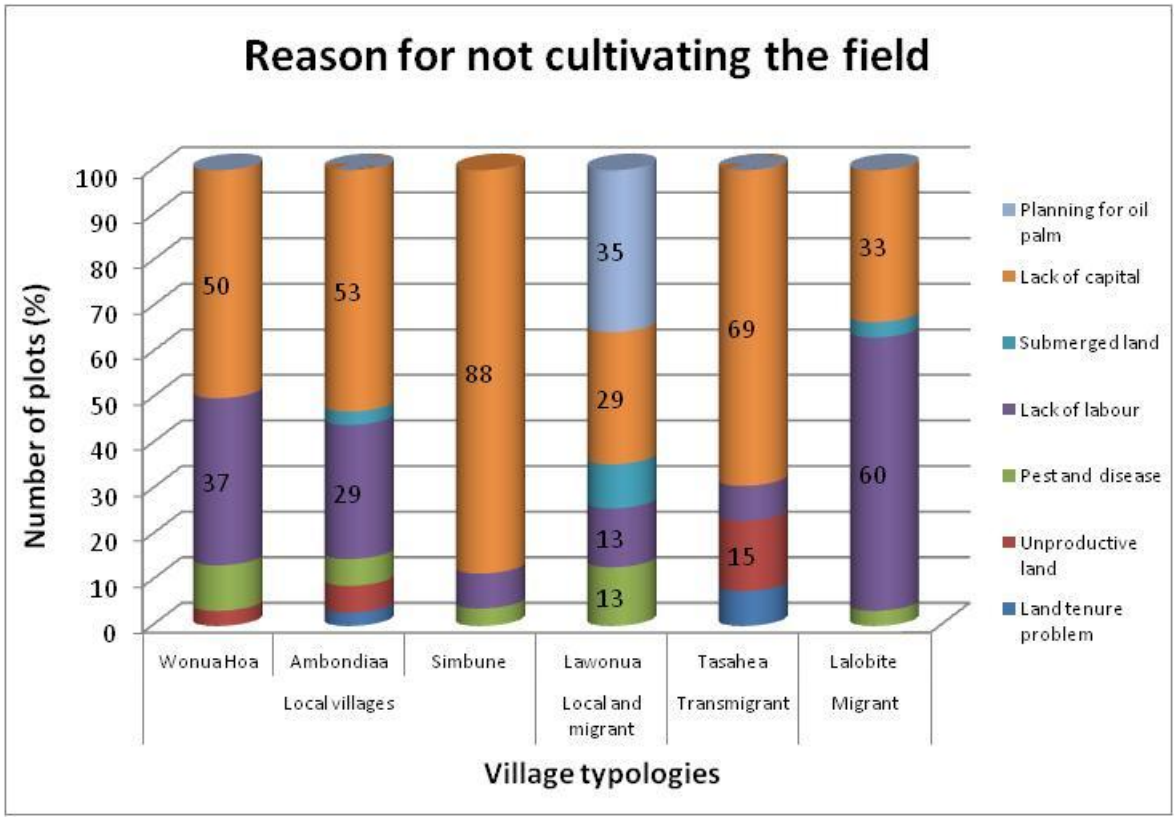

Figure 28. Reasons for not cultivating the fields in Southeast Sulawesi

Table 29. Years of fallow cultivation in Southeast Sulawesi

Village typologies	Villages	n	Years of fallow							
			≤5 Years		6-10 Years		11-15 Years		>15 Years	
			n	%	n	%	n	%	n	%
Local	Wonua Hoa	30	11	37	7	23	6	20	6	20
	Ambondiaa	34	11	32	5	15	2	6	16	47
	Simbune	26	7	27	5	19	8	31	6	23
Local and migrant	Lawonua	31	19	61	1	3	8	26	3	10
Transmigrant	Tasahea	13	5	38	3	23	0	0	5	38
Migrant	Lalobite	30	20	67	6	20	3	10	1	3

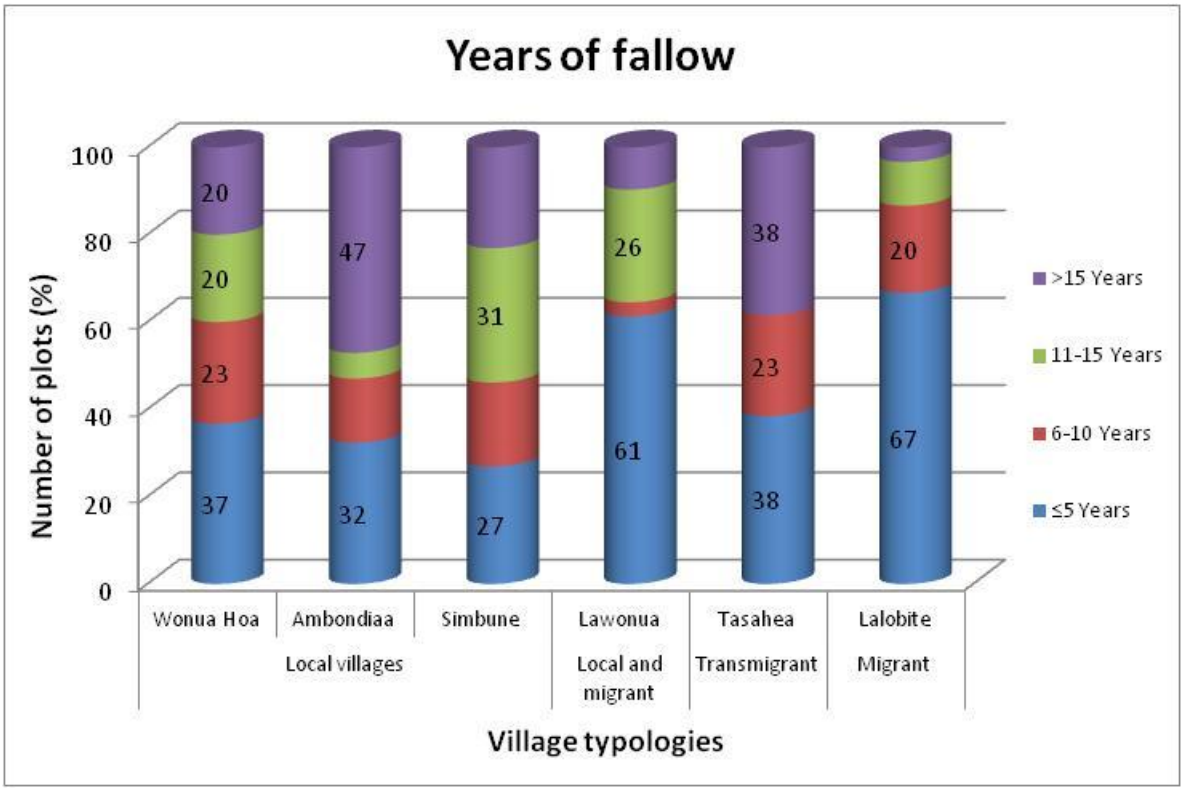

Figure 29. Years of fallow cultivation in Southeast Sulawesi

Income

Table 30. Sources of Income in Southeast Sulawesi in 2012

Source of income	Average income per household											
	Local villages						Local and migrant		Transmigrant		Migrant	
	Wonua Hoa		Ambondiaa		Simbune		Lawonua		Tasahea		Lalobite	
	IDR	%	IDR	%	IDR	%	IDR	%	IDR	%	IDR	%
1. On-farm/agriculture	17,560,932	56	19,509,985	61	18,772,872	59	16,972,342	54	29,248,054	67	19,472,576	69
Rice fields	2,154,492	6.8	-	0	0	-	0	-	2,265,185	5.2	503,117	1.8
Vegetable fields	2,971,033	9.4	503,783	1.6	59,533	0.2	1,666,283	5.3	57,667	0.1	2,590,450	9.2
Cacao agroforest	7,527,733	23.9	16,711,943	52.7	12,060,172	38	6,297,482	19.9	9,587,333	22.1	14,561,926	51.6
Mixed-gardens (agroforest)	1,702,474	5.4	881,250	2.8	2,134,367	6.7	5,844,607	18.4	4,947,548	11.4	323,950	1.1
Trees	411,733	1.3	142,242	0.4	17,000	0.1	2,286	0	148,033	0.3	0	-
Pepper agroforest	2,042,367	6.5	-	0	3,824,400	12	2,152,100	6.8	10,443,005	24.1	780,433	2.8
Other agriculture	751,100	2.4	1,270,767	4	677,400	2.1	1,009,583	3.2	1,799,283	4.1	712,700	2.5
2. Off-farm/non-agriculture	13,918,983	44.2	12,215,933	39	13,003,042	40.9	14,714,153	46.4	14,137,150	32.6	8,757,117	31
Forest products	28,800	0.1	2,822,733	8.9	71,733	0.2	70,667	0.2	157,533	0.4	86,167	0.3
Firewood	804,350	2.6	913,367	2.9	848,800	2.7	977,667	3.1	844,133	1.9	1,012,350	3.6
Labourer (worker)	2,690,667	8.5	3,684,767	11.6	3,854,333	12.1	6,232,853	19.7	4,614,833	10.6	2,480,667	8.8
Entrepreneurial	5,863,600	18.6	1,523,067	4.8	4,115,508	13	2,147,000	6.8	1,755,233	4	3,970,800	14.1
Professional	1,929,400	6.1	2,045,333	6.4	2,884,000	9.1	1,821,467	5.7	1,680,000	3.9	120,000	0.4
Other	1,622,700	5.2	916,667	2.9	150,000	0.5	3,019,500	9.5	3,468,750	8	472,000	1.7
Remittances	979,467	3.1	310,000	1	1,078,667	3.4	445,000	1.4	1,616,667	3.7	615,133	2.2
3. Total income per year	31,479,915	100	31,725,918	100	31,775,914	100	31,686,495	100	43,385,204	100	28,229,693	100
Income per capita per year	6,800,662		7,194,201		5,834,753		7,335,639		10,992,317		8,617,990	
Income per capita per day (IDR)	18,632		19,710		15,986		20,098		30,116		23,611	
Income per capita per day (USD)	2.12		2.24		1.82		2.28		3.42		2.68	

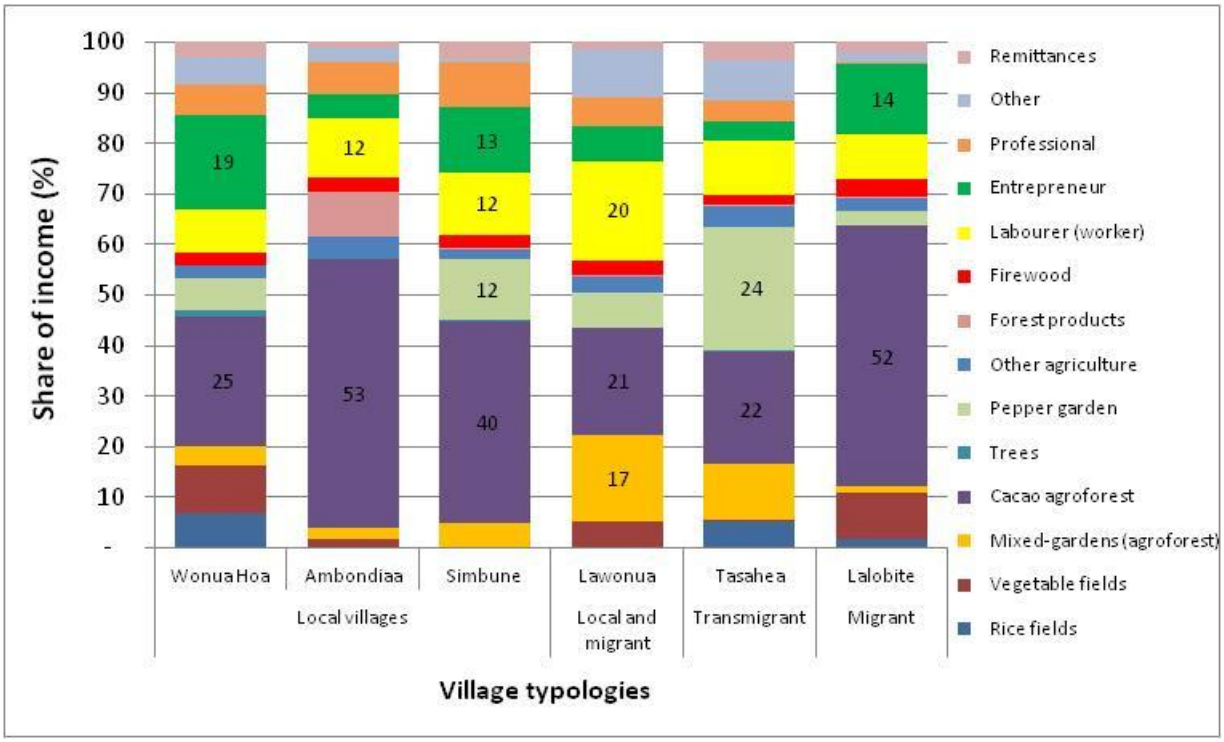

Figure 30. Sources of income by activity type in Southeast Sulawesi in 2012

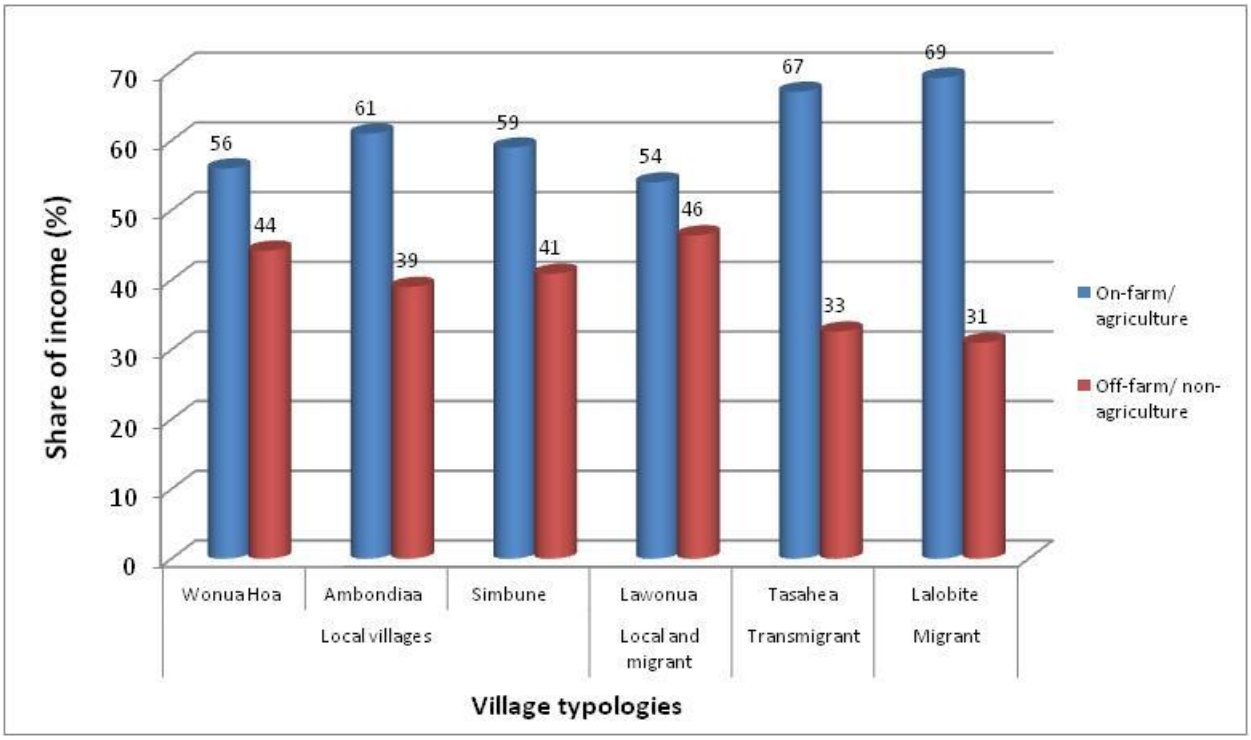

Figure 31. Sources of income in Southeast Sulawesi in 2012

Table 31. Share of income from forest products in Southeast Sulawesi in 2012

Village	Share of income from forest products								Total
	Fuelwood		Rattan		Plants		Honey		
	Value	%	Value	%	Value	%	Value	%	
Ambondiaa	27,401,000	24	10,936,000	10	4,666,000	4	69,080,000	62	112,083,000

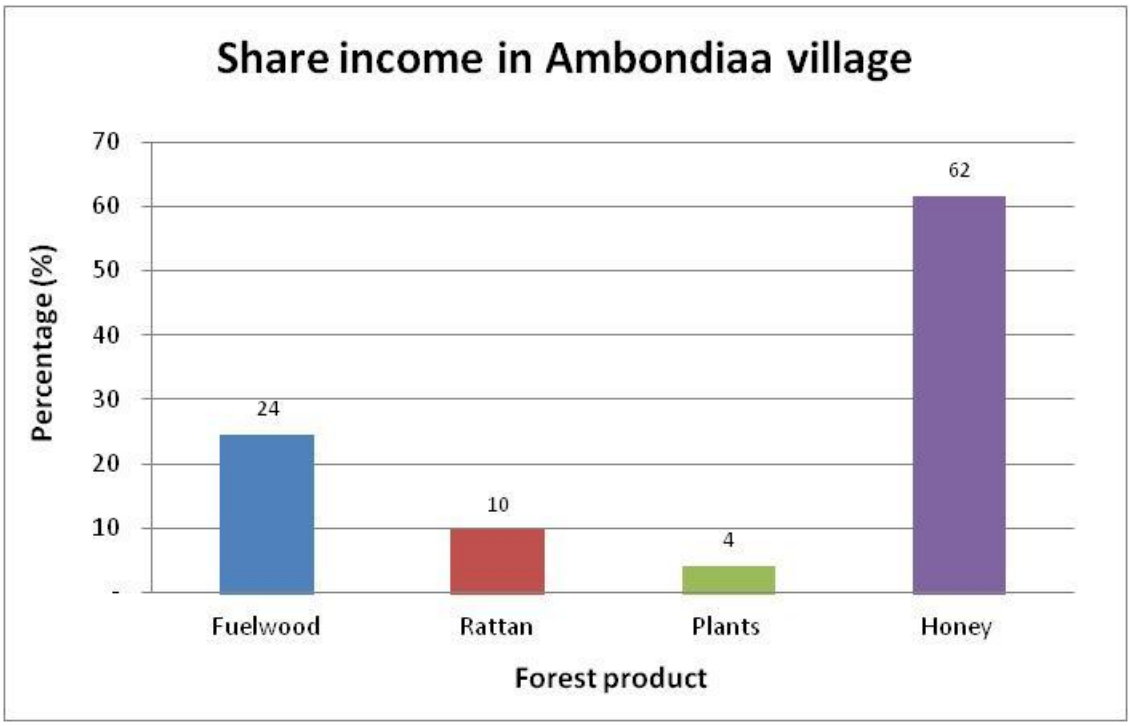

Figure 32. Share of income from forest products in Southeast Sulawesi in 2012

Income per capita

Table 32. Income per capita in Southeast Sulawesi in 2012

Source of income	Income per capita					
	Local			Local and migrant	Transmigrant	Migrant
	Wonua Hoa village	Ambondiaa village	Simbune village	Lawonua village	Tasahea village	Lalobite village
1.On-farm/agriculture						
Rice fields	468,368	0	0	0	507,131	131,248
Vegetable fields	645,877	106,433	10,506	352,032	12,910	675,770
Cacao agroforest	1,636,464	3,530,692	2,128,266	1,330,454	2,146,418	3,798,763
Mixed-gardens (agroforest)	268,071	152,201	261,947	1,136,071	1,087,563	82,652
Trees	89,507	30,051	3,000	483	33,142	0
Other gardens	102,032	33,979	114,706	98,706	20,097	1,857
Pepper agroforest	443,993	0	674,894	454,669	2,337,986	203,591
Other agriculture	163,283	268,472	119,541	213,292	402,825	185,922
2.Off-farm/non-agriculture						
Forest product	6,261	596,352	12,659	14,930	35,269	22,478
Firewood	174,859	192,965	149,788	206,549	188,985	264,091
Labourer (worker)	584,928	778,472	680,176	1,316,800	1,033,172	647,130
Entrepreneurial	1,274,696	321,775	726,266	453,592	392,963	1,035,861
Professional	419,435	432,113	508,941	384,817	376,119	31,304
Other	352,761	193,662	26,471	637,923	776,586	123,130
Remittances	212,928	65,493	190,353	94,014	361,940	160,470
3.Total income per year	6,843,460	6,702,659	5,607,514	6,694,330	9,713,105	7,364,268
Income per capita per Year	1,478,405	1,519,902	1,029,662	1,549,783	2,460,967	2,248,171
Income per capita per day (IDR)	18,632	19,710	15,986	20,098	30,116	23,611
Income per capita per day (USD)	2.12	2.24	1.82	2.28	3.42	2.68

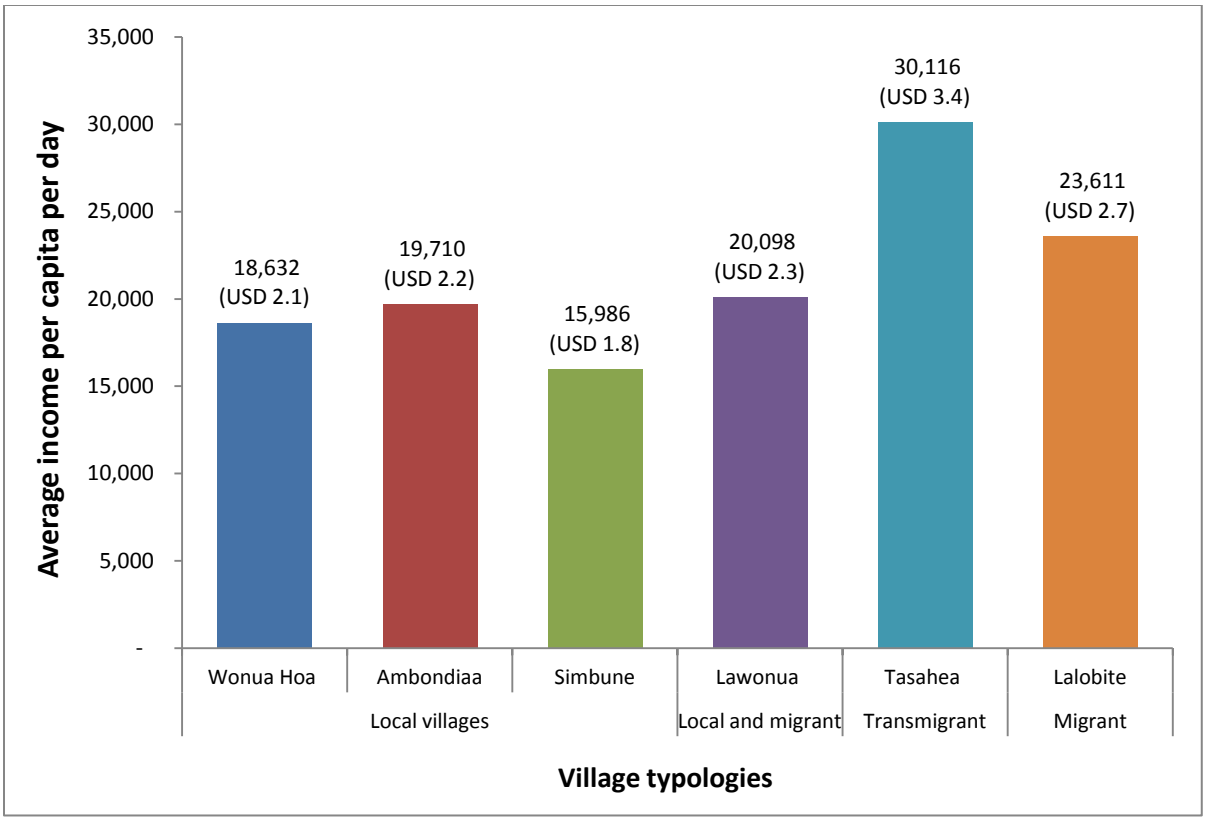

Figure 33. Average income per capita per day in Southeast Sulawesi in 2012

Gender in Southeast Sulawesi

Table 33. The role of women in land management in Southeast Sulawesi

Village typologies	Villages	n	The role of women in land management			
			A role exists		No role exists	
			n	%	n	%
Local villages	Wonua Hoa	30	29	97	1	3
	Ambondiaa	30	29	97	1	3
	Simbune	30	30	100	0	0
Local and migrant	Lawonua	30	27	90	3	10
Transmigrant	Tasahea	30	30	100	0	0
Migrant	Lalobite	30	25	83	5	17

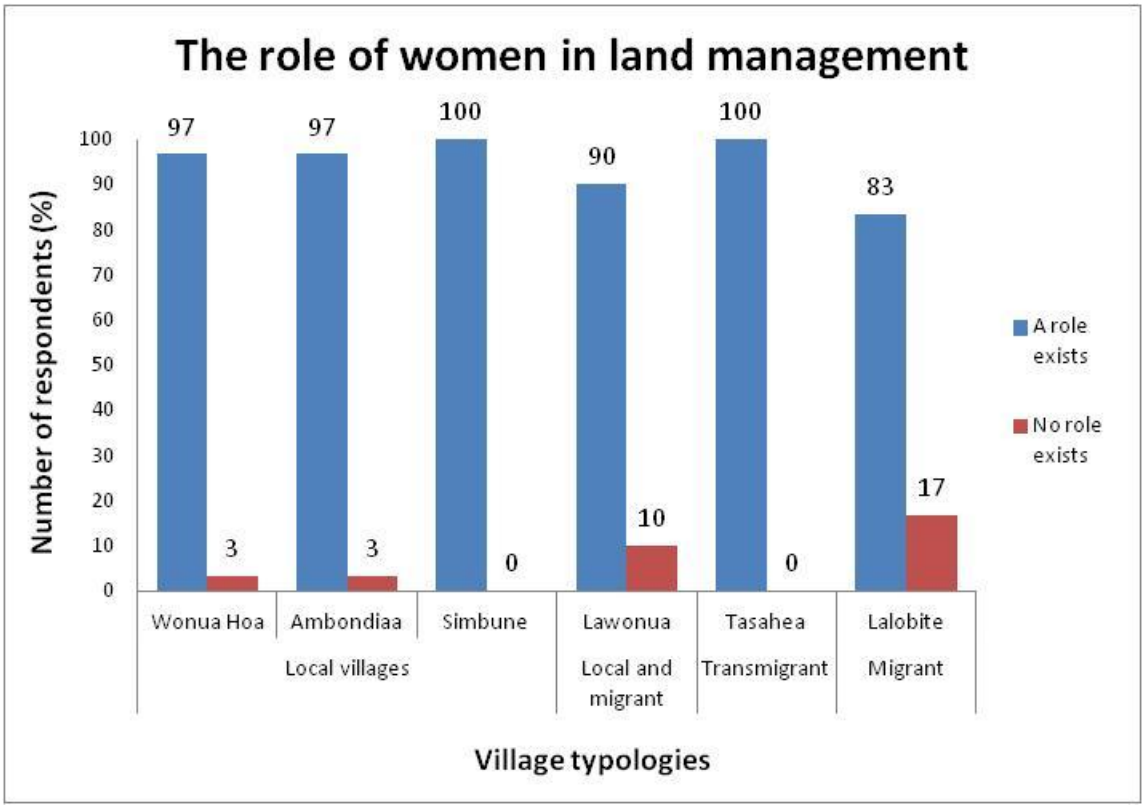

Figure 34. The role of women in land management in Southeast Sulawesi

Table 34. The role of women in farming system activities in Southeast Sulawesi

Activity	Villages	n	The role of women in farming system activities							
			Woman > man		Woman = man		Woman < man		No role for woman	
			n	%	n	%	n	%	n	%
Land preparation	Wonua Hoa	29	2	7	4	14	22	76	1	3
	Ambondiaa	29	0	0	2	7	25	86	2	7
	Simbune	30	3	10	3	10	20	67	4	13
	Lawonua	25	1	4	1	4	20	80	3	12
	Tasahea	30	0	0	5	17	25	83	0	0
	Lalobite	25	2	8	0	0	19	76	4	16
Planting	Wonua Hoa	29	2	7	6	21	19	66	2	7
	Ambondiaa	29	0	0	5	17	23	79	1	3
	Simbune	30	2	7	8	27	19	63	1	3
	Lawonua	26	1	4	3	12	19	73	3	12
	Tasahea	30	0	0	13	43	17	57	0	0
	Lalobite	25	2	8	5	20	16	64	2	8
Crop care	Wonua Hoa	29	2	7	5	17	21	72	1	3
	Ambondiaa	29	0	0	4	14	23	79	2	7
	Simbune	30	2	7	3	10	21	70	4	13
	Lawonua	27	3	11	2	7	18	67	4	15
	Tasahea	30	0	0	6	20	24	80	0	0
	Lalobite	25	2	8	4	16	17	68	2	8
Harvesting	Wonua Hoa	29	2	7	17	59	8	28	2	7
	Ambondiaa	29	0	0	16	55	13	45	0	0
	Simbune	30	3	10	16	53	11	37	0	0
	Lawonua	27	2	7	11	41	12	44	2	7
	Tasahea	30	2	7	24	80	4	13	0	0
	Lalobite	25	3	12	14	56	7	28	1	4
Post-harvesting	Wonua Hoa	29	7	24	16	55	5	17	1	3
	Ambondiaa	29	6	21	16	55	7	24	0	0
	Simbune	30	7	23	17	57	5	17	1	3
	Lawonua	27	13	48	6	22	6	22	2	7
	Tasahea	30	12	40	17	57	1	3	0	0
	Lalobite	25	8	32	12	48	5	20	0	0
Marketing	Wonua Hoa	29	24	83	3	10	2	7	0	0
	Ambondiaa	29	22	76	3	10	4	14	0	0
	Simbune	30	20	67	5	17	4	13	1	3
	Lawonua	27	22	81	3	11	2	7	0	0
	Tasahea	30	21	70	7	23	2	7	0	0
	Lalobite	25	16	64	6	24	3	12	0	0

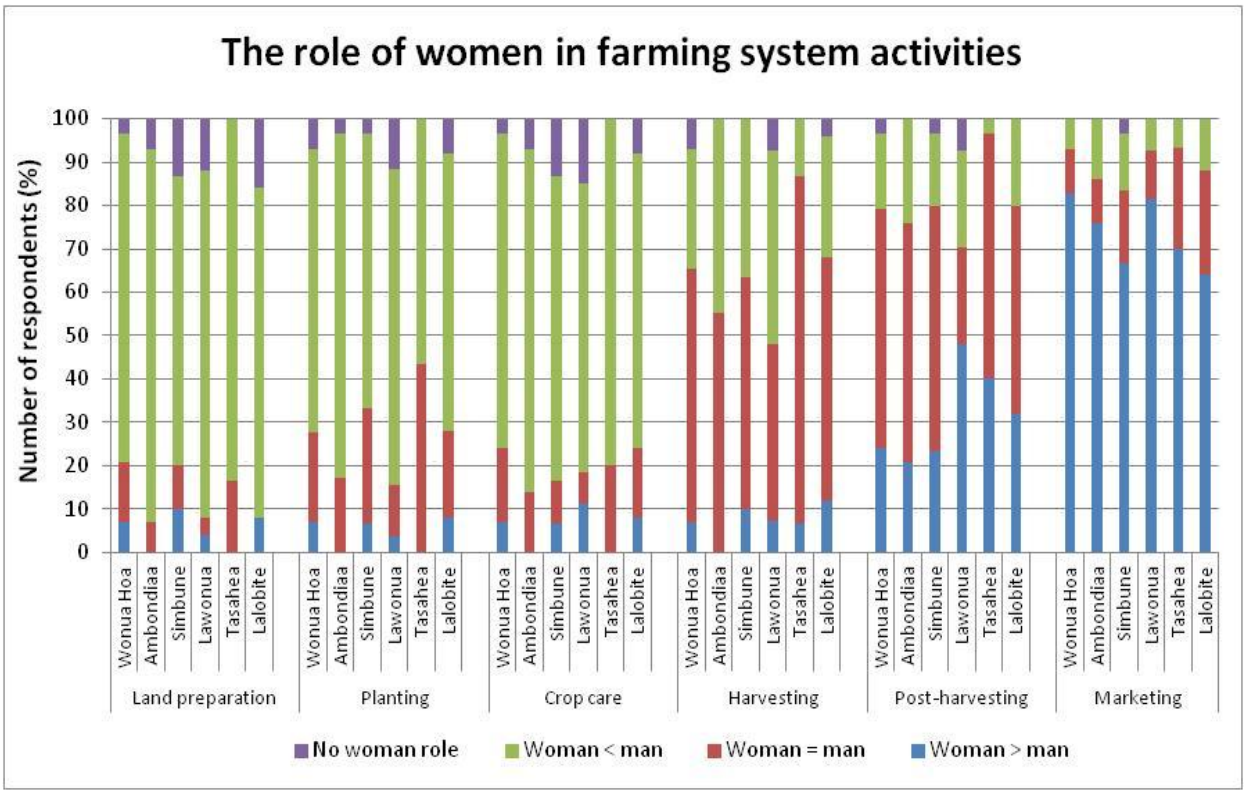

Figure 35. The role of women in farming system activities in Southeast Sulawesi

Table 35. The role of women in decision making in Southeast Sulawesi

Activity	Villages	n	The role of women in decision making			
			Man		Woman	
			n	%	n	%
Type of plant to be planted	Wonua Hoa	29	27	93	2	7
	Ambondiaa	29	28	97	1	3
	Simbune	30	28	93	2	7
	Lawonua	27	25	93	2	7
	Tasahea	30	28	93	2	7
	Lalobite	25	23	92	2	8
Time to start planting	Wonua Hoa	29	26	90	3	10
	Ambondiaa	29	28	97	1	3
	Simbune	30	27	90	3	10
	Lawonua	27	26	96	1	4
	Tasahea	30	28	93	2	7
	Lalobite	25	23	92	2	8
Planting other plants	Wonua Hoa	29	24	83	5	17
	Ambondiaa	29	28	97	1	3
	Simbune	30	28	93	2	7
	Lawonua	27	25	93	2	7
	Tasahea	30	26	87	4	13
	Lalobite	25	21	84	4	16
Applying fertilizer and medicine	Wonua Hoa	29	26	90	3	10
	Ambondiaa	29	28	97	1	3
	Simbune	30	28	93	2	7
	Lawonua	27	26	96	1	4
	Tasahea	30	29	97	1	3
	Lalobite	25	22	88	3	12
Marketing agricultural yield	Wonua Hoa	29	8	28	21	72
	Ambondiaa	29	7	24	22	76
	Simbune	30	7	23	23	77
	Lawonua	27	6	22	21	78
	Tasahea	30	7	23	23	77
	Lalobite	25	7	28	18	72

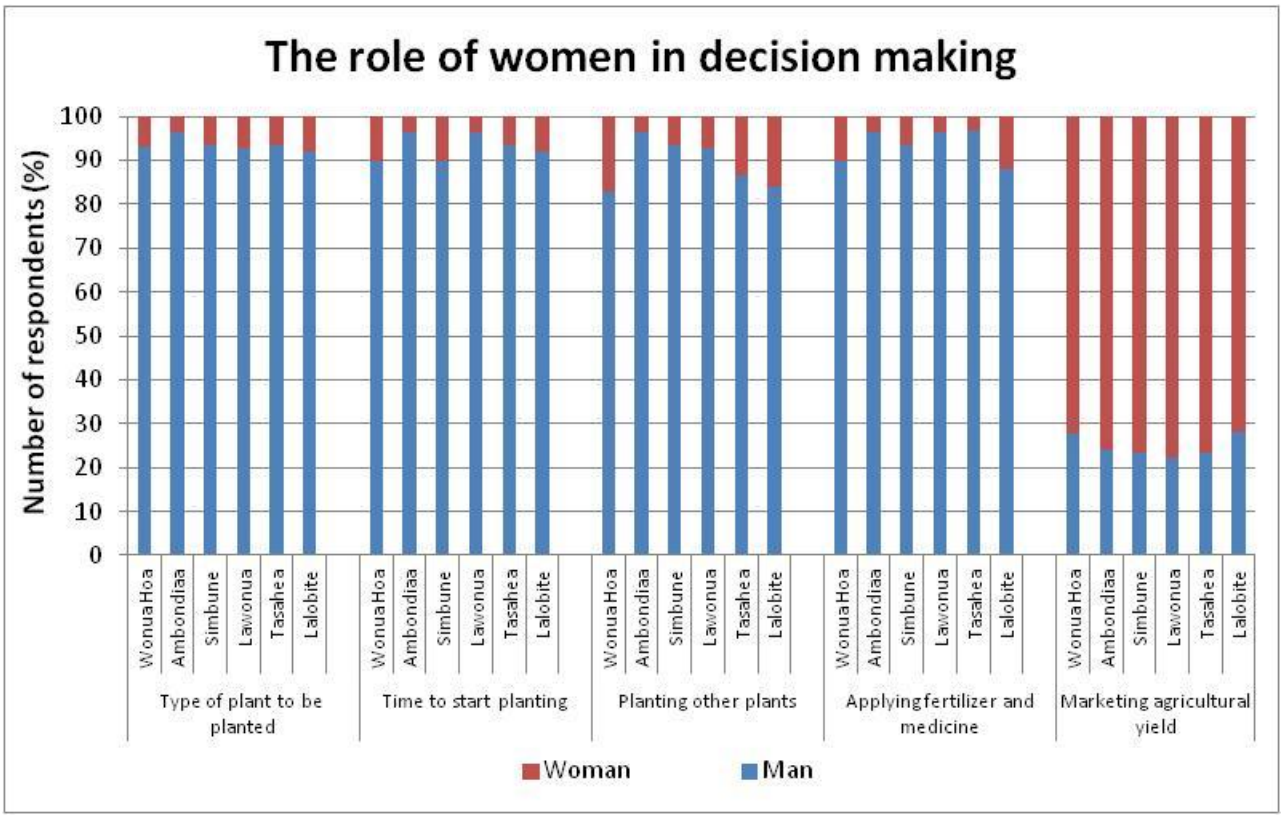

Figure 36. The role of women in decision making in Southeast Sulawesi

Table 36. The role of women in various types of land use in Southeast Sulawesi

Type of land	Villages	n	The role of women in various types of land use							
			Woman > man		Woman = man		Woman < man		No role for women	
			n	%	n	%	n	%	n	%
Rice fields	Wonua Hoa	10	2	20	0	0	4	40	4	40
	Ambondiaa	0	0	0	0	0	0	0	0	0
	Simbune	0	0	0	0	0	0	0	0	0
	Lawonua	0	0	0	0	0	0	0	0	0
	Tasahea	9	0	0	0	0	7	78	2	22
	Lalobite	3	0	0	0	0	3	100	0	0
Vegetable fields	Wonua Hoa	9	1	11	1	11	7	78	0	0
	Ambondiaa	6	2	33	0	0	3	50	1	17
	Simbune	1	0	0	0	0	1	100	0	0
	Lawonua	5	0	0	3	60	2	40	0	0
	Tasahea	2	0	0	0	0	2	100	0	0
	Lalobite	6	0	0	1	17	5	83	0	0
Cacao agroforest	Wonua Hoa	14	0	0	1	7	12	86	1	7
	Ambondiaa	27	0	0	5	19	22	81	0	0
	Simbune	21	2	10	3	14	15	71	1	5
	Lawonua	14	1	7	1	7	12	86	0	0
	Tasahea	28	2	7	10	36	16	57	0	0
	Lalobite	20	2	10	3	15	15	75	0	0
Mixed-gardens (agroforest)	Wonua Hoa	5	1	20	2	40	2	40	0	0
	Ambondiaa	5	0	0	1	20	4	80	0	0
	Simbune	12	0	0	5	42	7	58	0	0
	Lawonua	16	0	0	1	6	15	94	0	0
	Tasahea	17	2	12	4	24	11	65	0	0
	Lalobite	3	0	0	1	33	2	67	0	0

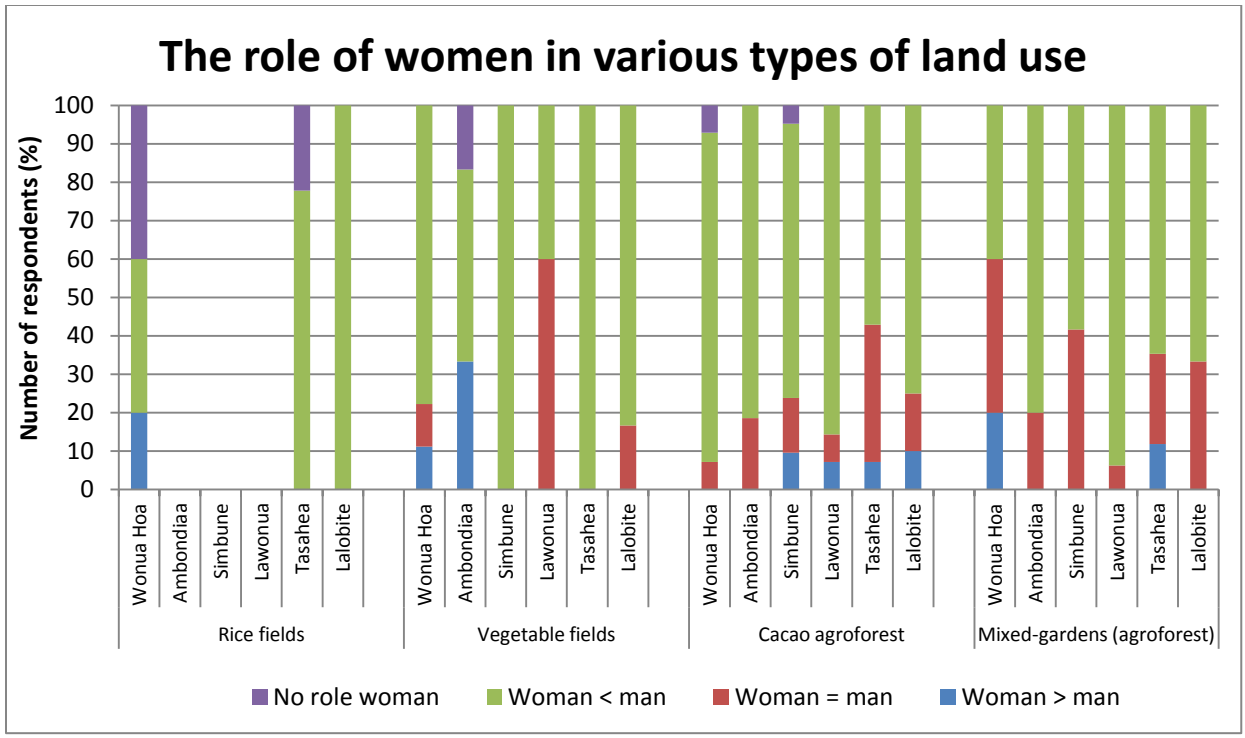

Figure 37. The role of women in various types of land use in Southeast Sulawesi

Table 37. Labour use in the various types of land use by village in Southeast Sulawesi

Village typologies	Land use by village	Labour use															
		Family				Exchange				Hire				Total			
		Man		Woman		Man		Woman		Man		Woman		Man		Woman	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Rice fields																	
Local	Wonua Hoa	78	79	21	21	21	100	0	0	295	68	138	32	394	71	160	29
	Ambondiaa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Simbune	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local and migrant	Lawonua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmigrant	Tasahea	76	97	2	3	2	100	0	0	173	71	69	29	251	78	72	22
Migrant	Lalobite	23	79	6	21	0	0	0	0	22	69	10	31	45	74	16	26
Vegetable fields																	
Local	Wonua Hoa	449	70	189	30	33	85	6	15	61	100	0	0	543	74	194	26
	Ambondiaa	57	58	42	42	15	48	17	52	0	0	0	0	72	55	59	45
	Simbune	18	100	0	0	3	29	7	71	0	0	0	0	21	74	7	26
Local and migrant	Lawonua	263	71	109	29	4	29	10	71	1	100	0	0	269	69	119	31
Transmigrant	Tasahea	13	100	0	0	0	0	0	0	0	0	0	0	13	100	0	0
Migrant	Lalobite	270	71	109	29	0	0	0	0	0	0	0	0	270	71	109	29
Cacao agroforest																	
Local	Wonua Hoa	1087	76	351	24	52	100	0	0	0	0	0	0	1140	76	351	24
	Ambondiaa	1779	78	516	22	94	69	43	31	35	78	10	22	1909	77	569	23
	Simbune	2148	68	1025	32	28	69	13	31	61	100	0	0	2237	68	1038	32
Local and migrant	Lawonua	1091	85	189	15	16	21	57	79	11	100	0	0	1117	82	246	18
Transmigrant	Tasahea	1829	70	776	30	43	59	30	41	1	100	0	0	1873	70	807	30
Migrant	Lalobite	1745	72	683	28	35	100	0	0	36	100	0	0	1815	73	683	27

Mixed-gardens/agroforest																	
Local	Wonua Hoa	372	59	260	41	55	100	0	0	22	100	0	0	449	63	260	37
	Ambondiaa	119	86	20	14	0	0	0	0	20	100	0	0	140	87	20	13
	Simbune	290	70	127	30	8	52	8	48	463	100	0	0	761	85	134	15
Local and migrant	Lawonua	832	80	211	20	14	100	0	0	23	100	0	0	869	80	211	20
Transmigrant	Tasahea	502	54	435	46	0	0	0	0	9	100	0	0	511	54	435	46
Migrant	Lalobite	184	86	29	14	0	0	0	0	0	0	0	0	184	86	29	14
Trees																	
Local	Wonua Hoa	42	82	9	18	75	78	21	22	2	100	0	0	119	79	31	21
	Ambondiaa	88	97	3	3	7	100	0	0	3	100	0	0	98	97	3	3
	Simbune	23	94	2	6	0	0	0	0	0	0	0	0	23	94	2	6
Local and migrant	Lawonua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmigrant	Tasahea	37	94	2	6	0	0	0	0	9	100	0	0	46	95	2	5
Migrant	Lalobite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pepper agroforest																	
Local	Wonua Hoa	224	78	61	22	7	100	0	0	54	100	0	0	285	82	61	18
	Ambondiaa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Simbune	367	75	121	25	24	88	3	12	16	100	0	0	407	77	124	23
Local and migrant	Lawonua	311	96	14	4	0	0	0	0	0	0	0	0	311	96	14	4
Transmigrant	Tasahea	755	67	367	33	11	100	0	0	0	0	0	0	766	68	367	32
Migrant	Lalobite	157	79	41	21	0	0	0	0	0	0	0	0	157	79	41	21

Collective/group marketing in Southeast Sulawesi

Table 38. Respondents who had heard of the term 'group marketing' in Southeast Sulawesi

Village typologies	Villages	n	Recognition of the term 'group marketing'			
			Yes		No	
			n	%	n	%
Local	Wonua Hoa	30	6	20	24	80
	Ambondiaa	30	8	27	22	39
	Simbune	30	12	40	18	60
Local and migrant	Lawonua	30	13	43	17	57
Transmigrant	Tasahea	30	10	33	20	67
Migrant	Lalobite	30	7	23	23	77

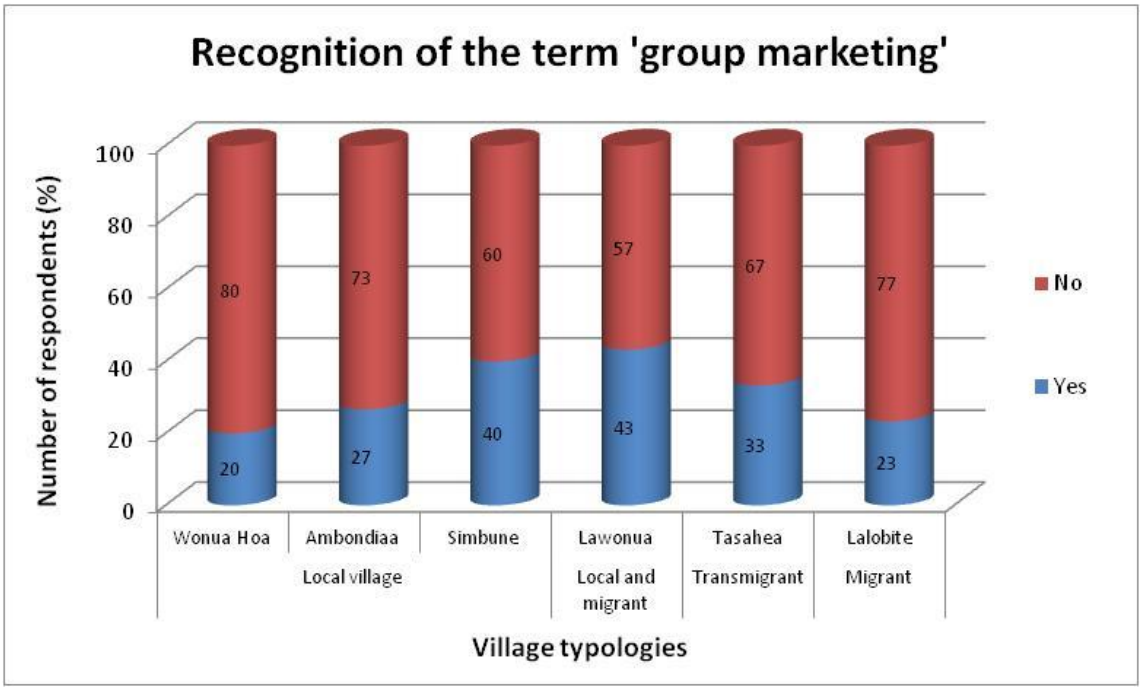

Figure 38. Respondents who had heard of the term 'group marketing' in Southeast Sulawesi

Table 39. Respondents who were interested to learn more about group marketing in Southeast Sulawesi

Village typologies	Villages	n	Interested to learn more about group marketing			
			Yes		No	
			n	%	n	%
Local	Wonua Hoa	30	27	90	3	10
	Ambondiaa	30	27	90	3	10
	Simbune	30	26	87	4	13
Local and migrant	Lawonua	30	28	93	2	7
Transmigrant	Tasahea	30	27	90	3	10
Migrant	Lalobite	30	28	93	2	7

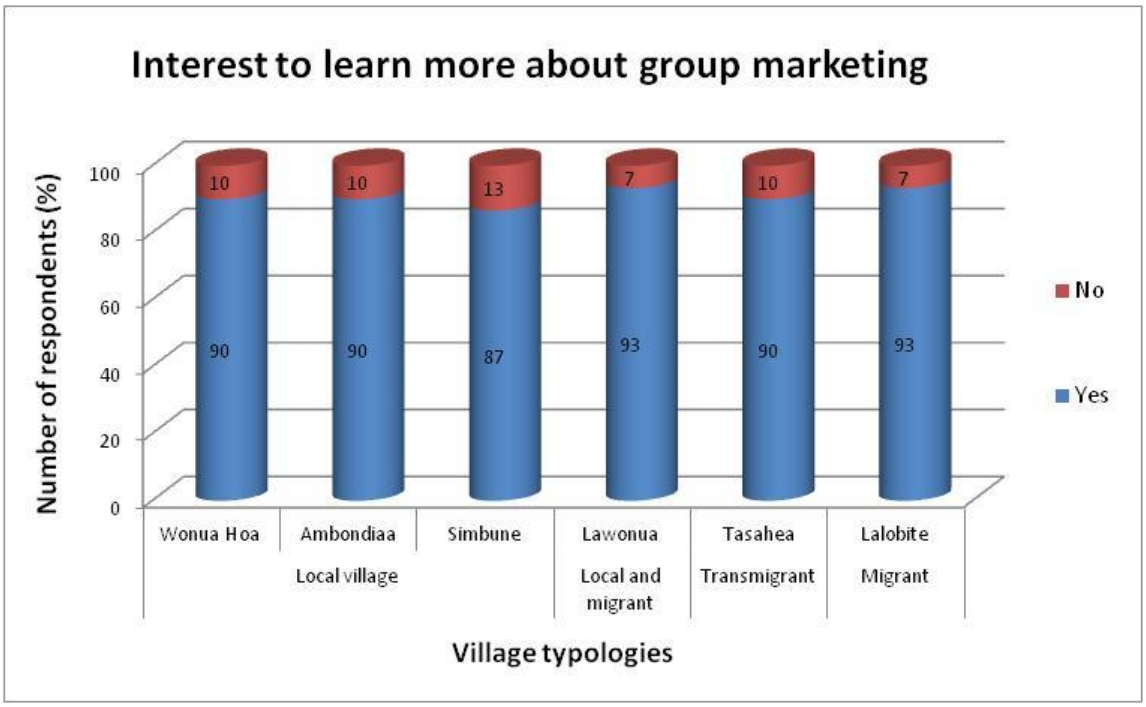

Figure 39. Respondents who were interested to learn more about group marketing in Southeast Sulawesi

Table 40. Respondents who were interested to market together as a group in Southeast Sulawesi

Village typologies	Villages	n	Interested to market together as a group			
			Yes		No	
			n	%	n	%
Local	Wonua Hoa	30	15	50	15	50
	Ambondiaa	30	16	53	14	47
	Simbune	30	22	73	8	27
Local and migrant	Lawonua	30	27	90	3	10
Transmigrant	Tasahea	30	17	57	13	43
Migrant	Lalobite	30	15	50	15	50

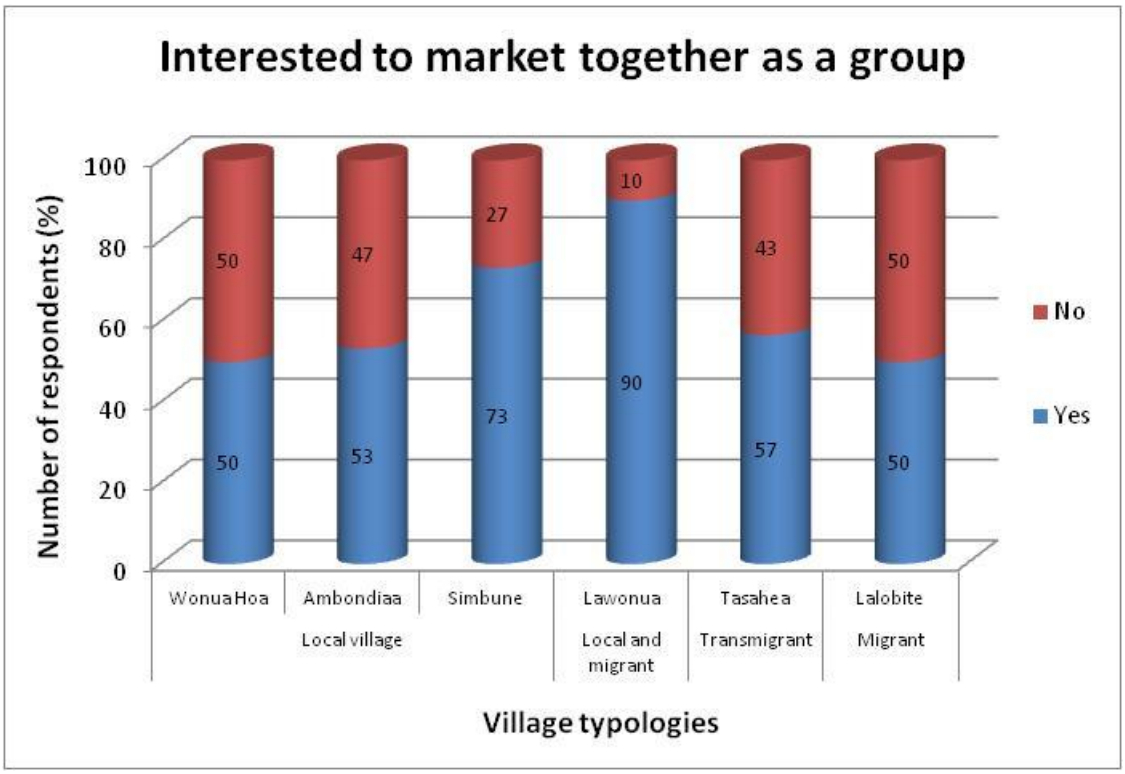

Figure 40. Respondents who were interested to market together as a group in Southeast Sulawesi

Table 41. Respondents who were interested in forming small-scale enterprises in Southeast Sulawesi

Village typologies	Villages	n	Interested in forming small-scale enterprise			
			Yes		No	
			n	%	n	%
Local	Wonua Hoa	15	13	87	2	13
	Ambondiaa	16	16	100	0	0
	Simbune	22	19	86	3	14
Local and migrant	Lawonua	27	27	100	0	0
Transmigrant	Tasahea	17	15	88	2	12
Migrant	Lalobite	15	13	87	2	13

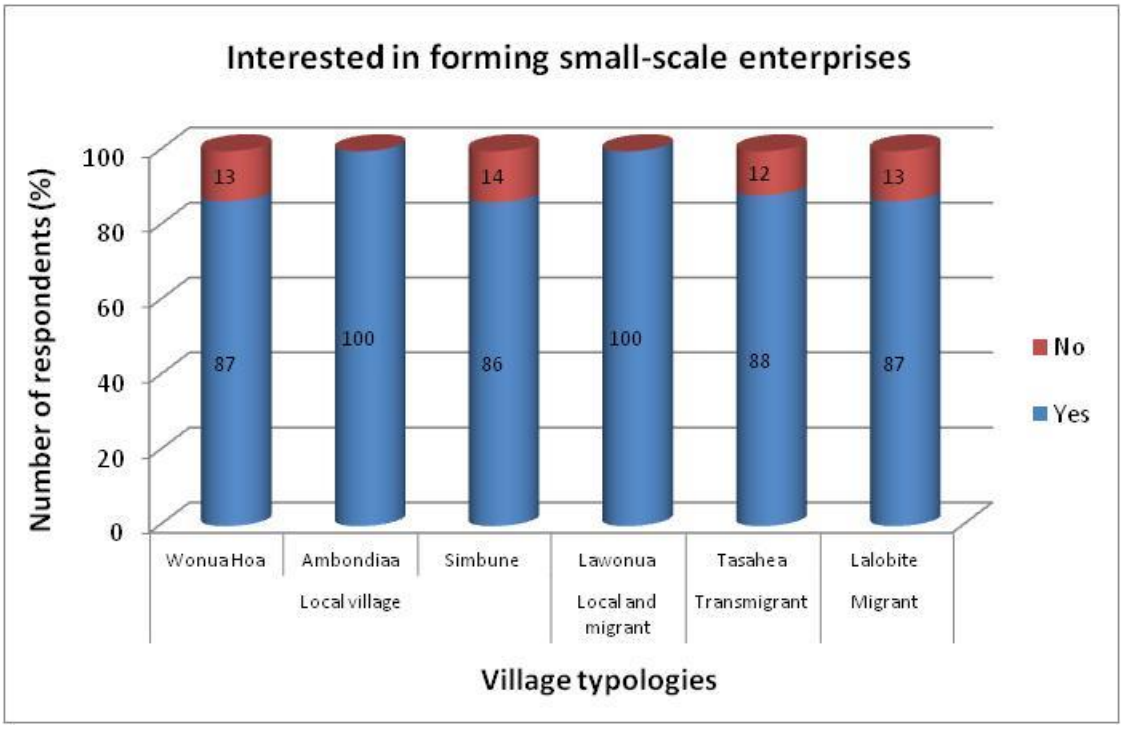

Figure 41. Respondents who were interested in forming small-scale enterprises in Southeast Sulawesi

Table 42. Respondents who were interested in learning about how to form enterprises in Southeast Sulawesi

Village typologies	Villages	n	Interested in learning about how to form enterprise			
			Yes		No	
			n	%	n	%
Local	Wonua Hoa	13	13	100	0	0
	Ambondiaa	16	16	100	0	0
	Simbune	19	19	100	0	0
Local and migrant	Lawonua	27	27	100	0	0
Transmigrant	Tasahea	15	14	93	1	7
Migrant	Lalobite	13	13	100	0	0

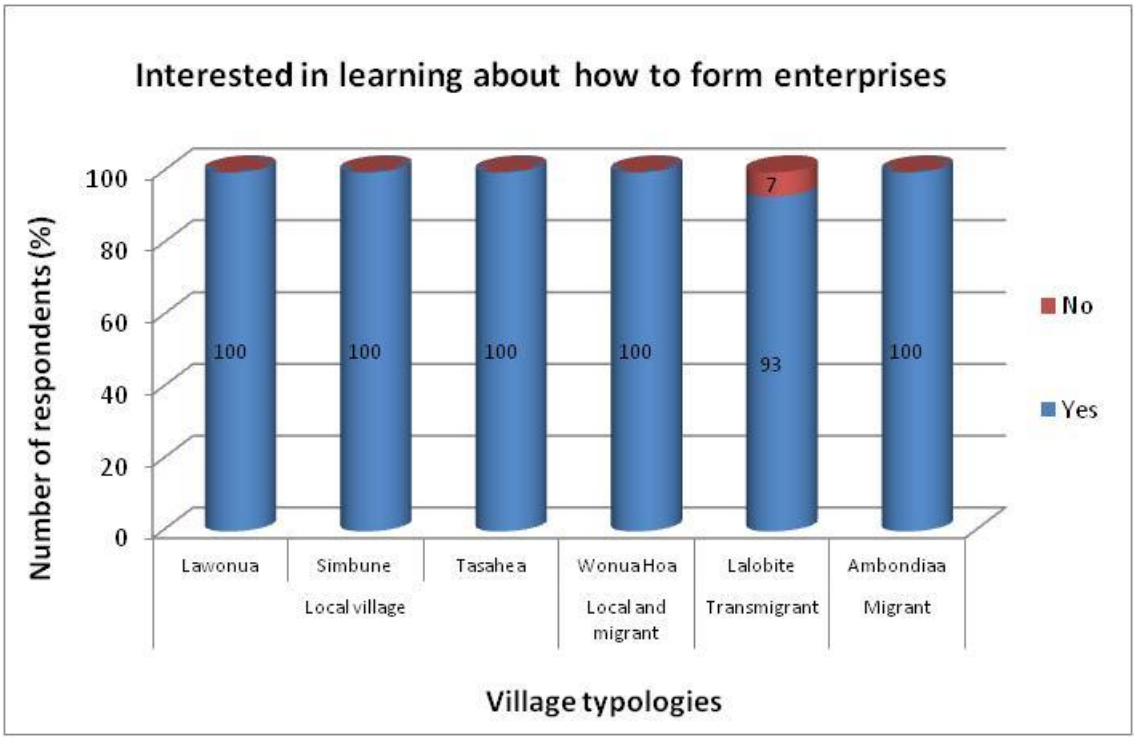

Figure 42. Respondents who were interested in learning about how to form enterprise in Southeast Sulawesi

Agricultural technical assistances in Southeast Sulawesi

Table 43. Respondents who received agricultural extension services in Southeast Sulawesi

Villages	n	Received agricultural technical services			
		Yes		No	
		n	%	n	%
Wonua Hoa	30	13	43	17	57
Ambondiaa	30	26	87	4	13
Simbune	30	23	77	7	23
Lawonua	30	27	90	3	10
Tasahea	30	22	73	8	27
Lalobite	30	4	13	26	87

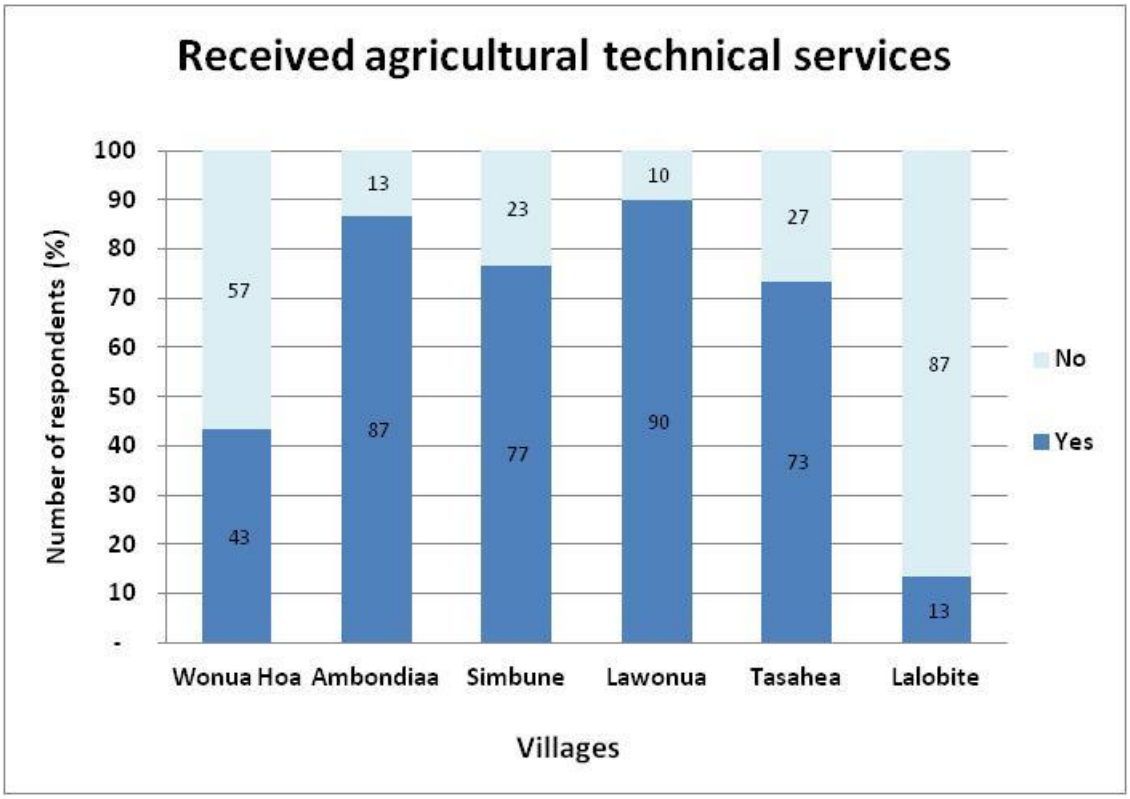

Figure 43. Respondents who received agricultural extension services in Southeast Sulawesi

Table 44. Types of agricultural extension services received by farmers in Southeast Sulawesi

Villages	n	Agricultural extension services received							
		Training		In-class activities		Agricultural aids		Cross-visit	
		n	%	n	%	n	%	n	%
Wonua Hoa	19	1	5	5	26	13	68	0	0
Ambondiaa	55	13	24	2	4	40	73	0	0
Simbune	40	15	38	5	13	20	50	0	0
Lawonua	44	13	30	10	23	20	45	1	2
Tasahea	49	19	39	9	18	21	43	0	0
Lalobite	5	1	20	1	20	3	60	0	0

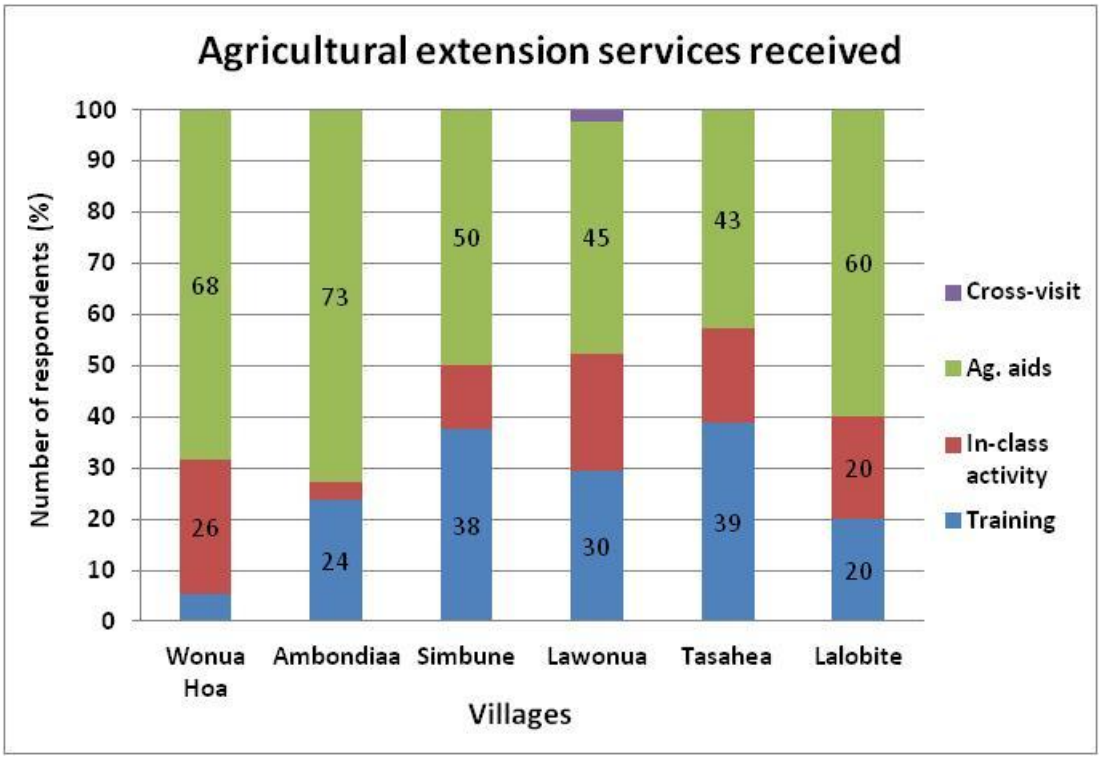

Figure 44. Types of agricultural extension services received by farmers in Southeast Sulawesi

Table 45. Types of agricultural extension subjects provided to farmers in Southeast Sulawesi

Villages	n	Type of agricultural extension subjects											
		Cacao		Fruit species		Timber trees		Vegetables		Agricultural input		Information	
		n	%	n	%	n	%	n	%	n	%	n	%
Wonua Hoa	19	0	0	0	0	8	42	1	5	8	42	2	11
Ambondiaa	55	23	42	1	2	8	15	0	0	15	27	8	15
Simbune	40	28	70	1	3	2	5	0	0	5	13	4	10
Lawonua	44	22	50	4	9	2	5	2	5	10	23	4	9
Tasahea	49	22	45	0	0	9	18	4	8	10	20	4	8
Lalobite	5	2	40	0	0	0	0	0	0	2	40	1	20

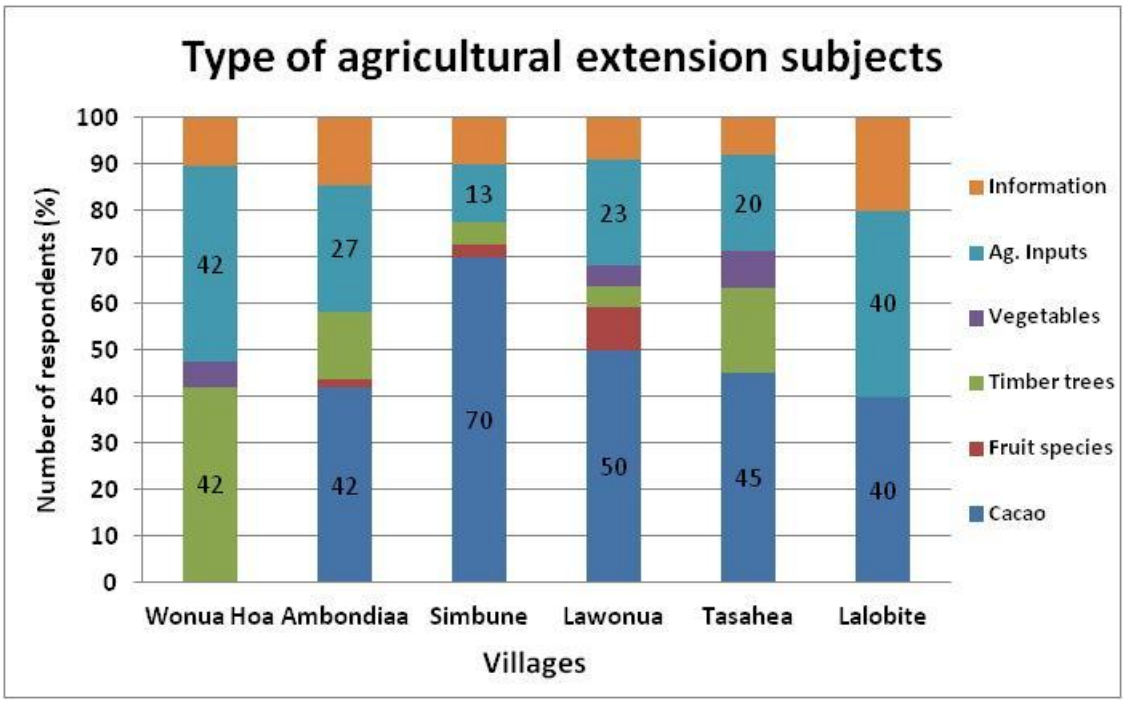

Figure 45. Types of agricultural extension subjects provided to famers in Southeast Sulawesi

Table 46. List of institutions that were sources of agricultural extension services

Village	n	Sources of extension services received							
		Agricultural government agency		Forestry government agency		Local NGOs		Private sector	
		n	%	n	%	n	%	n	%
Wonua Hoa	19	18	95	1	5	0	0	0	0
Ambondiaa	55	42	76	13	24	0	0	0	0
Simbune	40	37	93	1	3	0	0	2	5
Lawonua	44	42	95	0	0	1	2	1	2
Tasahea	49	45	92	3	6	0	0	1	2
Lalobite	5	4	80	0	0	0	0	1	20

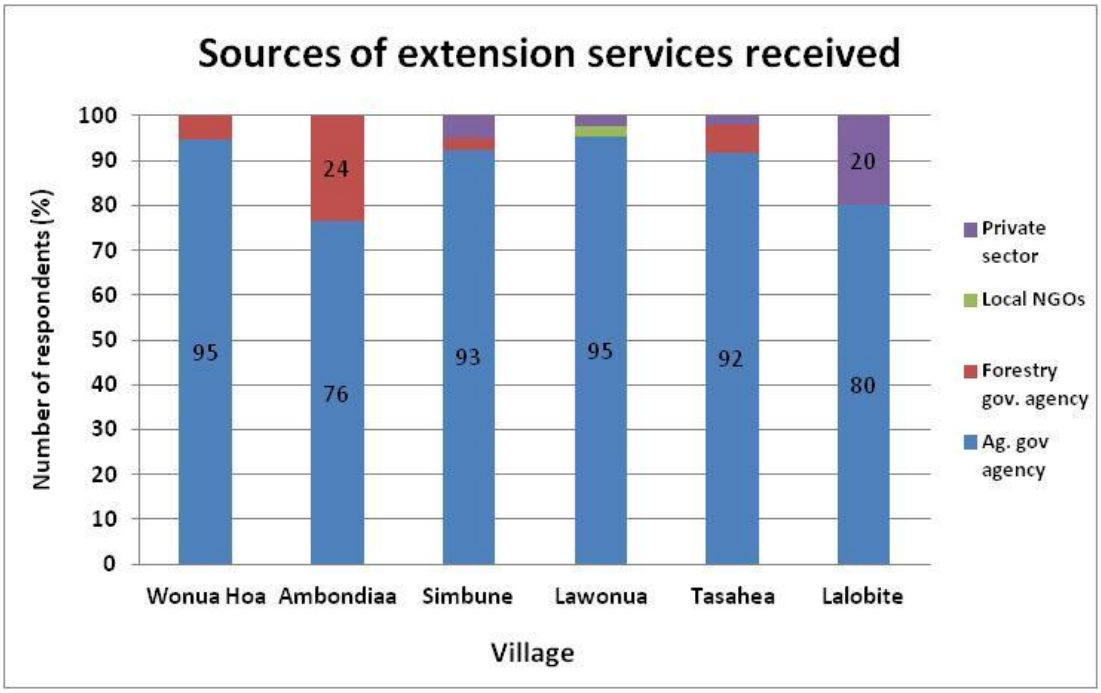

Figure 46. List of institutions that were sources of agricultural extension services in Southeast Sulawesi

Table 47. Intensities of agricultural extension services received by farmers in Southeast Sulawesi

Village	n	Receiving extension services per year									
		≤ 2008		2009		2010		2011		2012	
		n	%	n	%	n	%	n	%	n	%
Wonua Hoa	19	1	5	2	11	7	37	8	42	1	5
Ambondiaa	55	3	5	4	7	7	13	41	75	0	0
Simbune	40	2	5	15	38	12	30	9	23	2	5
Lawonua	44	9	20	9	20	7	16	15	34	4	9
Tasahea	49	7	14	8	16	14	29	17	35	3	6
Lalobite	5	0	0	2	40	1	20	1	20	1	20

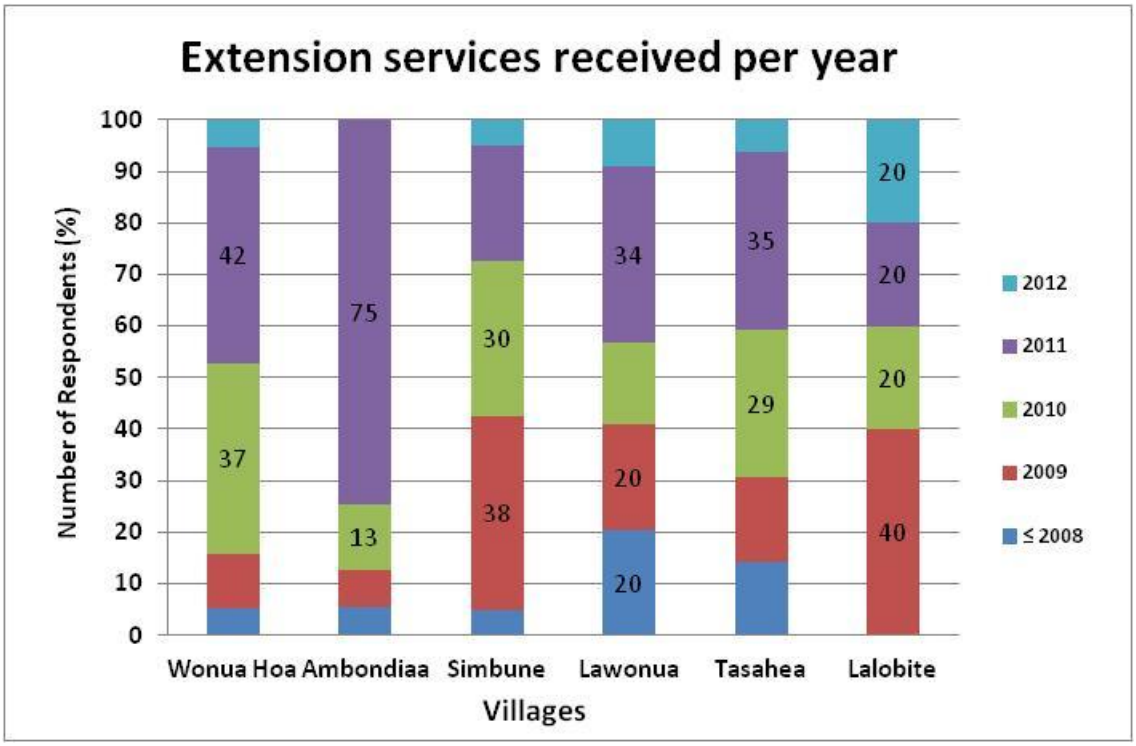

Figure 47. Intensities of agricultural extension services received by farmers in Southeast Sulawesi

Table 48. Gender of farmers who were registered to receive agricultural extension services in Southeast Sulawesi

Village	n	Agricultural extension services beneficiaries			
		Male		Female	
		n	%	n	%
Wonua Hoa	19	18	95	1	5
Ambondiaa	55	53	96	2	4
Simbune	40	39	98	1	3
Lawonua	44	41	93	3	7
Tasahea	49	43	88	6	12
Lalobite	5	5	100	0	0

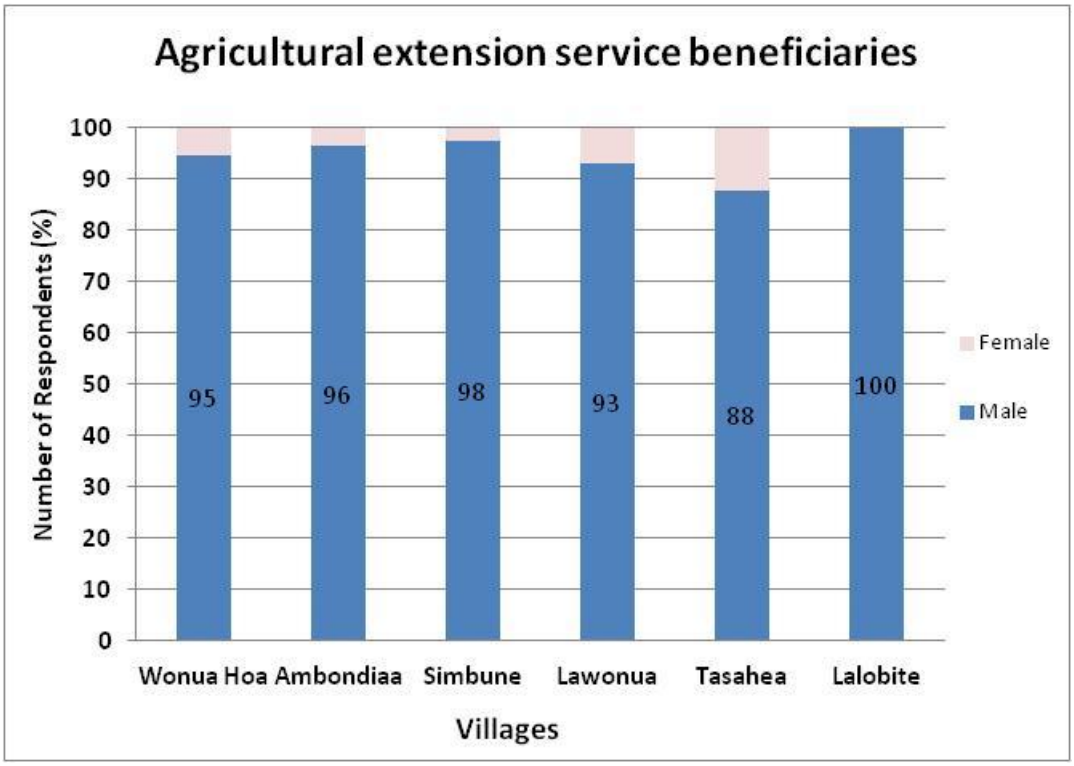

Figure 48. Gender of farmers who were registered to receiving agricultural extension services in Southeast Sulawesi

Table 49. Level of advantages received by farmers from agricultural extension services in Southeast Sulawesi

Village	n	Benefits received from extension services					
		None		Few		Many	
		n	%	n	%	n	%
Wonua Hoa	19	0	0	1	5	18	95
Ambondiaa	55	1	2	12	22	42	76
Simbune	40	0	0	11	28	29	73
Lawonua	44	6	14	12	27	26	59
Tasahea	49	3	6	11	22	35	71
Lalobite	5	0	0	1	20	4	80

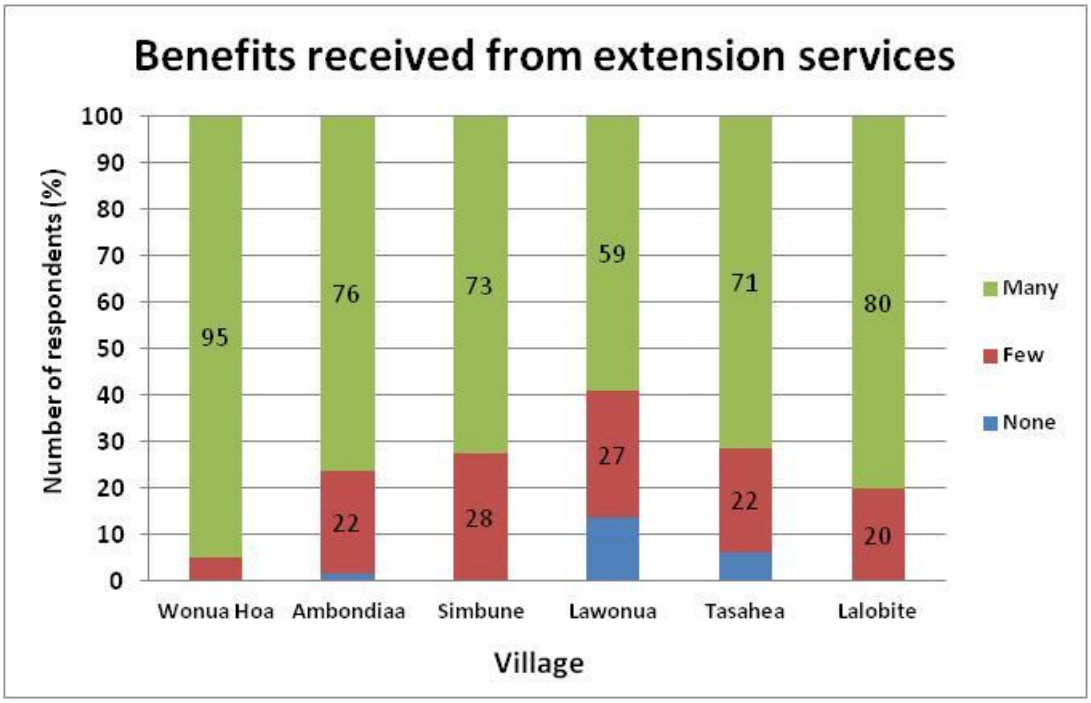

Figure 49. Level of advantages received by farmers from agricultural extension services in Southeast Sulawesi

Table 50. Percentage of respondents who requested agricultural extension services in Southeast Sulawesi

Village	n	Requested agricultural technical services			
		Yes		No	
		n	%	n	%
Wonua Hoa	30	23	77	7	23
Ambondiaa	30	29	97	1	3
Simbune	30	25	83	5	17
Lawonua	30	27	90	3	10
Tasahea	30	24	80	6	20
Lalobite	30	30	100	0	0

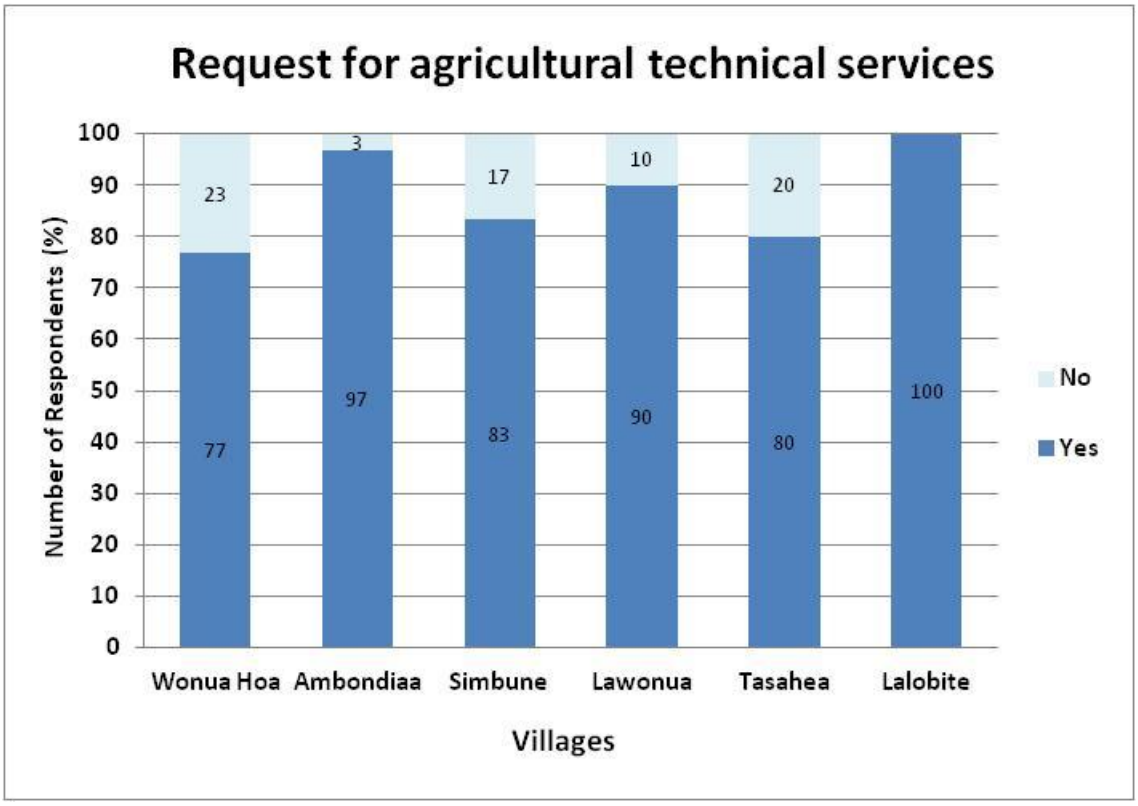

Figure 50. Percentage of respondents who requested agricultural extension services in Southeast Sulawesi

Table 51. List of requested agricultural topics for in-class extension services in Southeast Sulawesi

In-class topics	Number of respondents per village						Total respondents	Percentage
	Wonua Hoa	Ambondiaa	Simbune	Lawonua	Tasahea	Lalobite		
Cultivation	16	19	11	18	11	20	95	56.5
Garden management	4	6	7	2	3	3	25	14.9
Pest and disease handling	2	3	5	1	5	1	17	10.1
Agricultural information	2	0	1	5	5	2	15	8.9
Vegetative propagation	0	1	0	0	1	7	9	5.4
Marketing	1	0	0	0	0	0	1	0.6
FFS	0	1	0	0	0	0	1	0.6
Nursery	0	1	0	0	1	0	2	1.2
Post-harvest handling	0	0	0	2	0	0	2	1.2
Tree maintenance	0	0	1	0	0	0	1	0.6

Sources: Semi structured interview with n=30 respondents per village

Table 52. List of requested agricultural training topics for extension services in Southeast Sulawesi

Training topics	Number of respondents per village						Total respondents	Percentage
	Wonua Hoa	Ambondiaa	Simbune	Lawonua	Tasahea	Lalobite		
Cultivation	12	14	13	20	8	14	81	44
Pest and disease handling	5	9	5	5	12	5	41	22.3
Garden management	5	6	5	2	4	3	25	13.6
Vegetative propagation	0	6	1	0	0	11	18	9.8
Post-harvest handling	0	1	2	0	0	0	3	1.6
Tree maintenance	0	1	1	0	0	1	3	1.6
Agricultural information	0	0	0	2	0	0	2	1.1
Nursery	0	1	0	0	1	0	2	1.1
Livestock management	0	0	0	0	2	0	2	1.1
Farmer field school	0	0	0	0	1	0	1	0.5
Fisheries	0	0	0	0	1	0	1	0.5
Good agricultural practices	0	0	0	1	0	0	1	0.5
Land-use management	1	0	0	0	0	0	1	0.5
Organic fertilizer	0	0	0	0	1	0	1	0.5
Institutional empowerment	0	0	1	0	0	0	1	0.5
Wetland management	0	0	0	1	0	0	1	0.5

Sources: Semi-structured interview with n=30 respondents per village

Table 53. List of species for planting materials requested by farmers for livelihood enhancement in Southeast Sulawesi

Species requested	Number of respondents per village						Total respon-dents	Per-cent-age
	Wonua Hoa	Ambon-diaa	Sim-bune	Lawo-nua	Tasa-hea	Lalo-bite		
Plant species								
Cacao	8	25	13	2	9	7	64	17.2
Rubber	8	16	0	22	1	11	58	15.6
Pepper	4	9	6	5	22	4	50	13.4
Teak	10	16	13	3	1	1	44	11.8
Durian	12	10	5	2	8	21	58	15.6
Clove	5	7	3	0	0	16	31	8.3
Gmelina	1	0	4	1	4	0	10	2.7
Rambutan	2	0	0	1	3	2	8	2.2
Oil palm	3	0	1	0	1	1	6	1.6
Maize	2	0	0	3	0	0	5	1.3
Paraserianthes	1	0	2	1	1	0	5	1.3
Jabon (*Anthocephalus* sp)	0	0	4	0	0	0	4	1.1
Paddy	3	0	0	0	0	0	3	0.8
Patchouli	1	0	1	1	0	0	3	0.8
Vegetables	2	0	0	1	0	0	3	0.8
Chili	1	0	0	1	0	0	2	0.5
Gaharu	0	2	0	0	0	0	2	0.5
Mango	0	1	0	0	0	1	2	0.5
Timber-trees	0	0	2	0	0	0	2	0.5
Biti (*Vitex cofassus*)	0	0	0	0	1	0	1	0.3
Broccoli	1	0	0	0	0	0	1	0.3
Coconut	0	0	0	1	0	0	1	0.3
Guava	1	0	0	0	0	0	1	0.3
Kangkung	1	0	0	0	0	0	1	0.3
Longan	1	0	0	0	0	0	1	0.3
Longbean	0	0	0	1	0	0	1	0.3
Peanut	0	0	0	1	0	0	1	0.3
Short-term crops	1	0	0	0	0	0	1	0.3
Spinach	1	0	0	0	0	0	1	0.3
Fish species								
Catfish	0	0	0	1	0	0	1	0.3
Fish (*mujaer*)	0	0	0	1	0	0	1	0.3

Sources: Semi-structured interview with n=30 respondents per village