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TRANSFORMING LIVES AND LANDSCAPES

**REPORT 5**

# Baseline data of household survey in Gorontalo Sulawesi

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AgFor SULAWESI

Agroforestry and Forestry

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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 (Roshetko et al 2012).

The primary challenge is the low diversity of rural livelihoods systems, their high dependence on exotic commodity crops and the ensuing exposure to risk (biological and market). Diverse agroforestry systems in well-managed landscapes with gradients of intensity from intensive rice fields to natural forest are widely considered as more robust and risk adverse so the Project intends to establish them in the 3 cited provinces. Furthermore, suboptimal watershed management is leading to increased soil erosion, sedimentation, landslides and floods. Secondly, analyses indicate that Sulawesi will experience substantial variation in current atmospheric conditions, further exacerbating watershed problems. Enhanced watershed management and adaptation strategies for local farmers are needed to secure livelihoods and protect the environment. Incentives that help the development of environmental service programmes also need to be created. Thirdly, marginalized people lack titles to their land and have little awareness of, or access to, channels for certification or clarification of land status. This perpetuates vulnerability and suppresses investment. Similarly, women's rights are also often sidelined or ignored, indicating a special need for awareness raising and empowerment. Continued encroachment into forest areas is seen as a major driver of deforestation and is symptomatic of the wider conflict between communities and the government. Fourthly, local governance capacity is weak. Decentralization coupled with democratization has caught many districts unprepared. After 10 years, a great deal of local capacity has been built, but self-government is still understood more as entitlement rather than responsibility. Development efforts still lack the long-term vision necessary to achieve sustainability. Community participation in government land-use planning remains rare, as do relevant incentives and benefits for those communities (Roshetko et al 2012).

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. Assessment of land-use dynamics, farming systems and livelihood strategies within the 2 selected districts in Gorontalo Provinces

is very important for designing the next phase of the project and also for designing preferred strategies and their viability under local conditions. Two unit analyses were used in the livelihood baseline study—community level and household level. This study provides the baseline community perspectives on land-use dynamics, farming systems, livelihood strategies and more detailed data on household-level activity in Gorontalo.

## Site characteristics and typologies

The Gorontalo province is located in northern part of Sulawesi island, between $0^o$ 19' - $0^o$ 57' North Latitude and $121^o$ 23' - $125^o$ 14' East Longitude. It consists of land and sea areas with total wide area of 12.435 km2. The province is adjacent to:Central Sulawesi in the West, North Sulawesi in the East, Sulawesi Sea in the North, and Tomini Gulf in the South. It has 5 regencies and 1 city, namely Boalemo, Gorontalo, Pohuwato, Bone Bolango, North Gorontalo Regency and Gorontalo City (Gorontalo Dalam Angka 2014).

The minimum temperature occurred in February with $22,2^o$ C. Meanwhile the maximum one happened in October with $34,2^o$ C. In 2012, the average air temperature was around 26,3 - $27,6^o$ C.Gorontalo Province has a high relative humidity. The average humidity in 2013 reached 86.5 percent. As for the highest rainfall occurred in May with 307.9 mm, but the highest number of rainy days were in July and December with 24 days. The average wind speed recorded in 2013 at the meteorological station generally evenly for each month, ranged from 1.1 to 2.7 m/sec (Gorontalo Dalam Angka 2014).

According to Indonesia Investment Coordinating Board the Economy structure of Gorontalo Province in 2013 was dominated by agriculture (28%). The biggest contribution at agriculture is corn, followed by sweet potato and cassava. The biggest contribution at trade sector is retail, followed by restaurant and hotel. The main commodities of Gorontalo Province is in plantation sector, namely coconut, cocoa, sugar cane, coffee, sugar palm, clove, cashew, kapok, hazelnut and vanilla. Main commodities in fishery sector are fishery catch and aquaculture. In service sector, the main commodities are nature and culture tourism (Indonesia Investment Coordinating Board 2015).

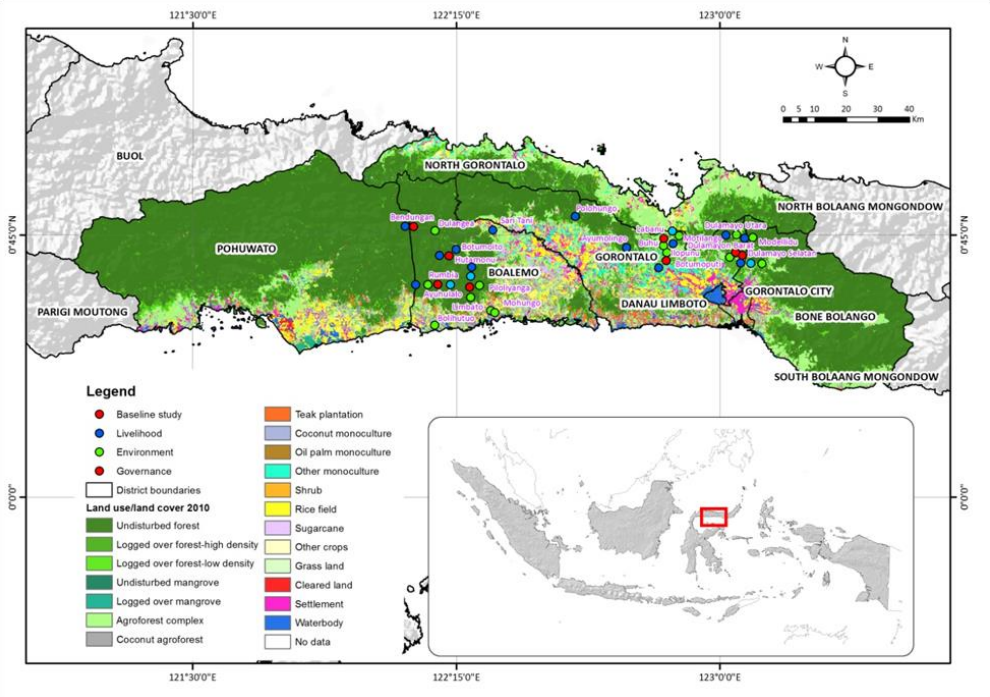


Figure 1. Study site in Gorontalo (Sulawesi)

Livelihood aspects of the people of Gorontalo closely relate to physical conditions and tenure status that lead to different major land-use activities and farming practices in each area, while also considering administrative status. People with different physical conditions and tenure status possessed different livelihood sources and strategies. The typologies were as illustrated in Table 1.

Table 1. Village typologies for FGDs and household surveys in Gorontalo (Sulawesi)

| SiteAgFor ICRAF | **Village typologies** | | | | |
|---|---|---|---|---|---|
| | **Gorontalo District** | | **Boalemo District** | | |
| | **Medium Agroforestry** | **Complex Agroforestry** | **APL-HTR** Area Penggunaan Lain (Forest for Other Landuses) &Hutan Tanaman (Plantation) | **HL-HKM** Hutan Lindung (Protected Forest)& Hutan Kemasyarakatan (Community Forest) | **APL** Area Penggunaan Lain (Forest for Other Landuses) |
| Intregrated Site: 4 villages | **Natural reserve:** Labanu | **Bordering with HTR, Peoples Protected Forest:** Dulamayo Selatan | Rumbia | Ayuhulalo | **-** |
| Main Site: 4 villages | **Limited production forest:** Botumoputi | **Bordering with Protected Forest:** Modelidu | **-** | Hutamonu | Bendungan |
| Total FGDSurvey:8 villages | 2 villages | 2 villages | 1 village | 2 villages | 1 village |
| Total HH survey: 240 Households | **60** | **60** | **30** | **60** | **30** |

## Methodology

Information was collected from 30 household of random stratification per village, from eight sampled villages in Gorontalo 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 and collective/group marketing were also assessed.

# Findings

## 1. Household demography in Gorontalo 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 the houses was relatively similar in Medium agroforestry villages, complex agroforestry, HL-HKm, APL-HTR and APL villages.***

Data capturing the condition of housing is summarized inTable 2–5 and Figure 2–5. The majority of the house floors in all villages were made of cement (70-97%), it was only in Dulamayo Village were made of cement (60%) and ceramics (30%).

The majority of the house walls in the Medium agroforestry villages, Complex agroforestry, HL-HKm, APL-HTR and APL villages were made of cement (50%–83%). It was only in the Bendungan (APL) Village that the house walls were made of wood (40%) and cement (50%).

The majority of the house roofs in the Medium agroforestry villages, Complex agroforestry, HL-HKm, APL-HTR and APL villages were made of iron sheeting (67%–100%).

For lighting, all farmer in HL-HKm villages used the public supply of electricity (97–100%). in the medium agroforestry, in Labanu Village also the dominant used the public supply of electricity (93%), but in Botumoputi Village used the public supply of electricity (57%),generators (27%) and no supply (17%). The APL and APL-HTR villages used public supply (70-83%) and no supply (13-20%). In comparison, in the complex agroforestry village, in DulamayoVillage 60 % of lighting was provided by mini-hydro electricity, the generatorelectricity was used at 30% and no supply 10%, In Modelidu Village 57 % of lighting was provided by generator electricity and no supply electricity was used at 43%.

### Education

***The levels of education of respondents in complex agroforestry, especially in Modelidu Village were the lowest compared with the other respondents. Education levels were relatively similar in themedium agroforestry villages, complex agroforestry, HL-HKm, APL-HTR and APL villages. The level of the education of males was slightly lower than females.***

We found that most of the respondents in Gorontalo Sulawesi, including both husbands and wives, had middle education levels (Table 6 and Figure 6). The mean length of schooling in APL villages was 6.45 years for males and 7.24 years for females. In APL-HTR village, the average length of schooling was 7.23 years for males and 7.70 years for females. In the HL-HKm village it was 5.77-6.55 years for males and 7.13-7.30 years for females. In the complex agroforestry village it was 3.87-6.59 years for males and 5.00-7.14 years for females. In the medium agroforestry village it was 5.57-5.80 years for males and 6.37-6.80 years for females.The highest illiteracy rate was in the Modelidu Village (10% for males and 11% for females).

We also calculated the distribution of the education of respondents' children in Gorontalo Sulawesi (Table 7 and Figure 7). The mean length of schooling in APL villages was 6.23 years for males and 5.69 years for females. In APL-HTR village, the average length of schooling was 5.50 years for males and 7.53 years for females. In the HL-HKm village it was 6.71-6.73 years for males and 8.13-8.27 years for females. In the complex agroforestry village it was 7.27-7.47 years for males and 7.06-8.00 years for females. In the medium agroforestry village it was 6.27-8.33 years for males and 7.00 years for females.

## Household members

***The average family size was similar farmer in the APL, APL-HTR, HL-HKm, complex agroforestry village and medium agroforestry village. The range of the average family size in all villages was 3.5–4.5 members, presented in Table 8 and Figure 8.***

## Age of household head

***The age of the household heads in the APL-HTR (Rumbia) and HL-HKm (Hutamonu) village were the youngest compared with the other villages. Most of the household heads in the APL, HL-HKm, complex agroforestry and medium agroforestry village were similarly aged between 40–60 years.***

Table 9 and Figure 9show that most of the household heads in the APL villages were aged between 40–60 years (73%). Farmers in APL-HTR village were aged below 40 years (57%), while 40% were40–60 years. In the HL-HKm village, most of the household heads were aged between 40–60 years (67%) and below 40 years (15%). In the complex agroforestry village they wereaged between 40–60 years (60%), while 27-30% were aged between 40–60 years.%). In the medium agroforestry village they wereaged between 40–60 years (50-70%), while 23% was over 60 years.

## Age of household members

***The age of the household members of farmer in the APL, APL-HTR, HL-HKm, complex agroforestry village and medium agroforestry village were relatively similar, with the majority aged between 15–60 years (adults).***

Table 10 and Figure 10shows the most age of household members in APL villages, with 66% between 15–60 years (adults) and 30% aged below 15 years (children). In APL-HTR villages, with 64% between 15–60 years (adults) and 35% aged below 15 years (children). In HL-HKMvillages, with 68-75% between 15–60 years (adults) and 31–33% aged below 15 years (children). In the complex-agroforestry village 66-69% were aged 15–60 years (adults), and 30-39% aged below 15 years (children). In the medium agroforestry village, with 61-71% aged between 15–60 years (adults).

## Number of males and females in household

***The number of male and female household members in the APL villages was relatively similar to the APL-HTR village, HL-HKm village, Complex agroforestry village and medium agroforestry village. In all villages, males were slightly higher than females, except for in the HL-HKm (Ayuhulalo) village, where males wereslightly lower than females*.**

Table 11 and Figure 11 shows the number of male and female household members in APL villages was 52% male and 48% female. In the APL-HTR villages it was 53% male and 47% female. In HL-HKm villages was 48-58% male and 42–52% female. In the complex agroforestry villages was 51-58% male and 42–49% female, and in the medium agroforestry village it was 51% male and 49% female.

## Ethnicity of household head

***The ethnicity of the household head was relatively similar among the all villages in the APL, APL-HTR, HL-HKm, complex agroforestry village and medium agroforestry) village were similar, with Gorontalo being the dominant ethnicity. This is presented in Table 12 and Figure 12.***

In the APL, APL-HTR, HL-HKm, complex agroforestry village and medium agroforestry Villages, all of the heads of the household ethnicity were Gorontalo (100%). While in Dulamayo Selatan Village, the household heads ethnicity were Gorontalo (97%) and Kaili (3%).

## 2. History of land use in Gorontalo

### Slope of land

***Most of the slope of the land in the APL, APL-HTR, HL-HKm, complex agroforestry village and medium agroforestry village, with the majority village areas was relatively similar (sideways).***

History of land use in Gorontalo

Table 13 and Figure 13 show that the slope of the land in APL village areas was sideways (64%) and flat (36%). In APL-HTR village areas was sideways (88%) and flat (12%). In HL-HKm village areas, most of the land slope wassideways (82-84%), while 16-18% was flat. The most of the land in complex agroforestry village areas was sideways (92-93%), in medium agroforestry Village areas was sideways (77-79%) and flat (13-19%).

### Location of land

***The location of land use in the APL villages, complex agroforestry and medium agroforestry village was relatively similar, with most of the land in located in private land in the village. Otherwise in APL-HTR village and HL-HKm village, with most of the land in located in state production forest and state protected forest. This is presented in Table 14 and Figure 14.***

In APL Village areas, the most of location of land was private land in the village areas (97%). In APL-HTR village areas the location of land was 62% in state production forest in the village and 37% private land in the village. In HL-HKm village areas, most of the location of land in state protected forest in the village (60-72%) and was private land in the village (26-37 %). In Complex agroforestry village areas, most of the location of land was private land in the village (77-90%) and in the Medium agroforestry village area also in private land in the village (94-95%).

### Walking time from home to the field

***The average walking time from home to the field was relatively different among the APL villageareas, APL-HTR, HL-HKm, Complex agroforestry and Medium agroforestry villages. In the APL village areas, the most of walking time from home to the field was between 16-30 minutes. While the APL-HTR and HL-HKm Village areas, with most of over 60 Minutes and the Complex agroforestry and medium village were <15 Minutes and between 16-30 minute.***

Table 15 and Figure 15show the average walking time from home to the field in APL village areas were ≤ 15 minutes(27%), 16-30 minutes (30%), 31-60 minutes (18%) and>60 Minutes(24%). In APL-HTR village areas were ≤ 15 minutes(13%), 16-30 minutes (30%), 31-60 minutes (18%) and>60 Minutes(39%). However the most of the average walking time from home to the field in HL-HKm village areas were >60 Minutes(37-42%) and 31-60 minutes (25-33%), in Complex agroforestry village areas were ≤ 15 minutes(32-43%) and 16-30 minutes (21-41%) and in Medium agroforestry village areas also were ≤ 15 minutes(28-62%) and 16-30 minutes (29-49%).

## Year of land acquisition

***The distribution of plot holdings by year of land acquisition was relatively similar among APL villageareas, APL-HTR, HL-HKm, Complex agroforestry and Medium agroforestry villages. Most of the plot holdings by year of land acquisition in all villages were obtained after 2000.***

Table 16 and Figure 16 show that in APL, APL-HTR and HL-HKm village areas, most of the plot ownership was obtained in the years after years 2000 (63-85%). In comparison, most of the land in Complex agroforestry and medium agroforestry village areas had 66-78% of plot holdings obtained in the years after 1990.

## Status of land management

***The most of recent status of land management was relatively similar in APL villageareas, APL-HTR, HL-HKm, Complex agroforestry and Medium agroforestry village areas, with the majority of land in all areas owned and self-cultivated.***

Table 17 and Figure 17 show the most recent status of land management in APL village areas, APL-HTR, HL-HKm, Complex agroforestryvillage areas was owned and self-cultivated (63-88%) and owned but not operated (8-28%). However, in Medium agroforestry village areas, the majority were also owned and self-cultivated (63-71%), operating other's (7-11%), owned but not operated (6-9%) and borrowed from others (8-9%).

## Manner of land ownership

***The majority of the manner of land ownership in APL village areas was relatively similar compared withAPL-HTR, HL-HKm, Complex agroforestry and Medium agroforestry village areas. The majority of land ownership in all village areas that had been inherited, purchased and opened forest.***

Table 18 and Figure 18 show that the majority of land ownership in APL village areas was purchased (38%), inherited (32%) and open forest (18%). In APL-HTR village areas 32% of the land was inherited, 31% was open forest and 29% was purchased. Land ownership in HL-HKm village areas was inherited (39-41%), open forest (23-31%) and purchased (25-29%).In Complex agroforestry village was open forest (27-53%), inherited (26-44%), and purchased (14-27%).In Medium agroforestry village areas was inherited (35-38%), purchased (22-33%) and open forest (9-22%). Other manners of land ownership in all areas were very low.

## Source of land

***The distribution of plot holdings by the source from which land was obtained was different in APL village areas, APL-HTR, HL-HKm, Complex agroforestry and Medium agroforestry village areas. The main source of land in the APL villages was the other people and the husband's parents, in the APL-HTR, HL-HKM, and Complex agroforestry were from the secondary forest.***

Table 19 and Figure 19 show the distribution of plot holdings by source from which the land was obtained. In APL village areas, 29% of the plots were from other people and from the husband's parents (26%). In APL-HTR village areas 31% of the plots were from secondary forest, 25% from other people and 21% from the husband's parents. In HL-HKm village areas, in Ayuhulalo Village areas, 34% of the plots were from the husband's parents and 34% from secondary forest, in Hutamonu Village areas, 28% the husband's parents and 23% from other people. In Complex agroforestry village areas, in Modelidu Village areas, 51% from secondary forest, and 16% from the husband's parents, in Dulamayo Selatan Village areas,30% from secondary forest and 22% from secondary forest. In comparison, most of the land in Medium agroforestry areas, in Labanu Village areas, 37% of the plots were from other people and 25% from the husband's parents, in Botumoputi Village areas, 30% from other people and 22% from secondary forest.

## Current land tenure status

***The majority of the current land tenure status in APL Village areas was relatively similar compared withAPL-HTR, HL-HKm, Complex agroforestry and Medium agroforestry village areas.The majority of current land tenure status in all villages was owned by the wife and husband together and the husband.***

Table 20 and Figure 20show current land tenure status in the eight villages. In APL village areas, most of the current land tenure status was owned by the wife and husband (44%) and by the husband (36%).In comparison, most of the current land tenure status in the APL-HTR Village areas was by the wife and husband (50%) and by the husband (29%). In HL-HKm Village areas, most of the current land tenure status was owned by the wife and husband (52%) and by the husband (25-31%). In Complex agroforestry Village areas, most of the current land tenure status was owned by the wife and husband (49-67%) and by the husband (16-31%) and in medium agroforestry Village areas was by the wife and husband (40-44%) and by the husband (21-28%).

## Current land use

***The current land use in the APL villages was different compared with APL-HTR, HL-HKm, Complex agroforestry and Medium agroforestry village areas. The main current land use in APL, APL-HTR, HL-HKm villages were crop fields, in the Complex agroforestry village it was mixed-gardens/agroforest, and in medium agroforestry village it was crop fields and coconut agroforest.***

The main current land use in APL village areas was rubber crop fields (50%) and coconut agroforest (20%), (Table 21 and Figure 21). In comparison, the majority current land use in APL-HTR village areas it was crop fields (35%) and bush fallow (24%). In HL-HKm village in Ayuhulalo Village areas was crop fields (40%) and bush fallow (28%) and in Hutamonu Village areas was crop fields (45%) and coconut agroforest (23%).The main current land use in complex agroforestry village areas were mixed-gardens/agroforest (48-58%) and clove agroforest (30%) in Dulamayo Selatan Village and crop fields (23%) in Modelidu Village. In Medium Agroforestry village in Labanu Village areas was crop fields (33%) and mixed-gardens/agroforest (25%) and in Botumoputi Village areas was coconut agroforest (41%) and crop fields (27%).

## Land use before acquisition

***The land use before acquisition was different in the APL, APL-HTR, HL-HKm, Complex agroforestry and Medium agroforestry village areas. The main land use before acquisition in the APL village was bush fallow and crop fields. In APL-HTR village, HL-HKm and complex agroforestry village areas were relatively similar, being bush fallow and secondary forest. However in the medium agroforestry village the main land use were bush fallow, crop fields and secondary forest.***

Most of the land use before acquisition in APL village areas was bush fallow (36%) and crop fields (35%), (Table 22 and Figure 22). In APL-HTR village areas was bush fallow (36%) and secondary forest (31%). In HL-HKm village areas was bush fallow (38-55%) and secondary forest (17-35%). In comparison, most of the land use before acquisition in complex agroforestry village areas was secondary forest (27-49%), bush fallow (23-27%) and in Dulamayo Selatan Village areas was agroforestry (26%). In medium agroforestry village area was bush fallow (30-40%), crop fields (19-21%) and secondary forest (22%) in Botumoputi Village areas.

## Land use one year after acquisition

***The land use one year after acquisition was different in the APL, APL-HTR, HL-HKm, Complex agroforestry and Medium agroforestry village areas. The main land use one yearafter acquisition in the all village areas were relatively similar, being crop fields. However in the complex agroforestry village the main land use one year after acquisition was agroforestry and crop fields.***

Table 23 and Figure 23 show that the most land use one year after acquisition in APL village areas was crop fields (58%) and bush fallow (20%). The most of land use one year after acquisition in APL-HTR village areas also was crop fields (58%) and bush fallow (21%). In HL-HKm village areas, land use one year after acquisition also was crop fields (49-64%) and bush fallow (16-29%). In medium agroforestry village areas, land use one year after acquisition was crop fields (52-59%) and coconut agroforest (17-25%). In In comparison, most of the landuse one year after acquisition in complex agroforestry areas, in Modelidu village areas, 52% of the plots were crop fields and timber trees (18%) and in Dulamayo Selatan Village areas was mix-agroforestry/agroforestry (35%), clove agroforest (23%) and crop fields (23%).

## Previous land use

***The previous land uses were different in in the APL, APL-HTR, HL-HKm, Complex agroforestry and Medium agroforestry village areas. The main previous land use in the APL, APL-HTR, HL-HKm village areas were relatively similar, being crop fields and bush fallow. However in the complex agroforestry village the main previous land use was crop fields, bush fallow and coconut agroforest. In comparison, the main previous land use in the medium agroforestry village was crop fields and agroforestry.***

Table 24 and Figure 24 show that the most of the previous land use in APL village area wasbush fallow (38%) and crop fields (36%), in APL-HTR village area wascrop fields (39%) and bush fallow (33%). In HL-HKm village area wasbush fallow (35-42%) and crop fields (32-39%). In medium agroforestry village area was crop fields (38-43%) and bush fallow (19-21%). Whereas in Complex agroforestry village areas in Modelidu Village areas, the previous land use was crop fields (38%) and secondary forest (22%) and in Dulamayo Selatan Village areas was agroforestry (24%), clove agroforest (20%), crop fields, bush fallow (16%) and others.

Four type proportions were planted by farmers with different conditions in each village. The average total of trees per hectare in Gorontalo is summarized in Table 25 and Figure 25. In Gorontalo, the entire amount of plot gardens were planted with perennial crops, multipurpose trees (MPTs) such as fruit, timber, and annual crops. However, most of villages were dominated by perennial crops (cacao, coconut, clove and coffee). APL village was dominated by perennial crops (cacao and coconut) about . 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 APL-HTR villages (2.53 ha) was larger than the APL village (1.44 ha), HL-HKm village (1.45 ha), complex agroforestry (1.03) and Medium agroforestry village (1.24 ha). The compositions of land holdings by land-use types were different across the sites (presented inTable 26 andFigure 26).***

In APL villages, the major land use of land holding was bush fallow (1.4 ha) and maize fields (0.51ha). While in the APL-HTR village, the major land use of land holding per household was bush fallow (0.88 ha) and crop fields (0.56ha). In the HL-HKm village, the major land use of land holding per household was crop fields (0.46-0.71ha) and bush fallow (0.23-0.52ha).In the Complex agroforestry village, the major land use of land holding per household was mixed-gardens/agroforestry (0.50-0.58 ha). In Medium agroforestry village, in Labanu Village was Maize fields (0.49ha) and agroforestry (0.37ha) and in Botumoputi Village was coconut agroforest (0.39ha), crop fields and agroforestry (0.19ha).

***The most of the location land holding per household farmers was relatively similar in Rumbia, Ayuhulalo and Hutamonu Village areas. The majority of the location land holding in all village areas was state production forest and protected forest (>60%) and private land (<=40%).***

Table 27 and Figure 27 show that the most of the location of land holding farmers in APL-HTR (Rumbia) Village area wasstate production forest (60%) andprivate land (40%). Whereas in HL-HKm (Ayuhulalo) Village area was state protected forest (63%) andprivate land (38%), in Hutamonu Village areas the location was state protected forest (74%) andprivate land (26%).

The majority of the length of bush fallow cultivation across all villages was less than 5 years (30-100%) and 6–10 years (0-50%), (Table 28 and Figure 28). In the APL village it was less than 5 years (30%) and 6-10 years (40%), in the APL-HTR village, 75% of fallow was less than 5 years and 15% was 6–10 years. In the HL-HKm village areas it was less than 5 years (50-89%) and 6-10 years (5-25%), in the complex agroforestry village, 57-100% of fallow was less than 5 years and 15% was 0-29 years. Whereas in the Medium agroforestry village, 43-50% of fallow was less than 15 years and 43-50 % of fallow was 6-10 years.

The major land use in a number of the villages in Gorontalo was bush fallow. The major reason for not cultivating this land in the APL villages was lack of labor (48%) and lack of capital (20%). In the APL-HTR village were lack of capital (38%) and lack of labor (25%). In HL-HKm village the reasons were a lack of capital (38-45%) and lack of labor (25-36%). In Complex agroforestry village the reasons were a pest and desease (24-32%) and a lack of capital (20-26%) and lack of labor (19-22%). In the Medium agroforestry village, in Labanu Village was 28% of the respondents gave the reason of a pest and desease and 22% cited a lack of labor and a lack of capital, in Botumoputi Village was 29% of the respondents gave the reason of a lack of capital and 24% of the respondents gave the reason of a lack of unproductive land (Table 29 and Figure 29).

## Income

***The average total of income per year per household in the APL villages was lower than in the APL-HTR, HL-HKm, complex agroforestry village and medium agroforestryvillage. The major sources of income for farmers in all villages were also different. For farmers in APL villages it was Maize fields and agriculture wage. In the APL-HTR village it was non agriculture wage and maize fields. In the HL-HKm village it was maize fields and chilli fields and agriculture wage. In Complex agroforestry village it was agroforestry and medium agroforestry village it was coconut agroforest and nonagriculture (wage).***

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 APL villages was lower compared with the other farmers (Table 30 and Figure 30). The majority source of income for farmers in APL villages was maize fields (22%) and agriculture wage (17%). In the APL-HTR village, the majority sources of income were non agriculture wage (24%) and maize fields (13%).In the HL-HKm village, the majority sources of income were maize fields (22-34%), Chili fields (2-18%) and agriculture wage (9-11%). In the Complex agroforestry 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 complex agroforestry village in Modelidu Village was nonagriculture wage (26%) and mixed-gardens/agroforest product (18%) and Dulamayo Selatan Village was mixed-gardens/agroforest product (58%) and nonagriculture wage (15%). The main source of income for the farmers in the Medium agroforestry Villagein Labanu Village was coconut agroforest (15%), agroforestry (13%) and maize fields (11%), in Botumoputi Village was nonagriculture wage (28%) and coconut agroforest (16%).

Table 31 shows that in APL villages the share of income from on-farm/agriculture (70%)was slightly higher than off-farm/non-agriculture (30%). In the APL-HTR village on-farm/agriculture was 68% and off-farm/non-agriculture 31%. In the HL-HKm village the share of income from on-farm/agriculture was slightly higher (83-88%) than off-farm/non-agriculture (12-16%). In the Complex agroforestry village, the share of income from on-farm/agriculture (64-75%) was higher than off-farm/non-agriculture (25-36%), and in the medium agroforestry village, the share of income from on-farm/agriculture (58-80%) was also higher than off-farm/non-agriculture (20-42%).

## Income per capita

***The daily income per capita of farmers in the APL villages was lower than in theAPL-HTR, HL-HKm, complex agroforestry village and medium agroforestryvillage. The daily income per capita of farmers in APL villages was poorer compared with the other farmers, meanwhile farmers in the Complex agroforestry village were richer than the farmers from the other villages. The daily income per capita of farmers in the Complex agroforestry village was almost twice that of the farmers from the APL village.***

The daily income per capita of farmers in Gorontalo Province is presentedin Table 31 and Figure 32. The daily income per capita of farmers in the APL villages was IDR 12 836 (USD 1.1). In the APL-HTR village was IDR 16 962 (USD 1.4)[1], in the HL-HKm village it was 18 315 (USD 1.6), 18 951 (USD 1.6) and in the Complex agroforestry village it was IDR 14 162 (USD 1.2) and IDR 32 639 (USD 2.8) and in Medium agroforestry village it was IDR 17 959 (USD 1.5) and IDR 17 925 (USD 1.5). Meanwhile the average family size ranged from 3.5 to 4.5 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 Gorontalo. 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 2014 was USD $1 = IDR 11 700.

# 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 eight sampled villages in Gorontalo Sulawesi. Household survey result show that in APL villages, 70% of respondents said that there were roles for women in land management. In APL-HTR village, the role of women in land management was as much as 87% of respondents. In the APL-HKm villages, the role of women in land management was as much as 80-93% of respondents. In the Complex agroforestry villages, the role of women in land management was as much as 83-93% of respondents. In the Medium agroforestry villages, the role of women in land management was as much as 80-90% of respondents Overall across all villages, the role of women in land management was much as 70% of respondents (Table 32 and Figure 33).

Table 33 and Figure 34show the role of women in decision making about land activity in Gorontalo Sulawesi. Decision making regarding all activities (such as the types of perennials to be planted, the types of crop to be planted, the time to start planting, planting other plants, applying fertilizer and medicine and marketing agricultural yield), were dominated by men with the women less involved than men.

Table 34, Table 35, Table 36, Figure 35, Figure 36, and Figure 37 depict gender roles in farming system activities in Gorontalo Sulawesi. The involvement of women in farming system activities was quite prominent, with women having roles in more than 60% of the activities in all surveyed villages. In all villages and in all activities (land preparation, planting and crop care) were dominated by men, with the involvement of women in these activities lower than men in general.

The three main activities were maize fields, mixed-gardens (agroforestry), timber or fruit based agroforest (coconut agroforest, clove agroforest)and others. 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 (maize fields, mixed-gardens (agroforestry), timber or fruit based agroforest (coconut agroforest, clove agroforest) and others) were dominated by men. The involvements of women in the various types of land activities were lower than men's (Table 37 and Figure 38).

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 Gorontalo Sulawesi can be seen inTable 38. For maize field activities, it was in APL, APL-HTR, HL-HKm, complex agroforestry and medium agroforestry villages, that

land was used for maize fields, only in Dulamayo Selatan village not used maize field. 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 (64-84%).

In crop field activities, the proportion of female involvement (0-44%) was lower than male for all labour uses; it was only in Hutamonu and Dulamayo Selatan that female involvement (44%) was almost equal to male. Labour use from the family was also dominated by men (55–100%), apart from Botumoputi which had 45% female involvement in this activity.

In coconut agroforest activities, the proportion of female involvement (7-46%) was lower than male for all labour uses. Labour use from the family wasalso dominated by men, at 54-93% in all villages.

For cacao agroforest activities, it was only in APL, APL-HTR, HL-HKm that land was used for maize fields. The proportion of female involvement (15-77%) was lower than male for all labour uses. Only in Hutamonu village that female involvement (77%) was higher than male. Labour use from the family was also dominated by male (84-91%), only in Hutamonu village that female involvement (68%) was higher than male.

In mixed-garden (agroforestry) activities, the proportion of female involvement (8-41%) was lower than male for all labour uses. Labour use from the family was also dominated by men, at 63-100% in all villages.

In clove agroforest activity, the proportion of female involvement (16–20%) was very low compared with men for all labour use. Labour uses from family were also dominated by men (74-100%).

In timber activity, the proportions of female involvement (9-50%) were lower than male for all labour uses; it was only in Dulamayo Selatan that female involvement (50%) was equal to male. Labour use from the family was also dominated by male (50-90%), only in Dulamayo Selatan that female involvement (50%) was equal to male.

## Collective/group marketing in Gorontalo Sulawesi

Information about collective/group marketing was collected from 30 households per village, from 30 respondents from eight sampled villages in Gorontalo Sulawesi. In APL villages, 23% of respondents had heard of the term 'group marketing', while in the APL-HTR village, 17% of respondents had heard of the term. In the HL-HKm village 17-20% of respondents had heard of the term 'group marketing', in the complex agroforestry village 17-37% of respondents had heard of the term 'group marketing',whereas in the medium agroforestry village, only 13-17% of respondents had heard of the term (Table 39 and Figure 39).

In Gorontalo Sulawesi, more than 80% of the respondents from all villages were interested in learning more about group marketing(Table 40 and Figure 40). In APL villages, 87% of respondents was interested to learn more about group marketing, and in the APL-HTR village, 97% of respondents was interested. In the HL-HKm village 67-80% of respondents were interested to learn more about group marketing, in complex agroforestry village 87-97% of respondents was interested to learn more about group marketing, and in the medium agroforestry village 87-93% of respondents was interested.

However, 43% of the respondents in the APL village were not interested to market together as a group (Table 41 and Figure 41). In the APL-HTR village, HL-HKm village, complex agroforestry village and medium agroforestry in Botumoputi village, 50–63% of the respondents were also not interested to market together as a group. In comparison in the APL-HTR village and medium agroforestry in Labanu village, 60-67% of the respondents were interested to market together as a group.

More than 93% of the respondents in all villages were interested in forming small-scale enterprises (Table 42 andFigure 42). Most of the respondents in APL villages, APL-HTR village, HL-HKm village, complex agroforestry village and medium agroforestry villageinterested in forming small-scale enterprises, it were 93–100% of respondents.

Moreover, all respondents in the APL villages, APL-HTR village, HL-HKm village, complex agroforestry village and medium agroforestry village were interested in learning about how to form enterprises (100%), (Table 43 andFigure 43).

# Appendix

## 1. Household demography in Gorontalo Sulawesi

Table 2. House condition by house floor in Gorontalo

| Village Typologies | Villages | n | House floor | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Dirt | | Wood | | Cement | | Ceramics | |
| | | | n | % | n | % | n | % | n | % |
| APL | Bendungan | 30 | 1 | 3 | 3 | 10 | 23 | 77 | 3 | 10 |
| APL-HTR | Rumbia | 30 | 1 | 3 | 0 | 0 | 24 | 80 | 5 | 17 |
| HL-HKM | Ayuhulalo | 30 | 0 | 0 | 0 | 0 | 23 | 77 | 7 | 23 |
| | Hutamonu | 30 | 1 | 3 | 1 | 3 | 24 | 80 | 4 | 13 |
| Complex agroforestry | Modelidu | 30 | 1 | 3 | 0 | 0 | 29 | 97 | 0 | 0 |
| | Dulamayo | 30 | 0 | 0 | 3 | 10 | 18 | 60 | 9 | 30 |
| Medium agroforestry | Labanu | 30 | 1 | 3 | 1 | 3 | 21 | 70 | 7 | 23 |
| | Botumoputi | 30 | 0 | 0 | 0 | 0 | 23 | 77 | 7 | 23 |

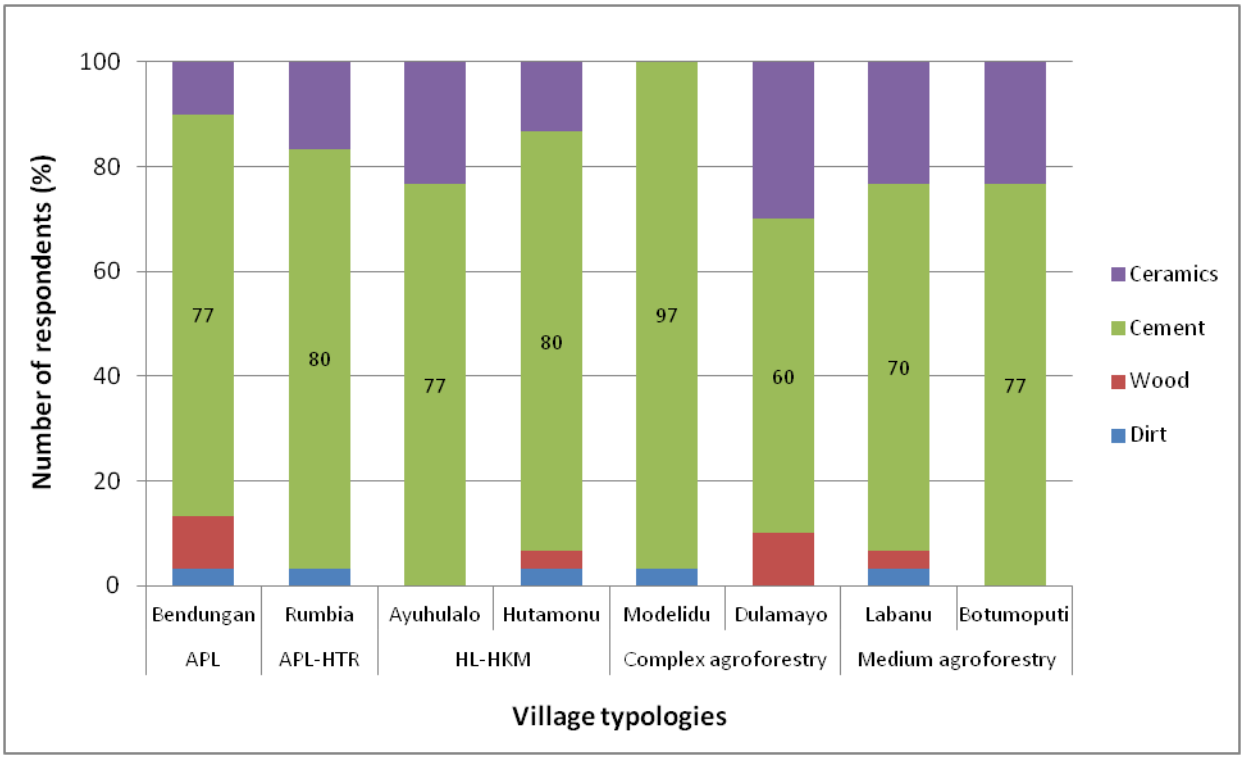


Figure 2. House condition by house floor in Gorontalo

Table 3. House condition by house wall in Gorontalo

| Village Typologies | Villages | n | House wall | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Bamboo | | Wood | | Cement | |
| | | | n | % | n | % | n | % |
| APL | Bendungan | 30 | 3 | 10 | 12 | 40 | 15 | 50 |
| APL-HTR | Rumbia | 30 | 3 | 10 | 5 | 17 | 22 | 73 |
| HL-HKM | Ayuhulalo | 30 | 0 | 0 | 5 | 17 | 25 | 83 |
| | Hutamonu | 30 | 3 | 10 | 5 | 17 | 22 | 73 |
| Complex agroforestry | Modelidu | 30 | 5 | 17 | 10 | 33 | 15 | 50 |
| | Dulamayo | 30 | 0 | 0 | 11 | 37 | 19 | 63 |
| Medium agroforestry | Labanu | 30 | 3 | 10 | 7 | 23 | 20 | 67 |
| | Botumoputi | 30 | 2 | 7 | 6 | 20 | 22 | 73 |

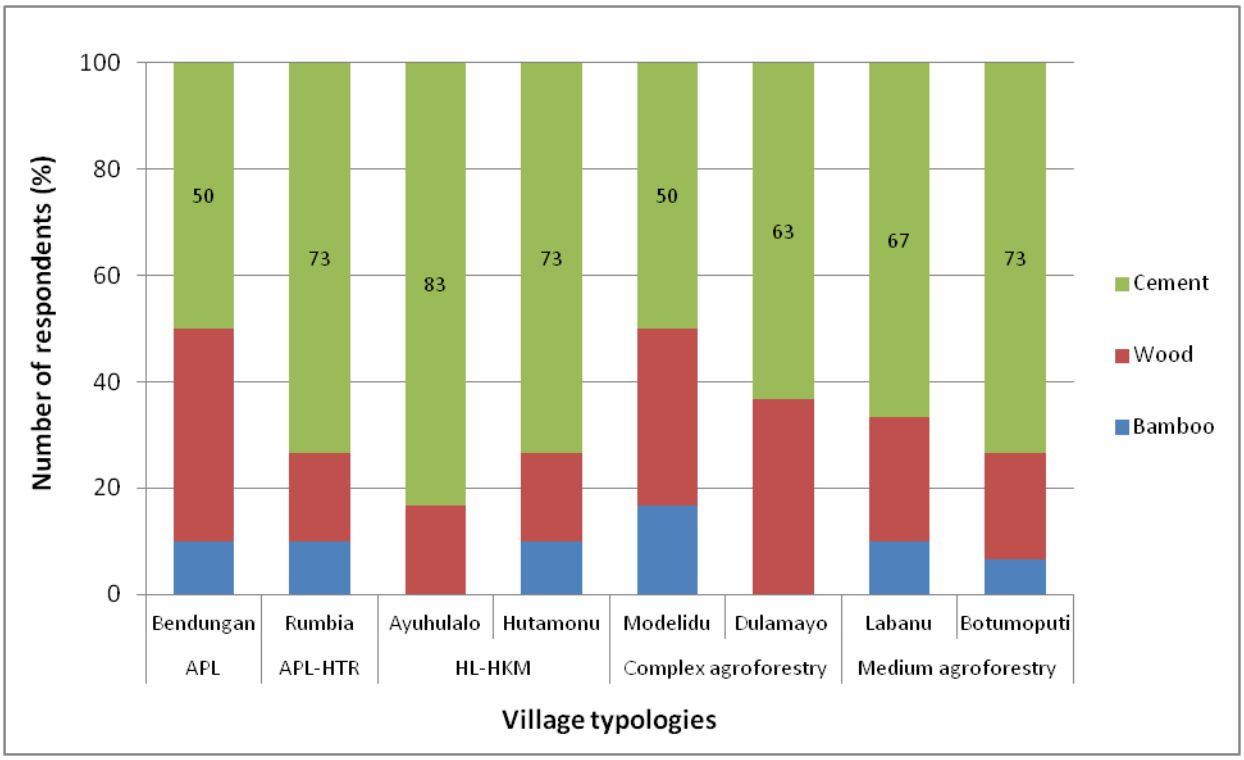


Figure 3. House condition by house wall in Gorontalo

Table 4. House condition by house roof in Gorontalo

| Village Typologies | Villages | n | House roof | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Straw | | Iron sheeting | | Tiles | | Palm | |
| | | | n | % | n | % | n | % | n | % |
| APL | Bendungan | 30 | 6 | 20 | 20 | 67 | 0 | 0 | 4 | 13 |
| APL-HTR | Rumbia | 30 | 1 | 3 | 28 | 93 | 0 | 0 | 1 | 3 |
| HL-HKM | Ayuhulalo | 30 | 0 | 0 | 30 | 100 | 0 | 0 | 0 | 0 |
| | Hutamonu | 30 | 2 | 7 | 26 | 87 | 1 | 3 | 1 | 3 |
| Complex agroforestry | Modelidu | 30 | 1 | 3 | 29 | 97 | 0 | 0 | 0 | 0 |
| | Dulamayo | 30 | 0 | 0 | 28 | 93 | 2 | 7 | 0 | 0 |
| Medium agroforestry | Labanu | 30 | 2 | 7 | 27 | 90 | 1 | 3 | 0 | 0 |
| | Botumoputi | 30 | 1 | 3 | 29 | 97 | 0 | 0 | 0 | 0 |

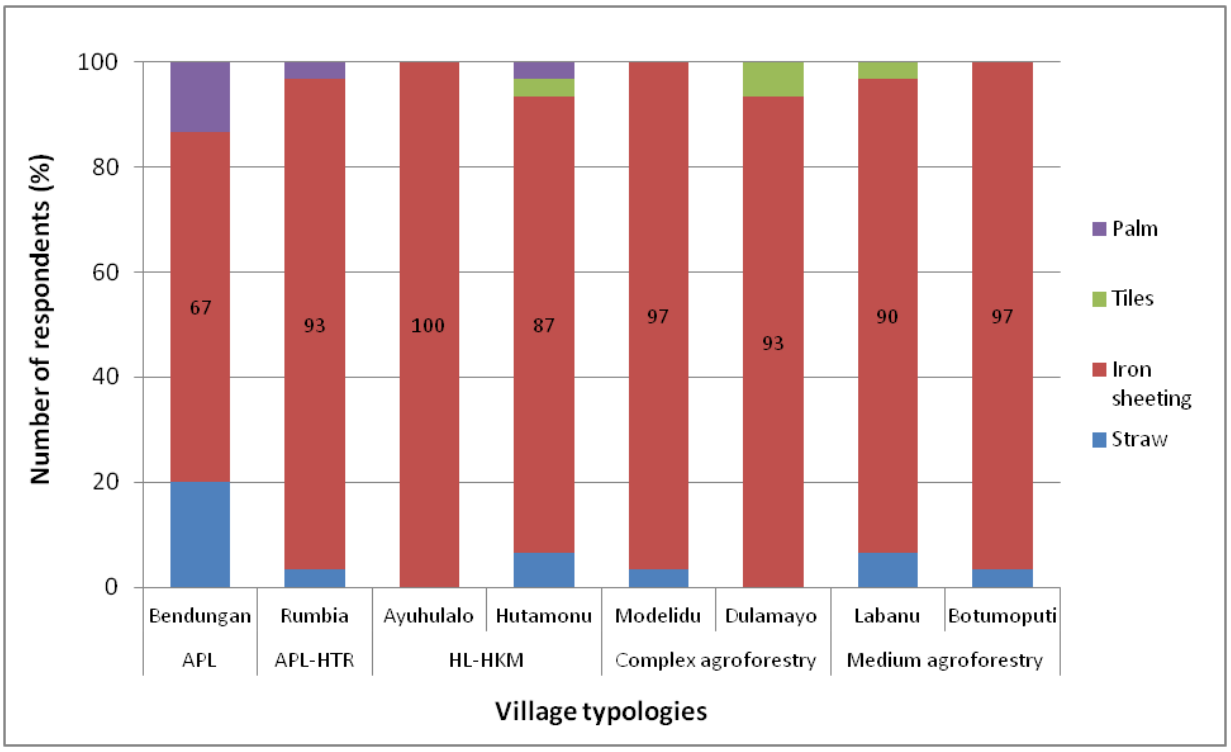


Figure 4. House condition by house roof in Gorontalo

Table 5. House condition by house lighting in Gorontalo

| Village typologies | Villages | n | House lighting | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | No supply | | Generator | | Public supply | | Mini-hydro | |
| | | | n | % | n | % | n | % | n | % |
| APL | Bendungan | 30 | 6 | 20 | 3 | 10 | 21 | 70 | 0 | 0 |
| APL-HTR | Rumbia | 30 | 4 | 13 | 1 | 3 | 25 | 83 | 0 | 0 |
| HL-HKM | Ayuhulalo | 30 | 0 | 0 | 0 | 0 | 30 | 100 | 0 | 0 |
| | Hutamonu | 30 | 1 | 3 | 0 | 0 | 29 | 97 | 0 | 0 |
| Complex agroforestry | Modelidu | 30 | 13 | 43 | 17 | 57 | 0 | 0 | 0 | 0 |
| | Dulamayo | 30 | 3 | 10 | 9 | 30 | 0 | 0 | 18 | 60 |
| Medium agroforestry | Labanu | 30 | 2 | 7 | 0 | 0 | 28 | 93 | 0 | 0 |
| | Botumoputi | 30 | 5 | 17 | 8 | 27 | 17 | 57 | 0 | 0 |

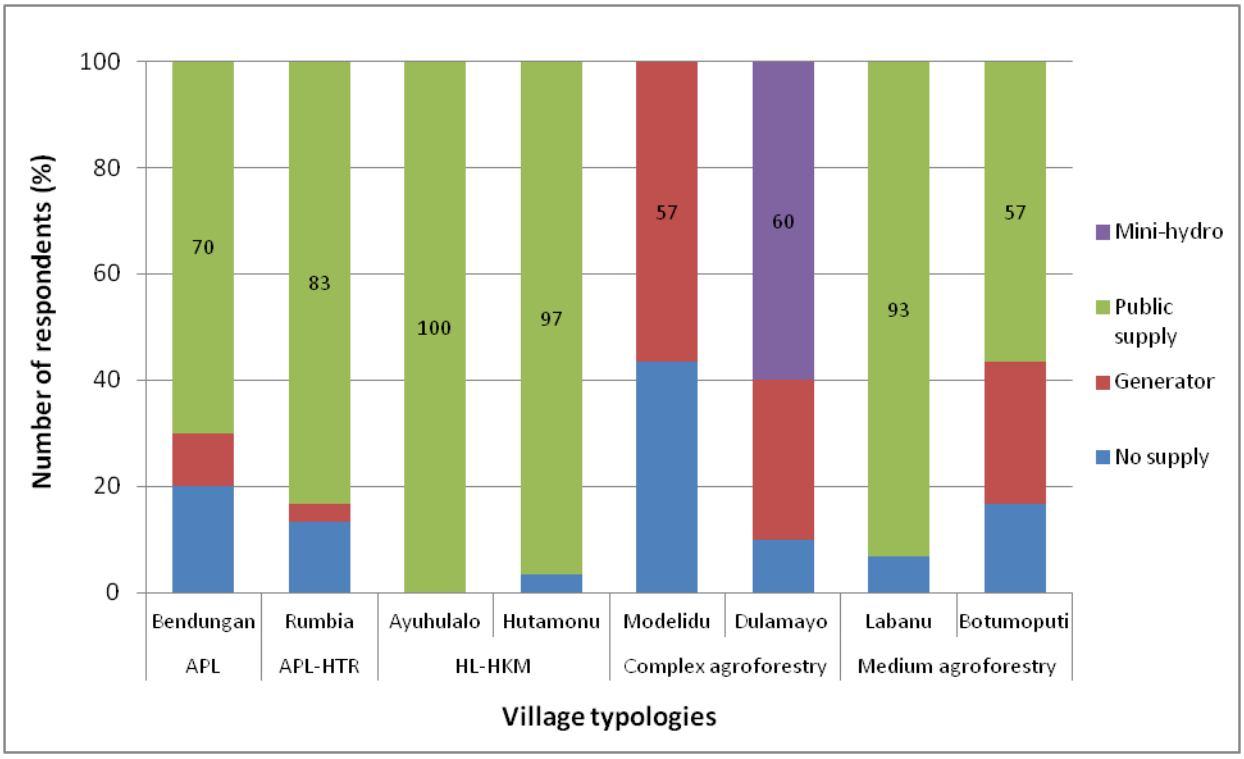


Figure 5. House condition by house lighting in Gorontalo

Table 6. Distribution of population by years of schooling in Gorontalo

| Village Typologies | Village | n | Years of schooling | | | | | | | | | | Mean Years of Schooling |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Illiteracy | | Primary School | | Junior High School | | Senior High School | | Pass Senior High School | | |
| | | | n | % | n | % | n | % | n | % | n | % | |
| APL | **Bendungan** | | | | | | | | | | | | |
| | Male | 29 | 0 | 0 | 24 | 83 | 3 | 10 | 2 | 7 | 0 | 0 | 6.45 |
| | Female | 29 | 0 | 0 | 18 | 62 | 7 | 24 | 4 | 14 | 0 | 0 | 7.24 |
| APL-HTR | **Rumbia** | | | | | | | | | | | | |
| | Male | 30 | 0 | 0 | 20 | 67 | 4 | 13 | 4 | 13 | 2 | 7 | 7.23 |
| | Female | 30 | 0 | 0 | 18 | 60 | 7 | 23 | 4 | 13 | 1 | 3 | 7.70 |
| HL-HKM | **Ayuhulalo** | | | | | | | | | | | | |
| | Male | 30 | 0 | 0 | 25 | 83 | 4 | 13 | 1 | 3 | 0 | 0 | 5.77 |
| | Female | 30 | 0 | 0 | 21 | 70 | 5 | 17 | 3 | 10 | 1 | 3 | 7.13 |
| | **Hutamonu** | | | | | | | | | | | | |
| | Male | 29 | 1 | 3 | 19 | 66 | 4 | 14 | 5 | 17 | 0 | 0 | 6.55 |
| | Female | 27 | 0 | 0 | 16 | 59 | 8 | 30 | 3 | 11 | 0 | 0 | 7.30 |
| Complex agroforestry | **Modelidu** | | | | | | | | | | | | |
| | Male | 30 | 3 | 10 | 26 | 87 | 1 | 3 | 0 | 0 | 0 | 0 | 3.87 |
| | Female | 28 | 3 | 11 | 21 | 75 | 3 | 11 | 0 | 0 | 1 | 4 | 5.00 |
| | **Dulamayo** | | | | | | | | | | | | |
| | Male | 29 | 1 | 3 | 19 | 66 | 3 | 10 | 6 | 21 | 0 | 0 | 6.59 |
| | Female | 28 | 0 | 0 | 18 | 64 | 6 | 21 | 4 | 14 | 0 | 0 | 7.14 |
| Medium agroforestry | **Labanu** | | | | | | | | | | | | |
| | Male | 30 | 2 | 7 | 24 | 80 | 2 | 7 | 1 | 3 | 1 | 3 | 5.80 |
| | Female | 30 | 1 | 3 | 21 | 70 | 2 | 7 | 5 | 17 | 1 | 3 | 6.80 |
| | **Botumoputi** | | | | | | | | | | | | |
| | Male | 30 | 2 | 7 | 22 | 73 | 5 | 17 | 1 | 3 | 0 | 0 | 5.57 |
| | Female | 30 | 2 | 7 | 22 | 73 | 3 | 10 | 3 | 10 | 0 | 0 | 6.37 |

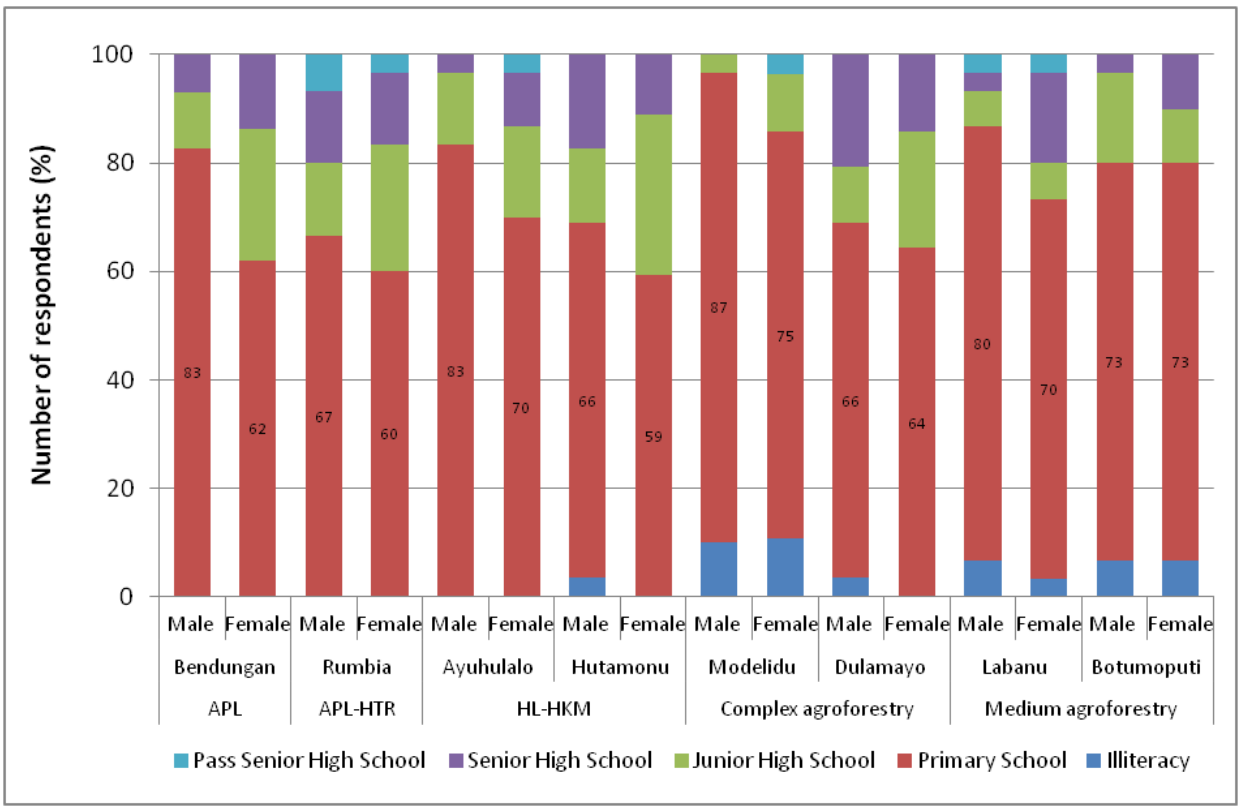


Figure 6. Distribution of population by years of schooling in Gorontalo

Table 7. Distribution of child population by years of schooling in Gorontalo

| Village Typologies | Village | n | Years of schooling of children | | | | | | | | | | Mean Years of Schooling |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Illiteracy | | Primary School | | Junior High School | | Senior High School | | Pass Senior High School | | |
| | | | n | % | n | % | n | % | n | % | n | % | |
| APL | **Bendungan** | | | | | | | | | | | | |
| | Male | 31 | 0 | 0 | 18 | 58 | 6 | 19 | 5 | 16 | 2 | 6 | 6.23 |
| | Female | 13 | 0 | 0 | 8 | 62 | 3 | 23 | 2 | 15 | 0 | 0 | 5.69 |
| APL-HTR | **Rumbia** | | | | | | | | | | | | |
| | Male | 26 | 0 | 0 | 18 | 69 | 4 | 15 | 2 | 8 | 2 | 8 | 5.50 |
| | Female | 19 | 0 | 0 | 7 | 37 | 7 | 37 | 5 | 26 | 0 | 0 | 7.53 |
| HL-HKM | **Ayuhulalo** | | | | | | | | | | | | |
| | Male | 31 | 1 | 3 | 18 | 58 | 3 | 10 | 6 | 19 | 3 | 10 | 6.71 |
| | Female | 33 | 0 | 0 | 13 | 39 | 7 | 21 | 8 | 24 | 5 | 15 | 8.27 |
| | **Hutamonu** | | | | | | | | | | | | |
| | Male | 30 | 0 | 0 | 17 | 57 | 5 | 17 | 7 | 23 | 1 | 3 | 6.73 |
| | Female | 23 | 0 | 0 | 10 | 43 | 4 | 17 | 8 | 35 | 1 | 4 | 8.13 |
| Complex agroforestry | **Modelidu** | | | | | | | | | | | | |
| | Male | 30 | 1 | 3 | 14 | 47 | 6 | 20 | 7 | 23 | 2 | 7 | 7.27 |
| | Female | 32 | 0 | 0 | 15 | 47 | 10 | 31 | 4 | 13 | 3 | 9 | 7.06 |
| | **Dulamayo** | | | | | | | | | | | | |
| | Male | 32 | 0 | 0 | 15 | 47 | 8 | 25 | 6 | 19 | 3 | 9 | 7.47 |
| | Female | 17 | 0 | 0 | 7 | 41 | 1 | 6 | 8 | 47 | 1 | 6 | 8.00 |
| Medium agroforestry | **Labanu** | | | | | | | | | | | | |
| | Male | 26 | 1 | 4 | 17 | 65 | 2 | 8 | 4 | 15 | 2 | 8 | 6.27 |
| | Female | 19 | 0 | 0 | 10 | 53 | 5 | 26 | 3 | 16 | 1 | 5 | 7.00 |
| | **Botumoputi** | | | | | | | | | | | | |
| | Male | 18 | 0 | 0 | 8 | 44 | 3 | 17 | 5 | 28 | 2 | 11 | 8.33 |
| | Female | 14 | 0 | 0 | 6 | 43 | 7 | 50 | 1 | 7 | 0 | 0 | 7.00 |

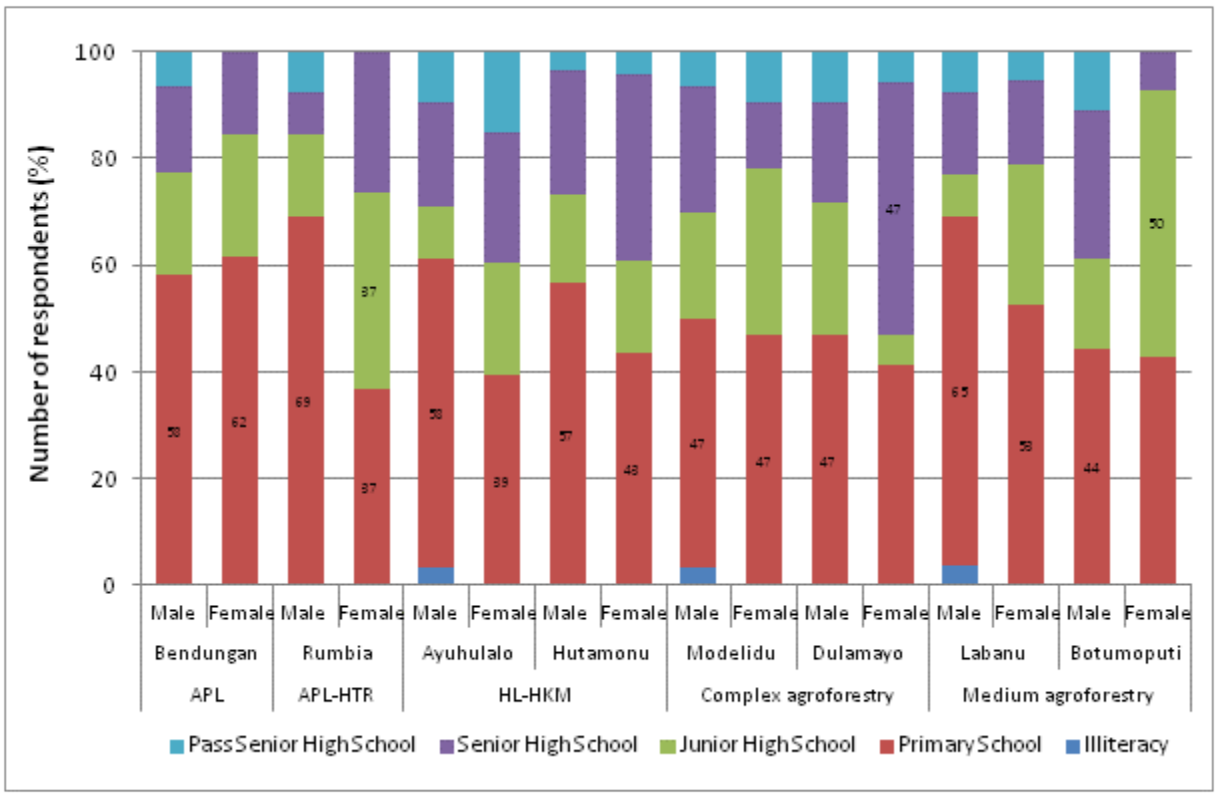


Figure 7. Distribution of child population by years of schooling in Gorontalo

Table 8. Average number of household members in Gorontalo

| Village typologies | Villages | Average number of household members |
|---|---|---|
| APL | Bendungan | 4.0 |
| APL-HTR | Rumbia | 4.2 |
| HL-HKM | Ayuhulalo | 4.3 |
| | Hutamonu | 3.7 |
| Complex agroforestry | Modelidu | 4.5 |
| | Dulamayo | 3.8 |
| Medium agroforestry | Labanu | 4.1 |
| | Botumoputi | 3.5 |

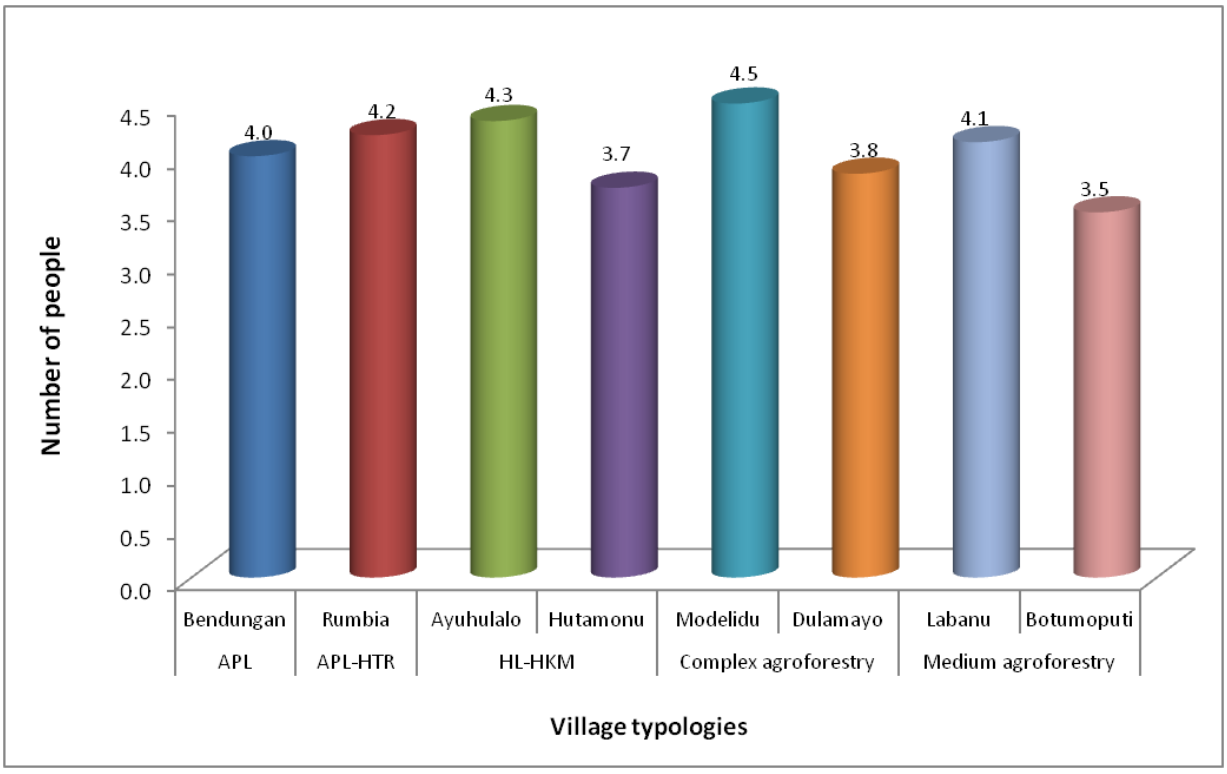


Figure 8. Average number of household members in Gorontalo

Table 9. Number of household head age in Gorontalo

| Village typologies | Villages | n | Number of household head age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | < 40 | | 40 - 60 | | > 60 | |
| | | | n | % | n | % | n | % |
| APL | Bendungan | 30 | 5 | 17 | 22 | 73 | 3 | 10 |
| APL-HTR | Rumbia | 30 | 17 | 57 | 12 | 40 | 1 | 3 |
| HL-HKM | Ayuhulalo | 30 | 9 | 30 | 20 | 67 | 1 | 3 |
| | Hutamonu | 30 | 15 | 50 | 13 | 43 | 2 | 7 |
| Complex agroforestry | Modelidu | 30 | 9 | 30 | 18 | 60 | 3 | 10 |
| | Dulamayo | 30 | 8 | 27 | 18 | 60 | 4 | 13 |
| Medium agroforestry | Labanu | 30 | 8 | 27 | 15 | 50 | 7 | 23 |
| | Botumoputi | 30 | 2 | 7 | 21 | 70 | 7 | 23 |

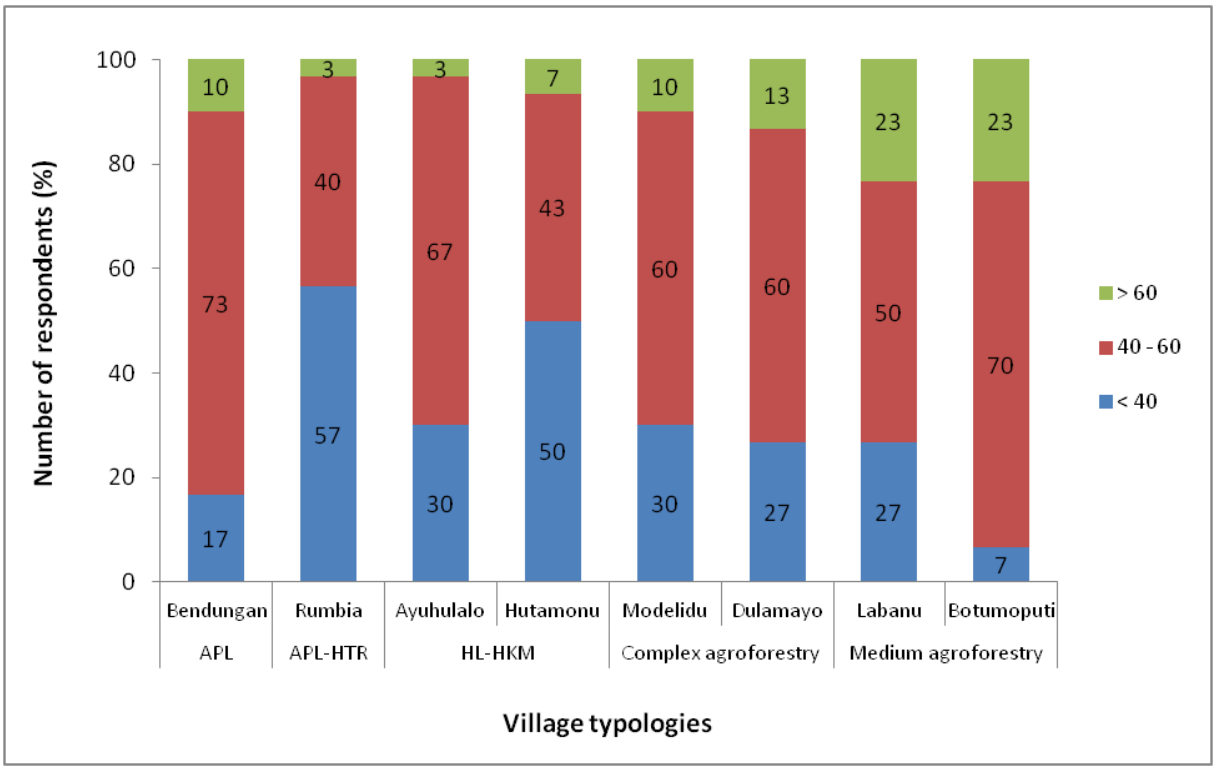


Figure 9. Number of household head age in Gorontalo

Table 10. Number of household members' age in Gorontalo

| Village typologies | Villages | n | Number of household members' age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Children (<15) | | Adults (15-60) | | Elders (>60) | |
| | | | n | % | n | % | n | % |
| APL | Bendungan | 120 | 36 | 30 | 79 | 66 | 5 | 4 |
| APL-HTR | Rumbia | 126 | 44 | 35 | 81 | 64 | 1 | 1 |
| HL-HKM | Ayuhulalo | 130 | 31 | 24 | 98 | 75 | 1 | 1 |
| | Hutamonu | 111 | 33 | 30 | 76 | 68 | 2 | 2 |
| Complex agroforestry | Modelidu | 135 | 39 | 29 | 89 | 66 | 7 | 5 |
| | Dulamayo | 115 | 30 | 26 | 79 | 69 | 6 | 5 |
| Medium agroforestry | Labanu | 124 | 33 | 27 | 76 | 61 | 15 | 12 |
| | Botumoputi | 104 | 18 | 17 | 74 | 71 | 12 | 12 |

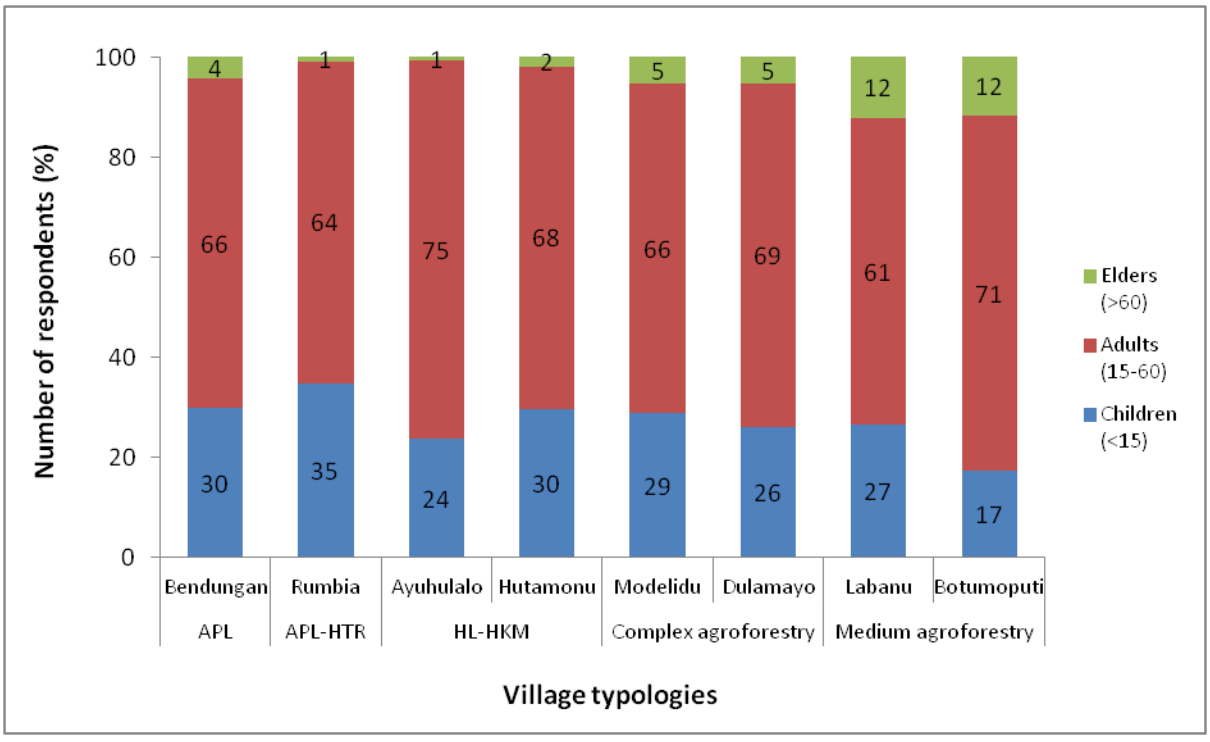


Figure 10. Number of household members' age in Gorontalo

Table 11. Number of male and female in households in Gorontalo

| Village typologies | Villages | n | Number of male and female in household | | | |
|---|---|---|---|---|---|---|
| | | | Male | | Female | |
| | | | n | % | n | % |
| APL | Bendungan | 120 | 63 | 52 | 57 | 48 |
| APL-HTR | Rumbia | 126 | 67 | 53 | 59 | 47 |
| HL-HKM | Ayuhulalo | 130 | 62 | 48 | 68 | 52 |
| | Hutamonu | 111 | 64 | 58 | 47 | 42 |
| Complex agroforestry | Modelidu | 135 | 69 | 51 | 66 | 49 |
| | Dulamayo | 115 | 67 | 58 | 48 | 42 |
| Medium agroforestry | Labanu | 124 | 63 | 51 | 61 | 49 |
| | Botumoputi | 104 | 53 | 51 | 51 | 49 |

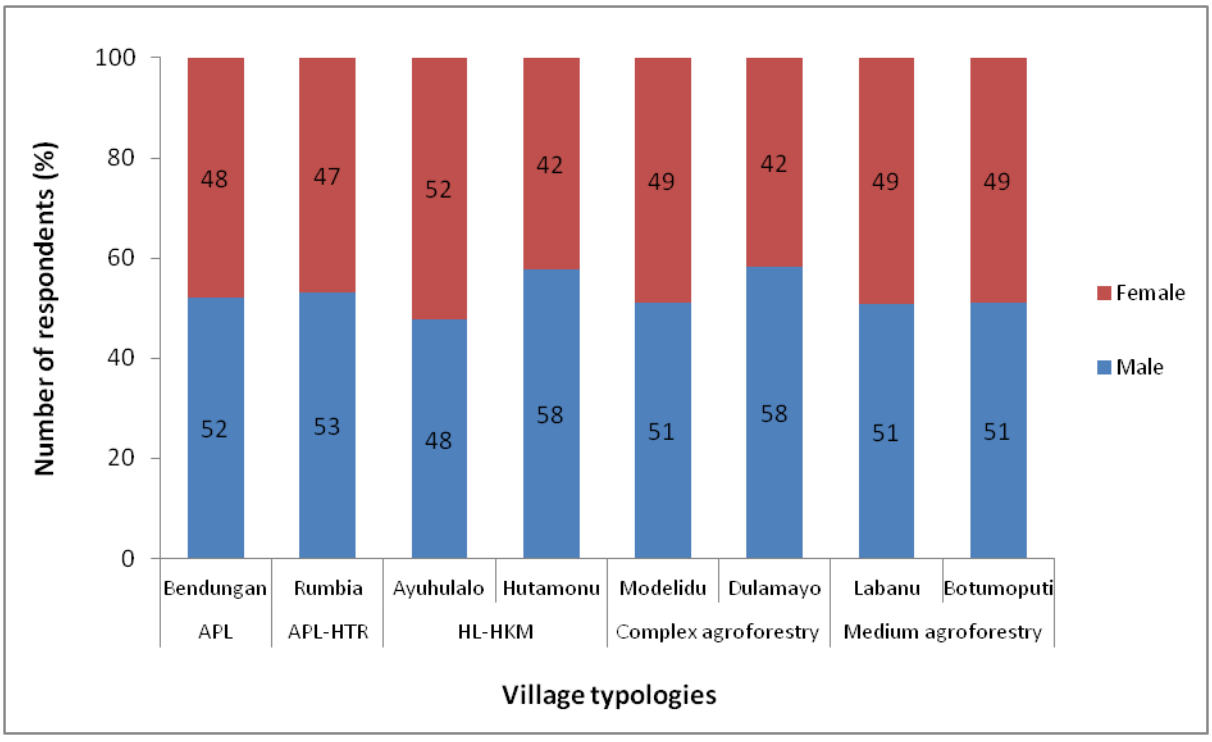


Figure 11. Number of male and female in households in Gorontalo

Table 12. Ethnicity of household head in Gorontalo

| Village typologies | Villages | n | Ethnicity of household head | | | |
|---|---|---|---|---|---|---|
| | | | Gorontalo | | Kaili | |
| | | | n | % | n | % |
| APL | Bendungan | 30 | 30 | 100 | 0 | 0 |
| APL-HTR | Rumbia | 30 | 30 | 100 | 0 | 0 |
| HL-HKM | Ayuhulalo | 30 | 30 | 100 | 0 | 0 |
| | Hutamonu | 30 | 30 | 100 | 0 | 0 |
| Complex agroforestry | Modelidu | 30 | 30 | 100 | 0 | 0 |
| | Dulamayo | 30 | 29 | 97 | 1 | 3 |
| Medium agroforestry | Labanu | 30 | 30 | 100 | 0 | 0 |
| | Botumoputi | 30 | 30 | 100 | 0 | 0 |

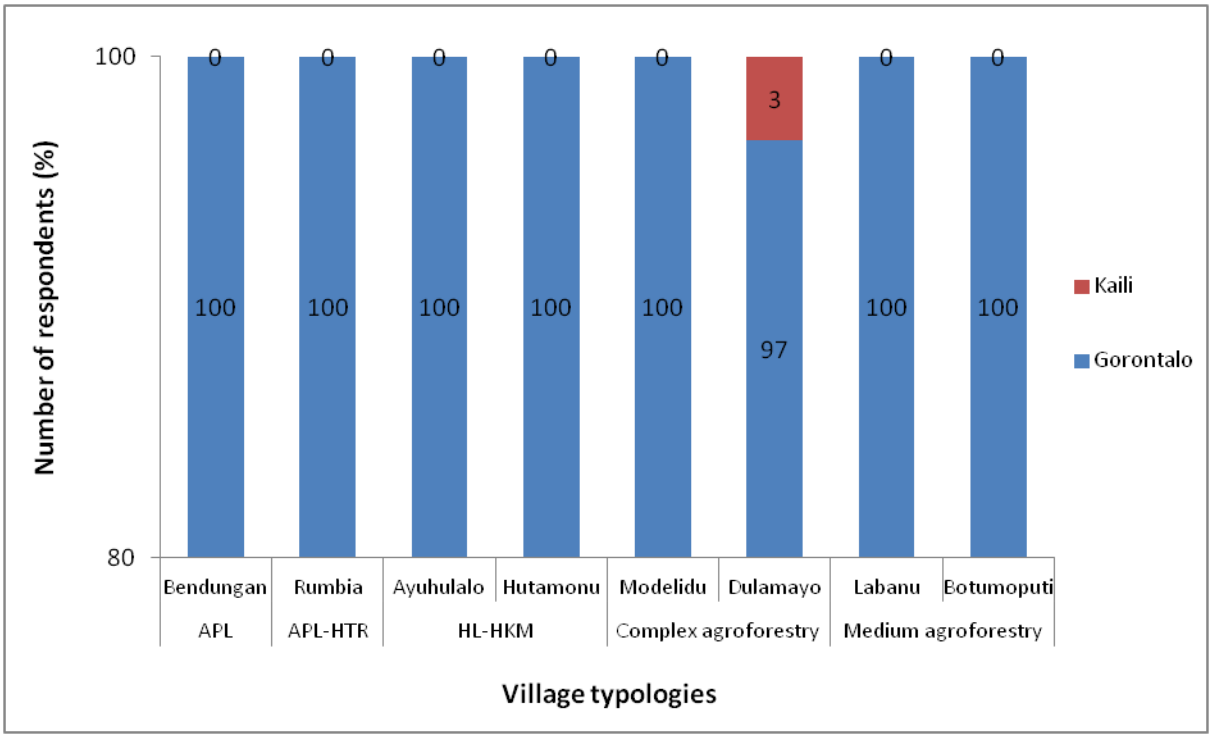


Figure 12. Ethnicity of household head in Gorontalo

## 2. History of land use in Gorontalo

Table 13. Slope of land in Southeast Sulawesi

| Village typologies | Villages | n | Slope of land | | | |
|---|---|---|---|---|---|---|
| | | | Flat | | Sideways | |
| | | | n | % | n | % |
| APL | Bendungan | 66 | 24 | 36 | 42 | 64 |
| APL-HTR | Rumbia | 84 | 10 | 12 | 74 | 88 |
| HL-HKM | Ayuhulalo | 68 | 12 | 18 | 56 | 82 |
| | Hutamonu | 69 | 11 | 16 | 58 | 84 |
| Complex agroforestry | Modelidu | 73 | 5 | 7 | 68 | 93 |
| | Dulamayo | 86 | 7 | 8 | 79 | 92 |
| Medium agroforestry | Labanu | 81 | 19 | 23 | 62 | 77 |
| | Botumoputi | 63 | 13 | 21 | 50 | 79 |

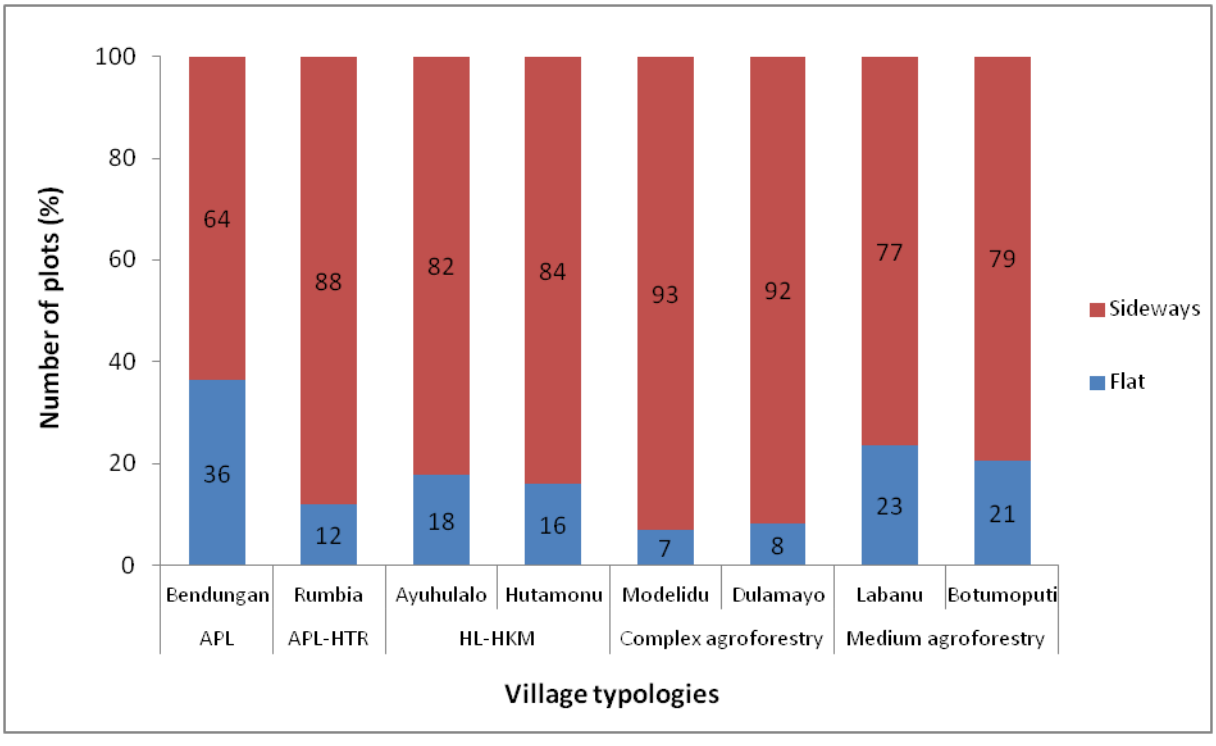


Figure 13. Slope of land in Southeast Sulawesi

Table 14. Location of land in Gorontalo

| Village typologies | Villages | n | Location of land | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Private land in the village | | Private land outside the village | | State protected forest | | State production forest | |
| | | | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 64 | 97 | 0 | 0 | 2 | 3 | 0 | 0 |
| APL-HTR | Rumbia | 84 | 31 | 37 | 1 | 1 | 0 | 0 | 52 | 62 |
| HL-HKM | Ayuhulalo | 68 | 25 | 37 | 2 | 3 | 41 | 60 | 0 | 0 |
| | Hutamonu | 69 | 18 | 26 | 1 | 1 | 50 | 72 | 0 | 0 |
| Complex agroforestry | Modelidu | 73 | 66 | 90 | 7 | 10 | 0 | 0 | 0 | 0 |
| | Dulamayo | 86 | 66 | 77 | 15 | 17 | 5 | 6 | 0 | 0 |
| Medium agroforestry | Labanu | 81 | 77 | 95 | 1 | 1 | 3 | 4 | 0 | 0 |
| | Botumoputi | 63 | 59 | 94 | 2 | 3 | 2 | 3 | 0 | 0 |

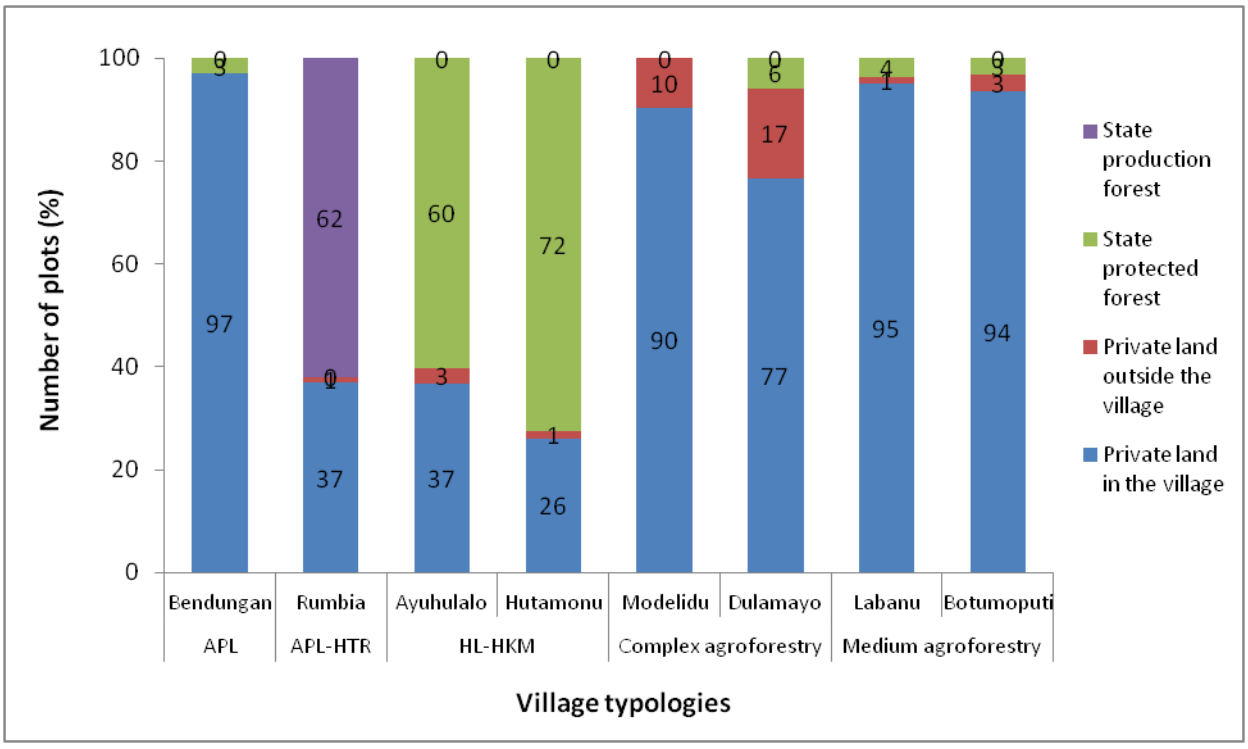


Figure 14. Location of land in Gorontalo

Table 15. Walking time from home to the field in Gorontalo

| 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 | % |
| APL | Bendungan | 66 | 18 | 27 | 20 | 30 | 12 | 18 | 16 | 24 |
| APL-HTR | Rumbia | 84 | 11 | 13 | 25 | 30 | 15 | 18 | 33 | 39 |
| HL-HKM | Ayuhulalo | 68 | 14 | 21 | 12 | 18 | 17 | 25 | 25 | 37 |
| | Hutamonu | 69 | 10 | 14 | 7 | 10 | 23 | 33 | 29 | 42 |
| Complex agroforestry | Modelidu | 73 | 23 | 32 | 30 | 41 | 15 | 21 | 5 | 7 |
| | Dulamayo | 86 | 37 | 43 | 18 | 21 | 18 | 21 | 13 | 15 |
| Medium agroforestry | Labanu | 81 | 23 | 28 | 40 | 49 | 16 | 20 | 2 | 2 |
| | Botumoputi | 63 | 39 | 62 | 18 | 29 | 4 | 6 | 2 | 3 |

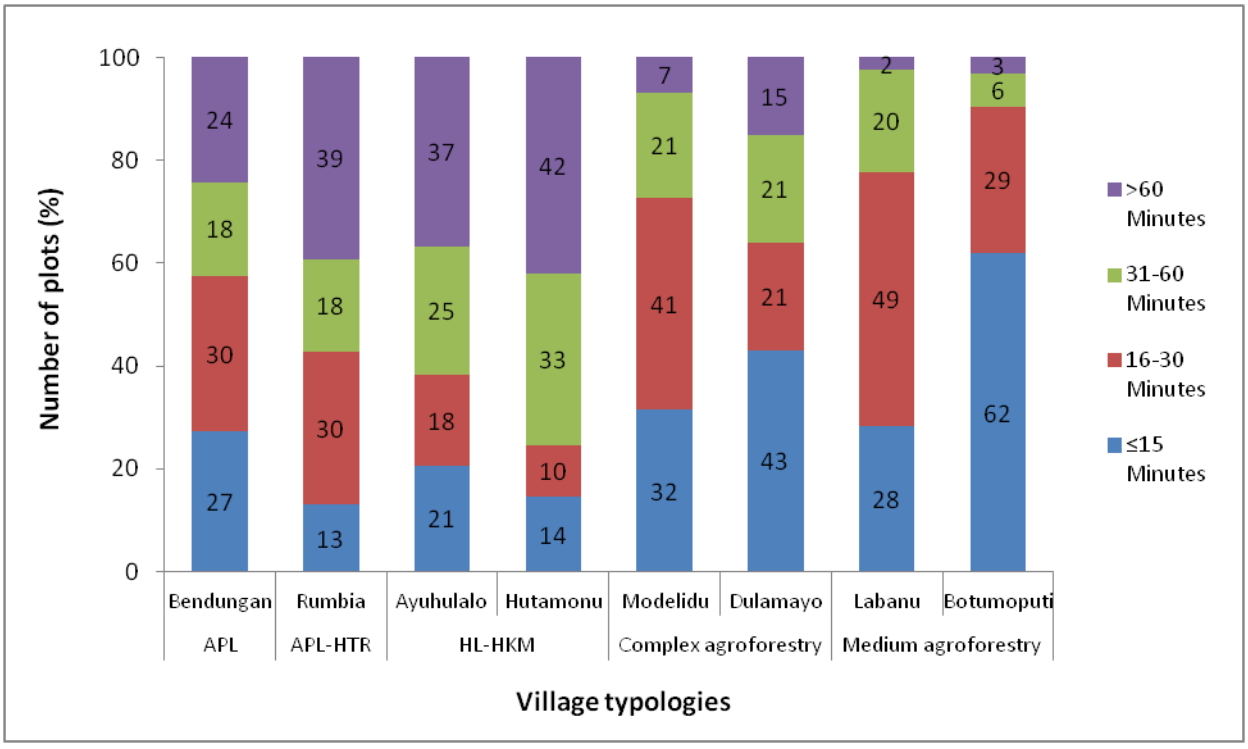


Figure 15. Walking time from home to the field in Gorontalo

Table 16. Year of land acquisition in Gorontalo

| Village typologies | Villages | n | Year of land acquisition | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | <1980 | | 1980-1989 | | 1990-1999 | | 2000-2005 | | >2005 | |
| | | | n | % | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 6 | 9 | 6 | 9 | 9 | 14 | 22 | 33 | 23 | 35 |
| APL-HTR | Rumbia | 84 | 0 | 0 | 3 | 4 | 10 | 12 | 21 | 25 | 50 | 60 |
| HL-HKM | Ayuhulalo | 68 | 7 | 10 | 6 | 9 | 12 | 18 | 13 | 19 | 30 | 44 |
| | Hutamonu | 69 | 2 | 3 | 3 | 4 | 8 | 12 | 23 | 33 | 33 | 48 |
| Complex agroforestry | Modelidu | 73 | 2 | 3 | 15 | 21 | 23 | 32 | 10 | 14 | 23 | 32 |
| | Dulamayo | 86 | 12 | 14 | 17 | 20 | 21 | 24 | 14 | 16 | 22 | 26 |
| Medium agroforestry | Labanu | 81 | 15 | 19 | 7 | 9 | 23 | 28 | 15 | 19 | 21 | 26 |
| | Botumoputi | 63 | 8 | 13 | 15 | 24 | 11 | 17 | 11 | 17 | 18 | 29 |

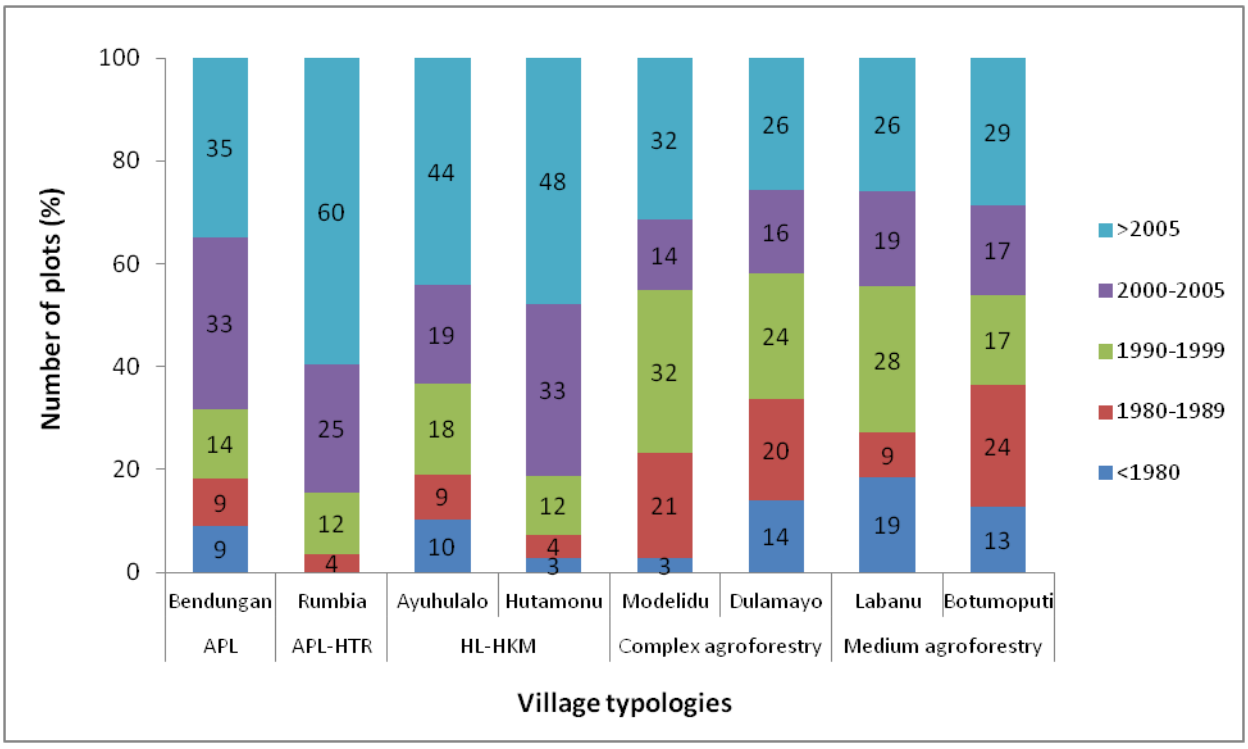


Figure 16. Year of land acquisition in Gorontalo

Table 17. Status of land management in Gorontalo

| Village typologies | Villages | n | Status of land management | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Owned and self cultivated | | Operating other's | | Rented from others | | Borrowed from others | | Owned and share-cropping | | Rented out to others | | Borrowed to others | | Right but not operated | |
| | | | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 48 | 73 | 2 | 3 | 1 | 2 | 4 | 6 | 0 | 0 | 0 | 0 | 1 | 2 | 10 | 15 |
| APL-HTR | Rumbia | 84 | 55 | 65 | 2 | 2 | 0 | 0 | 5 | 6 | 1 | 1 | 0 | 0 | 1 | 1 | 20 | 24 |
| HL-HKM | Ayuhulalo | 68 | 44 | 65 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 1 | 0 | 0 | 2 | 3 | 19 | 28 |
| | Hutamonu | 69 | 54 | 78 | 1 | 1 | 0 | 0 | 5 | 7 | 0 | 0 | 1 | 1 | 0 | 0 | 8 | 12 |
| Complex agroforestry | Modelidu | 73 | 59 | 81 | 2 | 3 | 0 | 0 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 11 |
| | Dulamayo | 86 | 76 | 88 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 7 | 8 |
| Medium agroforestry | Labanu | 81 | 51 | 63 | 6 | 7 | 3 | 4 | 7 | 9 | 3 | 4 | 4 | 5 | 0 | 0 | 7 | 9 |
| | Botumoputi | 63 | 45 | 71 | 7 | 11 | 1 | 2 | 5 | 8 | 1 | 2 | 0 | 0 | 0 | 0 | 4 | 6 |

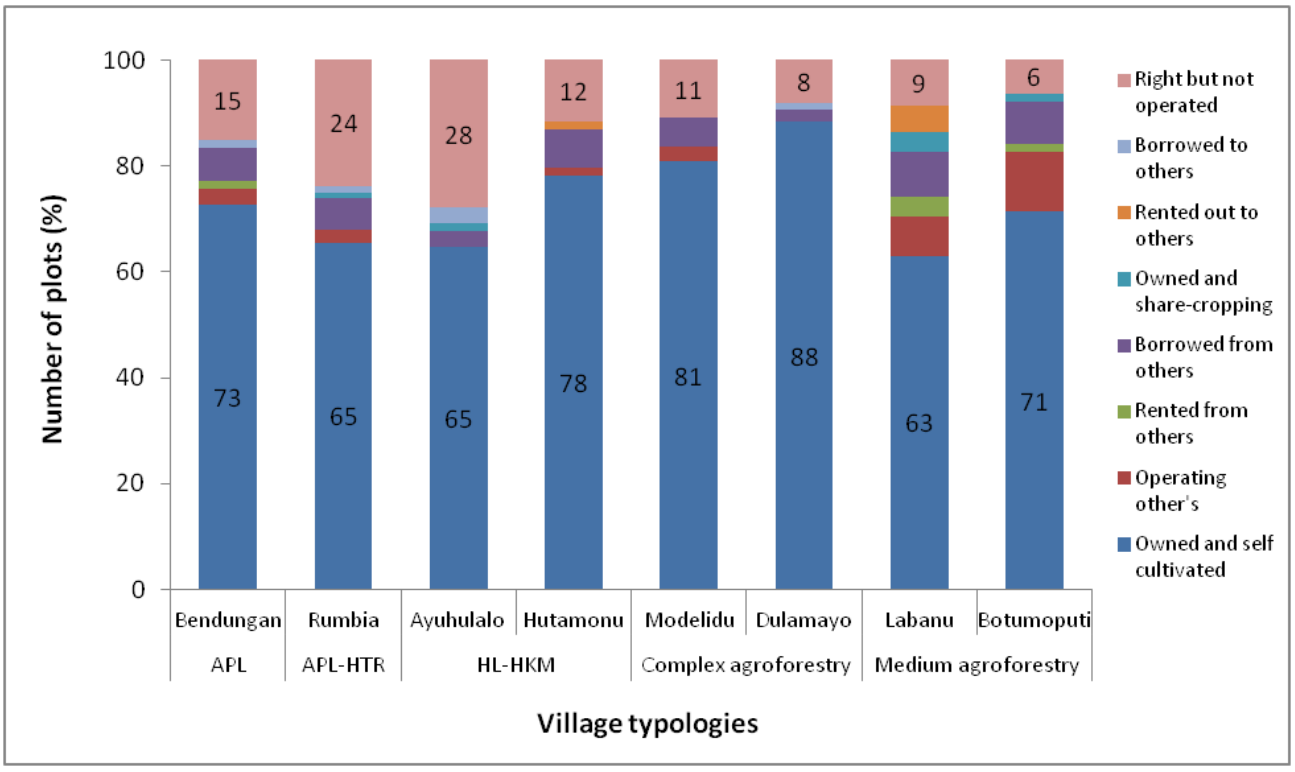


Figure 17. Status of land management in Gorontalo

Table 18. Manner of land ownership in Gorontalo

| Village typologies | Villages | n | Manner of land ownership | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Inherited | | Purchased | | Opened forest | | Share cropping | | Rented | | Borrowed | |
| | | | n | % | n | % | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 21 | 32 | 25 | 38 | 12 | 18 | 2 | 3 | 1 | 2 | 5 | 8 |
| APL-HTR | Rumbia | 84 | 27 | 32 | 24 | 29 | 26 | 31 | 2 | 2 | 0 | 0 | 5 | 6 |
| HL-HKM | Ayuhulalo | 68 | 28 | 41 | 17 | 25 | 21 | 31 | 0 | 0 | 0 | 0 | 2 | 3 |
| | Hutamonu | 69 | 27 | 39 | 20 | 29 | 16 | 23 | 1 | 1 | 0 | 0 | 5 | 7 |
| Complex agroforestry | Modelidu | 73 | 19 | 26 | 10 | 14 | 39 | 53 | 1 | 1 | 0 | 0 | 4 | 5 |
| | Dulamayo | 86 | 38 | 44 | 23 | 27 | 23 | 27 | 0 | 0 | 0 | 0 | 2 | 2 |
| Medium agroforestry | Labanu | 81 | 31 | 38 | 27 | 33 | 7 | 9 | 6 | 7 | 3 | 4 | 7 | 9 |
| | Botumoputi | 63 | 22 | 35 | 14 | 22 | 14 | 22 | 7 | 11 | 1 | 2 | 5 | 8 |

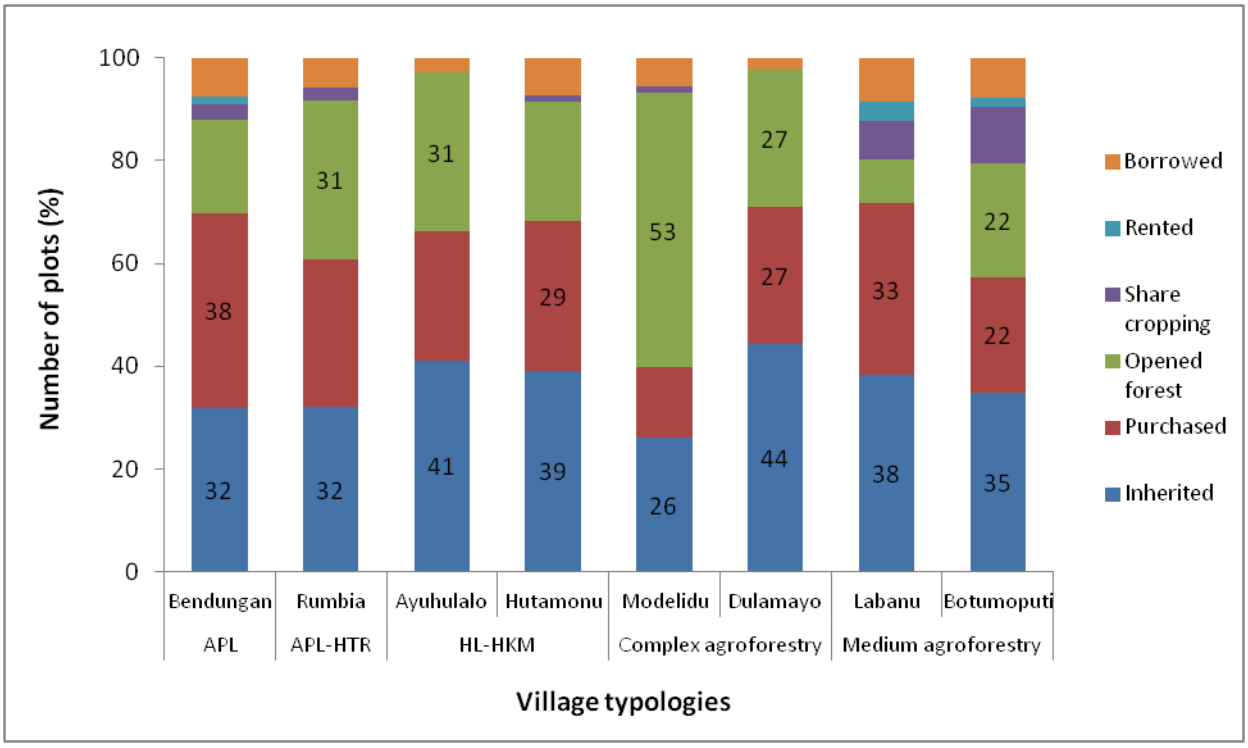


Figure 18. Manner of land ownership in Gorontalo

Table 19. Source of land in Gorontalo

| Village typologies | Villages | n | Source of land | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Husband | | Wife | | Relative | | Other people | | Primary forest | | Secondary forest | |
| | | | n | % | n | % | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 17 | 26 | 8 | 12 | 10 | 15 | 20 | 30 | 2 | 3 | 9 | 14 |
| APL-HTR | Rumbia | 84 | 18 | 21 | 10 | 12 | 8 | 10 | 21 | 25 | 1 | 1 | 26 | 31 |
| HL-HKM | Ayuhulalo | 68 | 23 | 34 | 8 | 12 | 12 | 18 | 2 | 3 | 0 | 0 | 23 | 34 |
| | Hutamonu | 69 | 19 | 28 | 9 | 13 | 9 | 13 | 16 | 23 | 3 | 4 | 13 | 19 |
| Complex agroforestry | Modelidu | 73 | 12 | 16 | 8 | 11 | 3 | 4 | 11 | 15 | 2 | 3 | 37 | 51 |
| | Dulamayo | 86 | 26 | 30 | 16 | 19 | 7 | 8 | 14 | 16 | 4 | 5 | 19 | 22 |
| Medium agroforestry | Labanu | 81 | 20 | 25 | 12 | 15 | 12 | 15 | 30 | 37 | 1 | 1 | 6 | 7 |
| | Botumoputi | 63 | 13 | 21 | 9 | 14 | 8 | 13 | 19 | 30 | 0 | 0 | 14 | 22 |

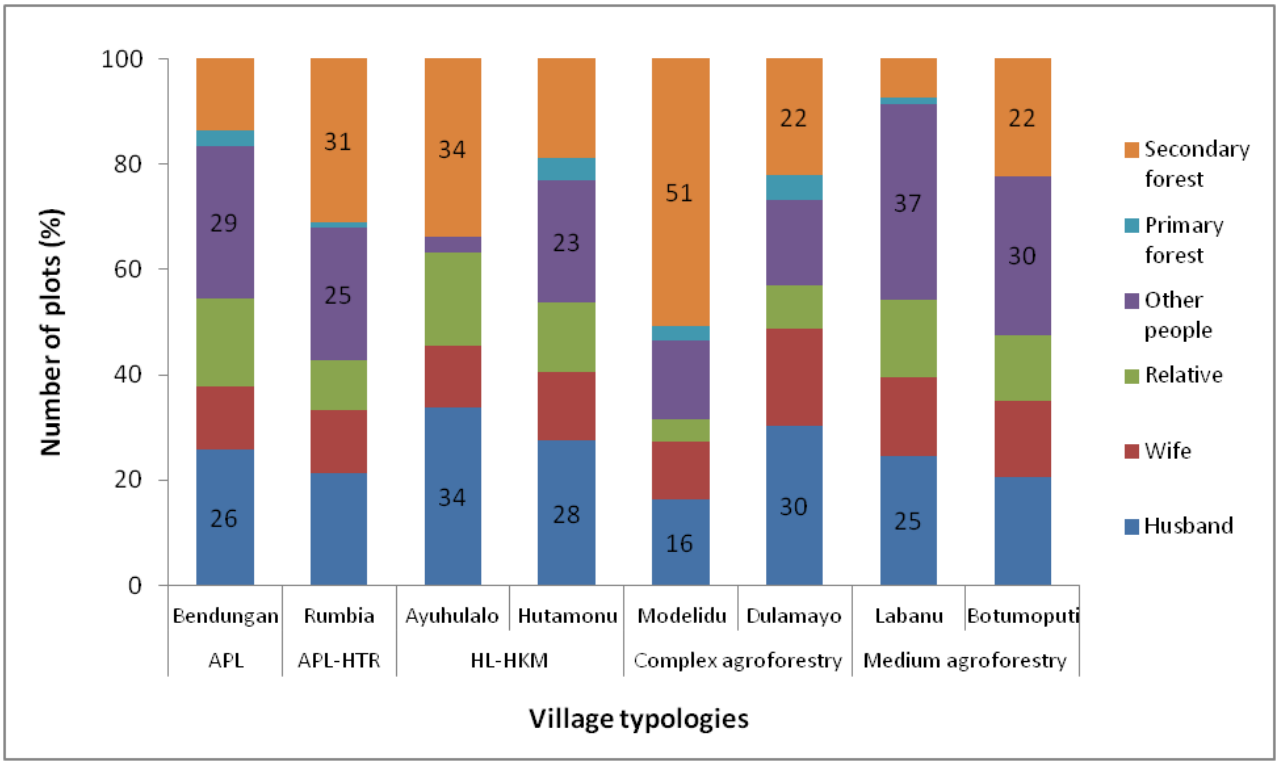


Figure 19. Source of land in Gorontalo

Table 20. Current land tenure status in Gorontalo

| Village typologies | Villages | n | Current land tenure status | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Owned by wife and husband | | Owned by husband | | Owned by wife | | Owned by other people | |
| | | | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 29 | 44 | 24 | 36 | 7 | 11 | 6 | 9 |
| APL-HTR | Rumbia | 84 | 42 | 50 | 24 | 29 | 10 | 12 | 8 | 10 |
| HL-HKM | Ayuhulalo | 68 | 38 | 56 | 21 | 31 | 8 | 12 | 1 | 1 |
| | Hutamonu | 69 | 36 | 52 | 17 | 25 | 10 | 14 | 6 | 9 |
| Complex agroforestry | Modelidu | 73 | 49 | 67 | 12 | 16 | 7 | 10 | 5 | 7 |
| | Dulamayo | 86 | 42 | 49 | 27 | 31 | 15 | 17 | 2 | 2 |
| Medium agroforestry | Labanu | 81 | 32 | 40 | 23 | 28 | 10 | 12 | 16 | 20 |
| | Botumoputi | 63 | 28 | 44 | 13 | 21 | 9 | 14 | 13 | 21 |

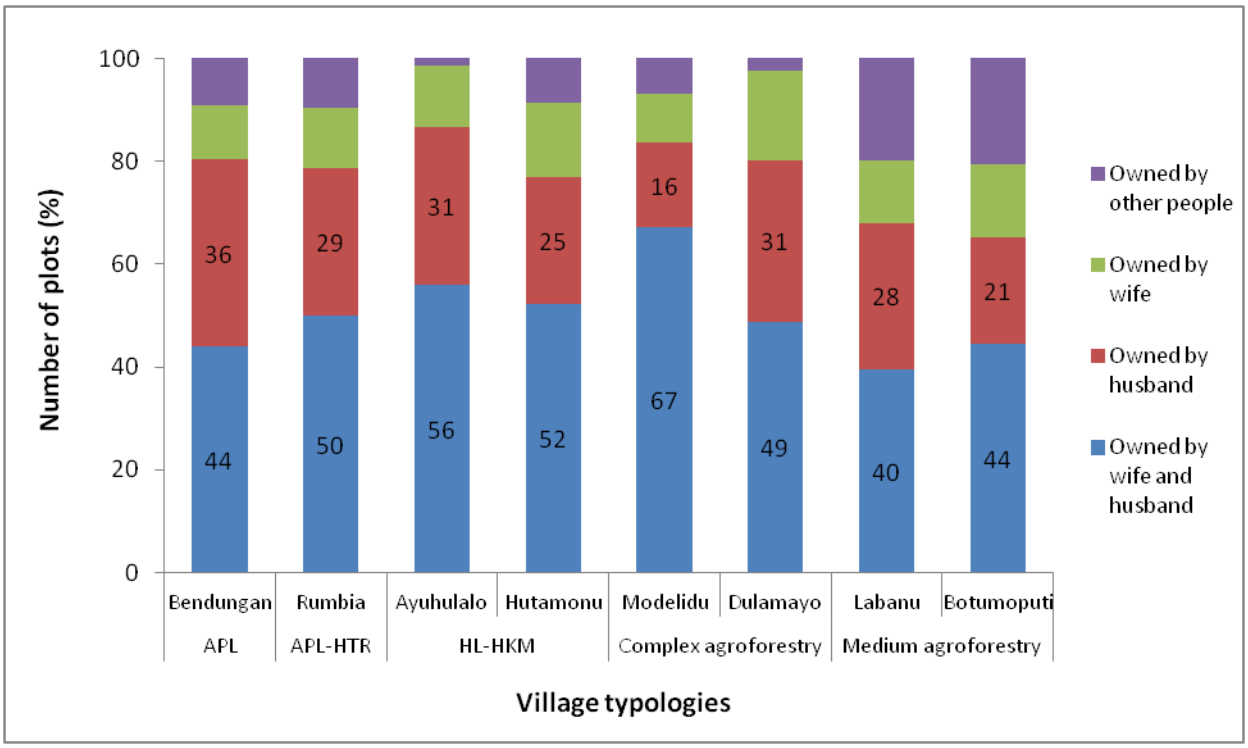


Figure 20. Current land tenure status in Gorontalo

Table 21. Current land use in Gorontalo

| Village typologies | Villages | n | Current land use | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Crop fields | | Coconut agroforest | | Cacao agroforest | | Agroforestry | | Clove agroforest | | Timber | | Bush fallow | |
| | | | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 34 | 52 | 13 | 20 | 8 | 12 | 1 | 2 | 0 | 0 | 0 | 0 | 10 | 15 |
| APL-HTR | Rumbia | 84 | 29 | 35 | 13 | 15 | 4 | 5 | 8 | 10 | 2 | 2 | 8 | 10 | 20 | 24 |
| HL-HKM | Ayuhulalo | 68 | 27 | 40 | 8 | 12 | 1 | 1 | 7 | 10 | 6 | 9 | 0 | 0 | 19 | 28 |
| | Hutamonu | 69 | 31 | 45 | 16 | 23 | 2 | 3 | 5 | 7 | 7 | 10 | 0 | 0 | 8 | 12 |
| Complex agroforestry | Modelidu | 73 | 17 | 23 | 1 | 1 | 0 | 0 | 35 | 48 | 1 | 1 | 11 | 15 | 8 | 11 |
| | Dulamayo | 86 | 1 | 1 | 0 | 0 | 0 | 0 | 50 | 58 | 26 | 30 | 2 | 2 | 7 | 8 |
| Medium agroforestry | Labanu | 81 | 27 | 33 | 12 | 15 | 0 | 0 | 20 | 25 | 0 | 0 | 15 | 19 | 7 | 9 |
| | Botumoputi | 63 | 17 | 27 | 26 | 41 | 0 | 0 | 11 | 17 | 0 | 0 | 5 | 8 | 4 | 6 |

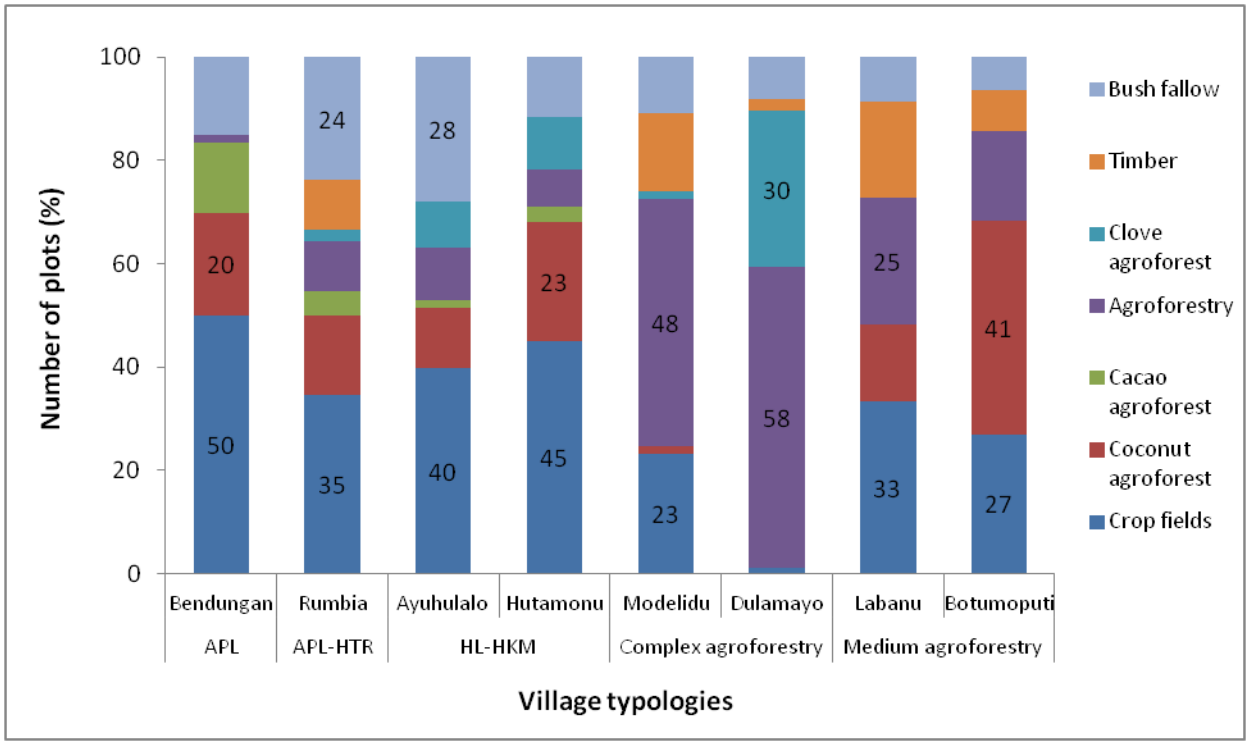


Figure 21. Current land use in Gorontalo

Table 22. Land use before acquisition in Gorontalo

| Village typologies | Villages | n | Land use before acquisition | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Crop fields | | Coconut agroforest | | Timber | | Clove agroforest | | Agroforestry | | Cacao agroforest | | Bush fallow | | Primary forest | | Secondary forest | |
| | | | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 23 | 35 | 7 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 24 | 36 | 2 | 3 | 9 | 14 |
| APL-HTR | Rumbia | 84 | 14 | 17 | 10 | 12 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 36 | 1 | 1 | 26 | 31 |
| HL-HKM | Ayuhulalo | 68 | 13 | 19 | 4 | 6 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 26 | 38 | 0 | 0 | 24 | 35 |
| | Hutamonu | 69 | 9 | 13 | 6 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 38 | 55 | 3 | 4 | 12 | 17 |
| Complex agroforestry | Modelidu | 73 | 7 | 10 | 1 | 1 | 4 | 5 | 1 | 1 | 5 | 7 | 0 | 0 | 17 | 23 | 2 | 3 | 36 | 49 |
| | Dulamayo | 86 | 1 | 1 | 0 | 0 | 5 | 6 | 12 | 14 | 22 | 26 | 0 | 0 | 23 | 27 | 4 | 5 | 19 | 22 |
| Medium agroforestry | Labanu | 81 | 17 | 21 | 15 | 19 | 9 | 11 | 0 | 0 | 9 | 11 | 0 | 0 | 24 | 30 | 1 | 1 | 6 | 7 |
| | Botumoputi | 63 | 12 | 19 | 8 | 13 | 2 | 3 | 0 | 0 | 1 | 2 | 1 | 2 | 25 | 40 | 0 | 0 | 14 | 22 |

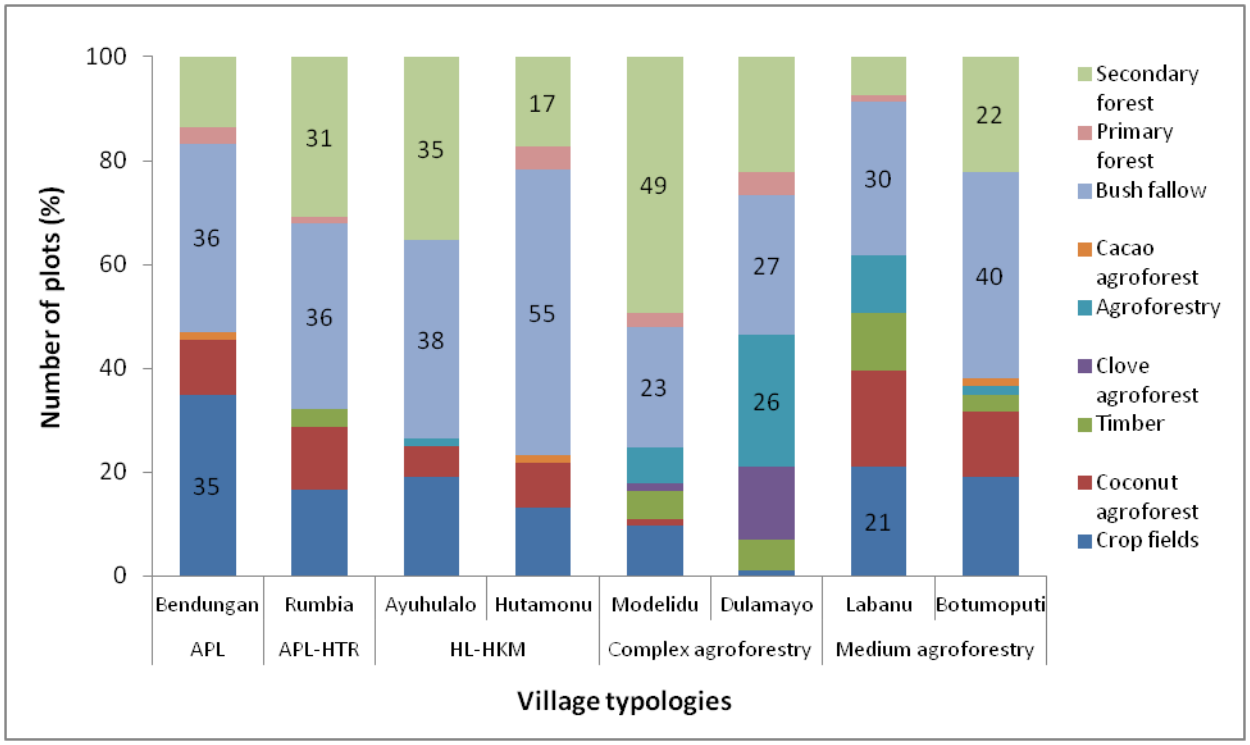


Figure 22. Land use before acquisition in Gorontalo

Table 23. Land use one year after acquisition in Gorontalo

| Village typologies | Villages | n | Land use one year after acquisition | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Crop fields | | Coconut agroforest | | Timber | | Clove agroforest | | Agroforestry | | Cacao agroforest | | Bush fallow | |
| | | | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 39 | 59 | 9 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 8 | 13 | 20 |
| APL-HTR | Rumbia | 84 | 49 | 58 | 9 | 11 | 3 | 4 | 0 | 0 | 5 | 6 | 0 | 0 | 18 | 21 |
| HL-HKM | Ayuhulalo | 68 | 33 | 49 | 4 | 6 | 0 | 0 | 4 | 6 | 6 | 9 | 1 | 1 | 20 | 29 |
| | Hutamonu | 69 | 44 | 64 | 8 | 12 | 0 | 0 | 3 | 4 | 3 | 4 | 0 | 0 | 11 | 16 |
| Complex agroforestry | Modelidu | 73 | 38 | 52 | 1 | 1 | 13 | 18 | 1 | 1 | 12 | 16 | 0 | 0 | 8 | 11 |
| | Dulamayo | 86 | 20 | 23 | 0 | 0 | 5 | 6 | 20 | 23 | 30 | 35 | 1 | 1 | 10 | 12 |
| Medium agroforestry | Labanu | 81 | 42 | 52 | 14 | 17 | 8 | 10 | 0 | 0 | 11 | 14 | 0 | 0 | 6 | 7 |
| | Botumoputi | 63 | 37 | 59 | 16 | 25 | 2 | 3 | 0 | 0 | 4 | 6 | 0 | 0 | 4 | 6 |

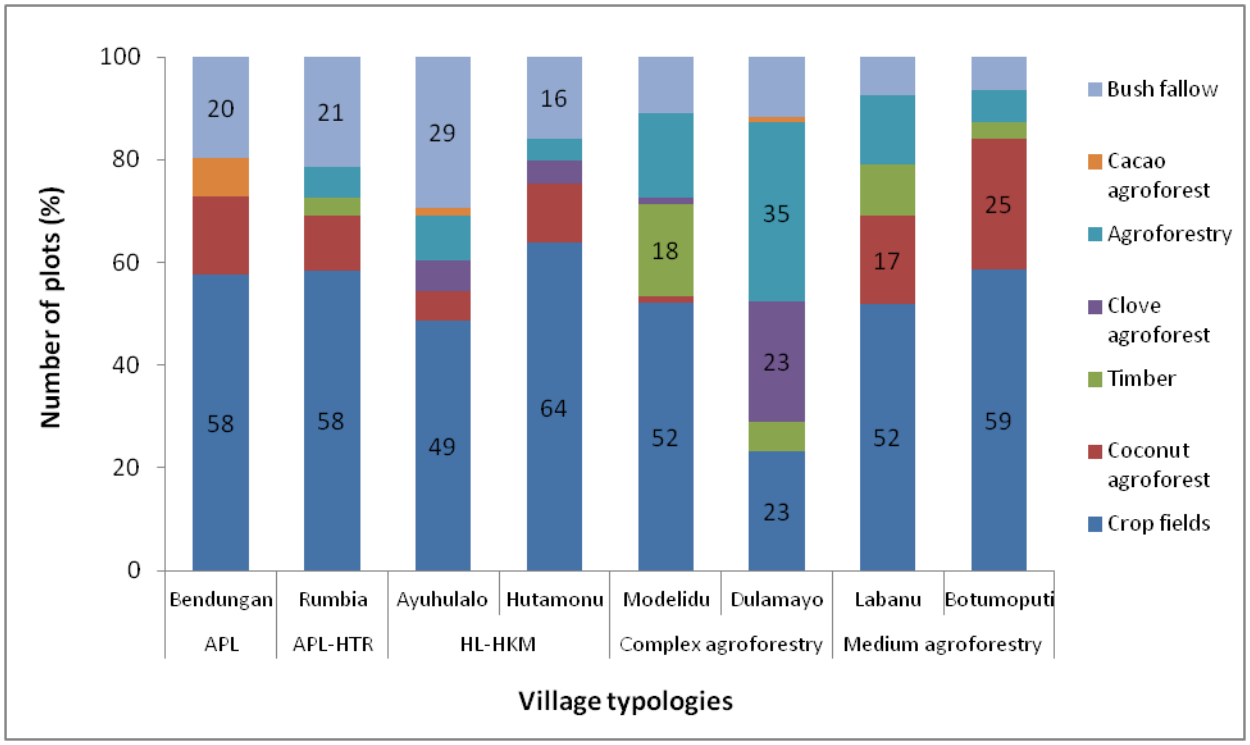


Figure 23. Land use one year after acquisition in Gorontalo

Table 24. Previous land use in Gorontalo

| Village typologies | Villages | n | Previous land use | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Crop fields | | Coconut agroforest | | Timber | | Clove agroforest | | Agroforestry | | Cacao agroforest | | Bush fallow | | Primary forest | | Secondary forest | |
| | | | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 25 | 38 | 8 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 25 | 38 | 2 | 3 | 5 | 8 |
| APL-HTR | Rumbia | 84 | 33 | 39 | 10 | 12 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 28 | 33 | 0 | 0 | 10 | 12 |
| HL-HKM | Ayuhulalo | 68 | 22 | 32 | 4 | 6 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 1 | 24 | 35 | 0 | 0 | 15 | 22 |
| | Hutamonu | 69 | 27 | 39 | 6 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 29 | 42 | 1 | 1 | 5 | 7 |
| Complex agroforestry | Modelidu | 73 | 28 | 38 | 1 | 1 | 11 | 15 | 1 | 1 | 5 | 7 | 0 | 0 | 11 | 15 | 0 | 0 | 16 | 22 |
| | Dulamayo | 86 | 14 | 16 | 0 | 0 | 10 | 12 | 17 | 20 | 21 | 24 | 3 | 3 | 14 | 16 | 2 | 2 | 5 | 6 |
| Medium agroforestry | Labanu | 81 | 31 | 38 | 11 | 14 | 10 | 12 | 0 | 0 | 11 | 14 | 1 | 1 | 13 | 16 | 0 | 0 | 4 | 5 |
| | Botumoputi | 63 | 27 | 43 | 9 | 14 | 3 | 5 | 0 | 0 | 1 | 2 | 1 | 2 | 13 | 21 | 0 | 0 | 9 | 14 |

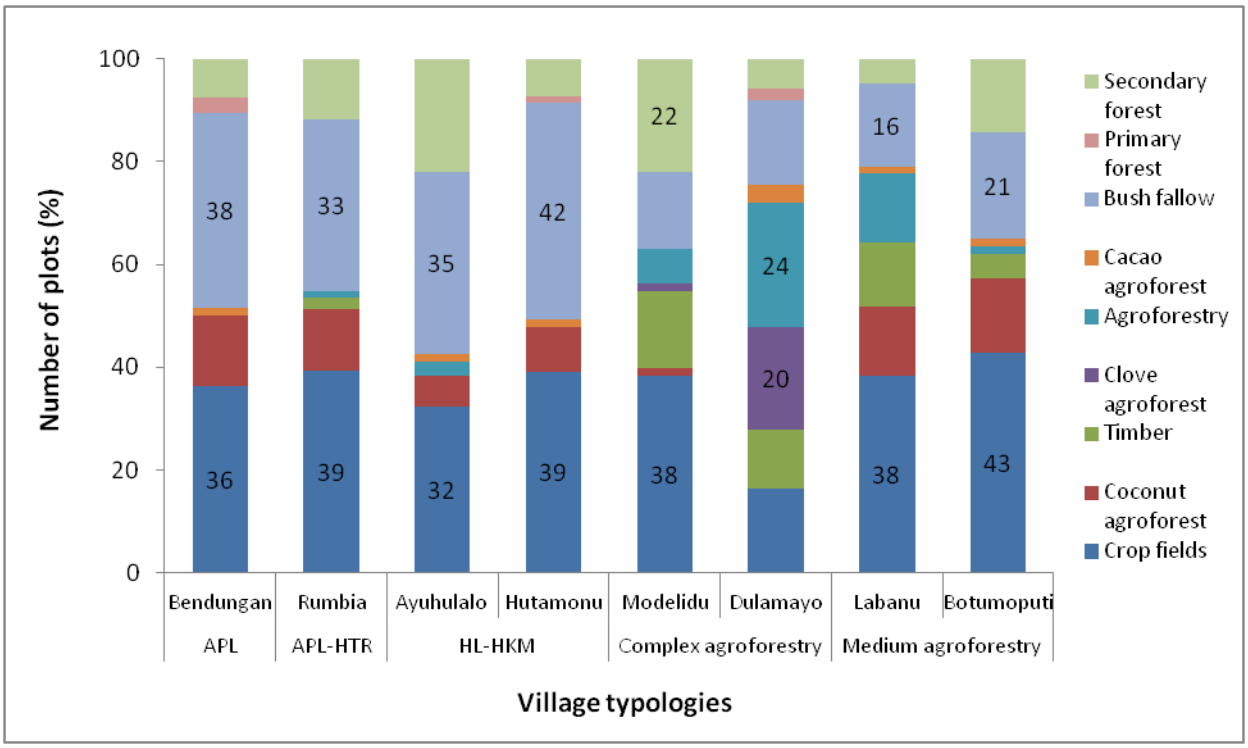


Figure 24. Previous land use in Gorontalo

Table 25. Average total of trees per hectare in Gorontalo

| Village typologies | Villages | Average total of trees per hectare | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Perennial crops | | MPTs | | Timber | | Annual crops | | |
| | | n | % | n | % | n | % | n | % | |
| APL | Bendungan | 157 | 94 | 2 | 1 | 5 | 3 | 2 | 1 | 166 |
| APL-HTR | Rumbia | 93 | 52 | 19 | 11 | 43 | 24 | 23 | 13 | 177 |
| HL-HKM | Ayuhulalo | 95 | 77 | 20 | 16 | 0 | 0 | 9 | 7 | 123 |
| | Hutamonu | 137 | 81 | 10 | 6 | 3 | 2 | 20 | 12 | 170 |
| Complex agroforestry | Modelidu | 44 | 18 | 98 | 41 | 83 | 34 | 15 | 6 | 240 |
| | Dulamayo | 116 | 58 | 76 | 38 | 1 | 1 | 6 | 3 | 199 |
| Medium agroforestry | Labanu | 41 | 21 | 10 | 5 | 138 | 69 | 10 | 5 | 199 |
| | Botumoputi | 73 | 36 | 12 | 6 | 87 | 42 | 34 | 16 | 205 |

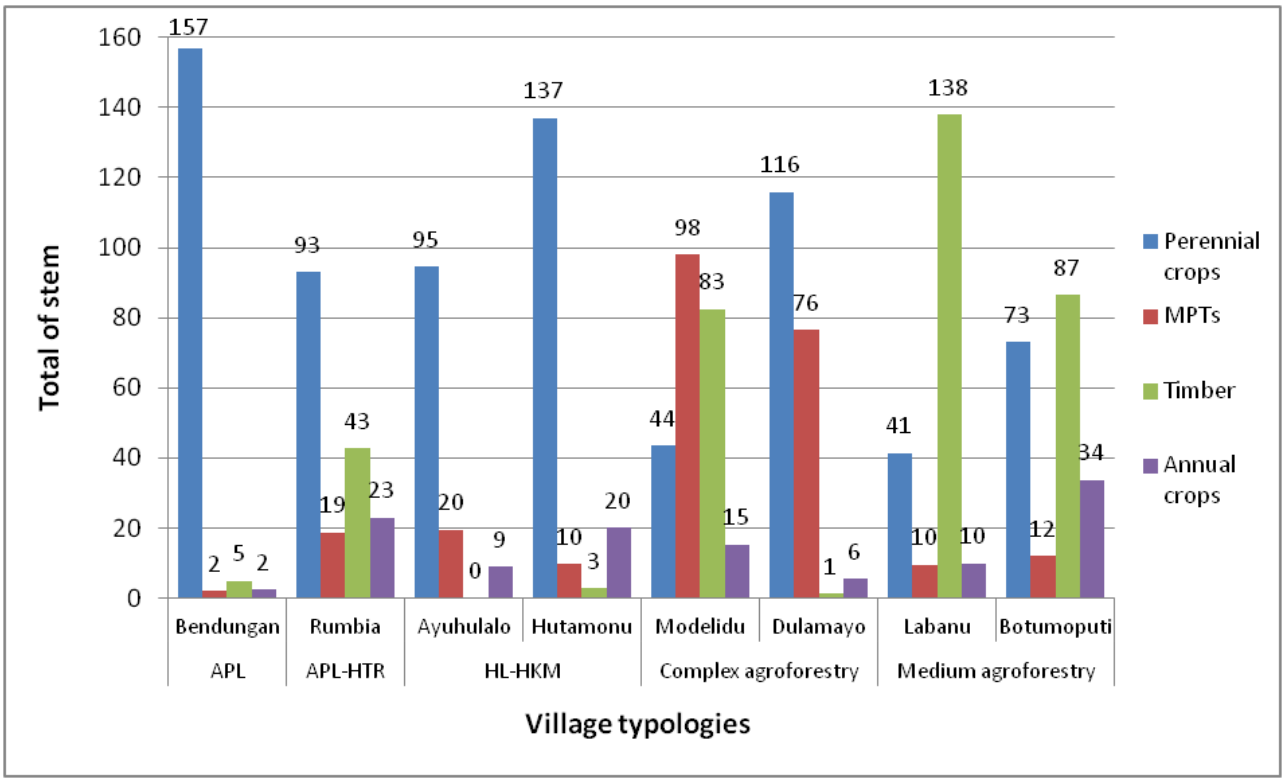


Figure 25. Average total of trees per hectare in Gorontalo

## 3. Land holdings, income and income per capita

Table 26. Average land holding by land use (ha) in Gorontalo

| Village Typologies | Villages | Average land holding by land use (ha) | | | | | | | Land holding per household (ha) |
|---|---|---|---|---|---|---|---|---|---|
| | | Crop fields | Coconut agroforest | Timber | Clove agroforest | Agroforestry | Cacao agroforest | Bush fallow | |
| APL | Bendungan | 0.56 | 0.19 | 0.00 | 0.00 | 0.03 | 0.10 | 0.56 | 1.44 |
| APL-HTR | Rumbia | 0.56 | 0.29 | 0.24 | 0.13 | 0.29 | 0.14 | 0.88 | 2.53 |
| HL-HKM | Ayuhulalo | 0.71 | 0.22 | 0.00 | 0.08 | 0.18 | 0.01 | 0.52 | 1.72 |
| | Hutamonu | 0.46 | 0.19 | 0.00 | 0.14 | 0.13 | 0.02 | 0.23 | 1.17 |
| Complex agroforestry | Modelidu | 0.17 | 0.02 | 0.15 | 0.00 | 0.50 | 0.00 | 0.09 | 0.92 |
| | Dulamayo | 0.01 | 0.00 | 0.06 | 0.33 | 0.58 | 0.00 | 0.17 | 1.14 |
| Medium agroforestry | Labanu | 0.50 | 0.27 | 0.26 | 0.00 | 0.37 | 0.00 | 0.21 | 1.61 |
| | Botumoputi | 0.19 | 0.39 | 0.05 | 0.00 | 0.19 | 0.00 | 0.05 | 0.87 |

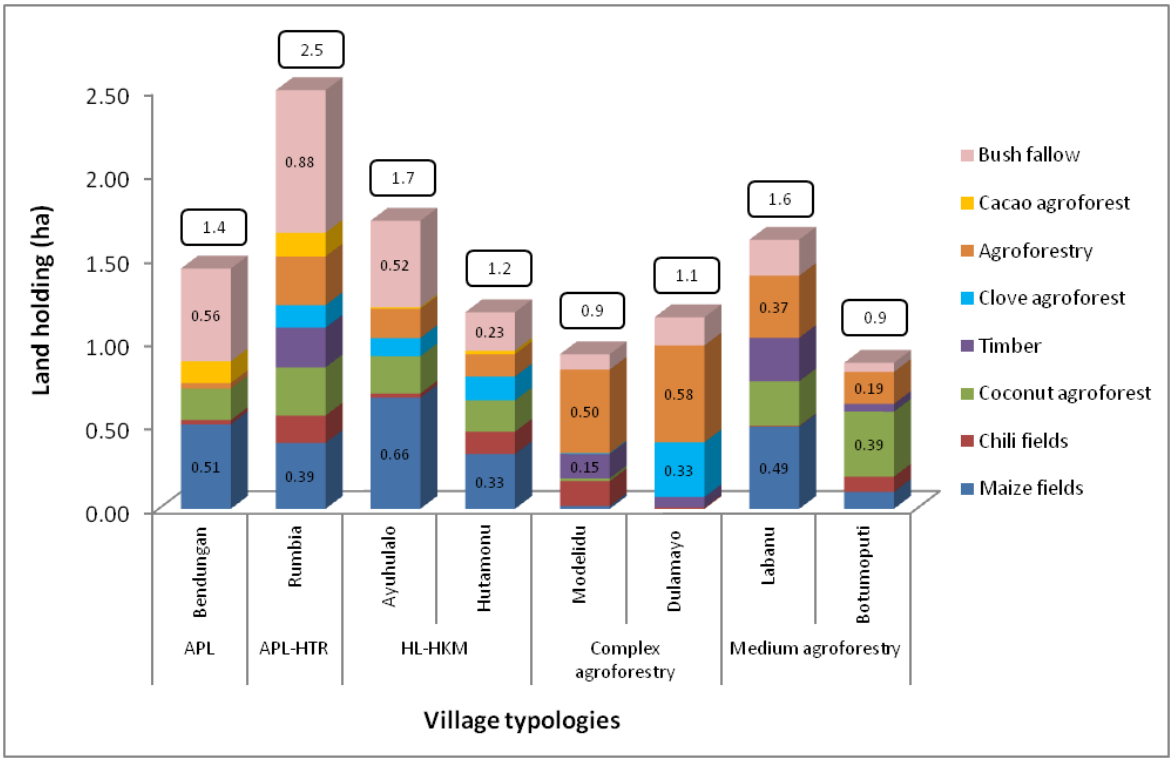


Figure 26. Average land holding by land use (ha) in Gorontalo

Table 27. Percentage land holding (ha) by land location in Gorontalo

| Village Typologies | Villages | Land location | Land holding (ha) by land location | | | | | | | | Land holding per household (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Maize fields | Chili fields | Coconut agroforest | Timber | Clove agroforest | Agroforestry | Cacao agroforest | Bush fallow | |
| APL-HTR | Rumbia | Private | 62 | 20 | 67 | 25 | 75 | 3 | 88 | 28 | 40 |
| | | State | 38 | 80 | 33 | 75 | 25 | 97 | 12 | 72 | 60 |
| HL-HKM | Ayuhulalo | Private | 45 | 100 | 63 | 0 | 0 | 71 | 0 | 11 | 38 |
| | | State | 55 | 0 | 37 | 0 | 100 | 29 | 100 | 89 | 63 |
| | Hutamonu | Private | 18 | 11 | 32 | 0 | 12 | 56 | 0 | 36 | 26 |
| | | State | 82 | 89 | 68 | 0 | 88 | 44 | 100 | 64 | 74 |

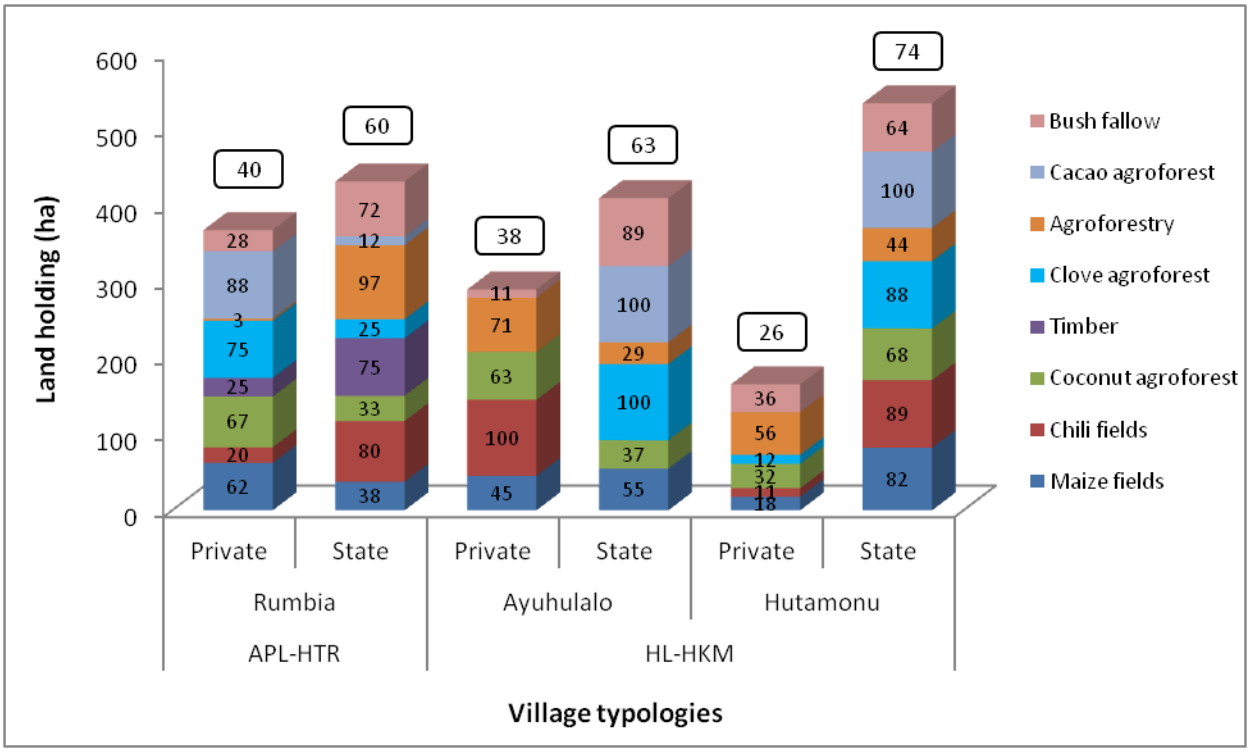


Figure 27.Percentage land holding (ha) by land location in Gorontalo

Table 28. Years of fallow cultivation in Gorontalo

| Village typologies | Villages | n | Years of fallow | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ≤ 5 years | | 6-10 years | | 11-15 years | | > 15 years | |
| | | | n | % | n | % | n | % | n | % |
| APL | Bendungan | 10 | 3 | 30 | 4 | 40 | 1 | 10 | 2 | 20 |
| APL-HTR | Rumbia | 20 | 15 | 75 | 3 | 15 | 1 | 5 | 1 | 5 |
| HL-HKM | Ayuhulalo | 19 | 17 | 89 | 1 | 5 | 1 | 5 | 0 | 0 |
| | Hutamonu | 8 | 4 | 50 | 2 | 25 | 2 | 25 | 0 | 0 |
| Complex agroforestry | Modelidu | 8 | 8 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Dulamayo | 7 | 4 | 57 | 2 | 29 | 1 | 14 | 0 | 0 |
| Medium agroforestry | Labanu | 7 | 3 | 43 | 3 | 43 | 0 | 0 | 1 | 14 |
| | Botumoputi | 4 | 2 | 50 | 2 | 50 | 0 | 0 | 0 | 0 |

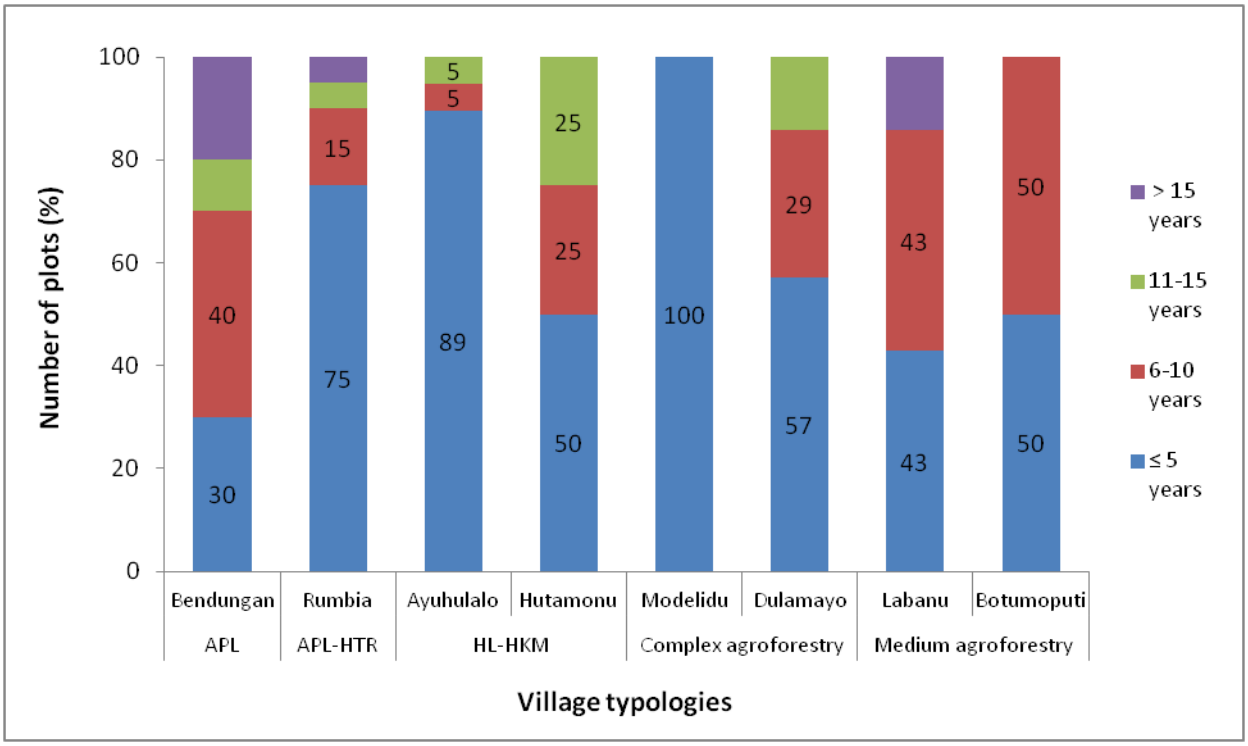


Figure 28. Years of fallow cultivation in Gorontalo

Table 29. Reasons for not cultivating the fields in Gorontalo

| Village typologies | Villages | n | Reason for not cultivating the field | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Land tenure problem | | Unproductive land | | Pest and disease | | Lack of Labor | | Lack of Capital | |
| | | | n | % | n | % | n | % | n | % | n | % |
| APL | Bendungan | 66 | 6 | 9 | 6 | 9 | 9 | 14 | 32 | 48 | 13 | 20 |
| APL-HTR | Rumbia | 84 | 0 | 0 | 3 | 4 | 10 | 12 | 25 | 30 | 46 | 55 |
| HL-HKM | Ayuhulalo | 68 | 7 | 10 | 6 | 9 | 12 | 18 | 17 | 25 | 26 | 38 |
| | Hutamonu | 69 | 2 | 3 | 3 | 4 | 8 | 12 | 25 | 36 | 31 | 45 |
| Complex agroforestry | Modelidu | 73 | 2 | 3 | 15 | 21 | 23 | 32 | 14 | 19 | 19 | 26 |
| | Dulamayo | 86 | 12 | 14 | 17 | 20 | 21 | 24 | 19 | 22 | 17 | 20 |
| Medium agroforestry | Labanu | 81 | 15 | 19 | 7 | 9 | 23 | 28 | 18 | 22 | 18 | 22 |
| | Botumoputi | 63 | 8 | 13 | 15 | 24 | 11 | 17 | 11 | 17 | 18 | 29 |

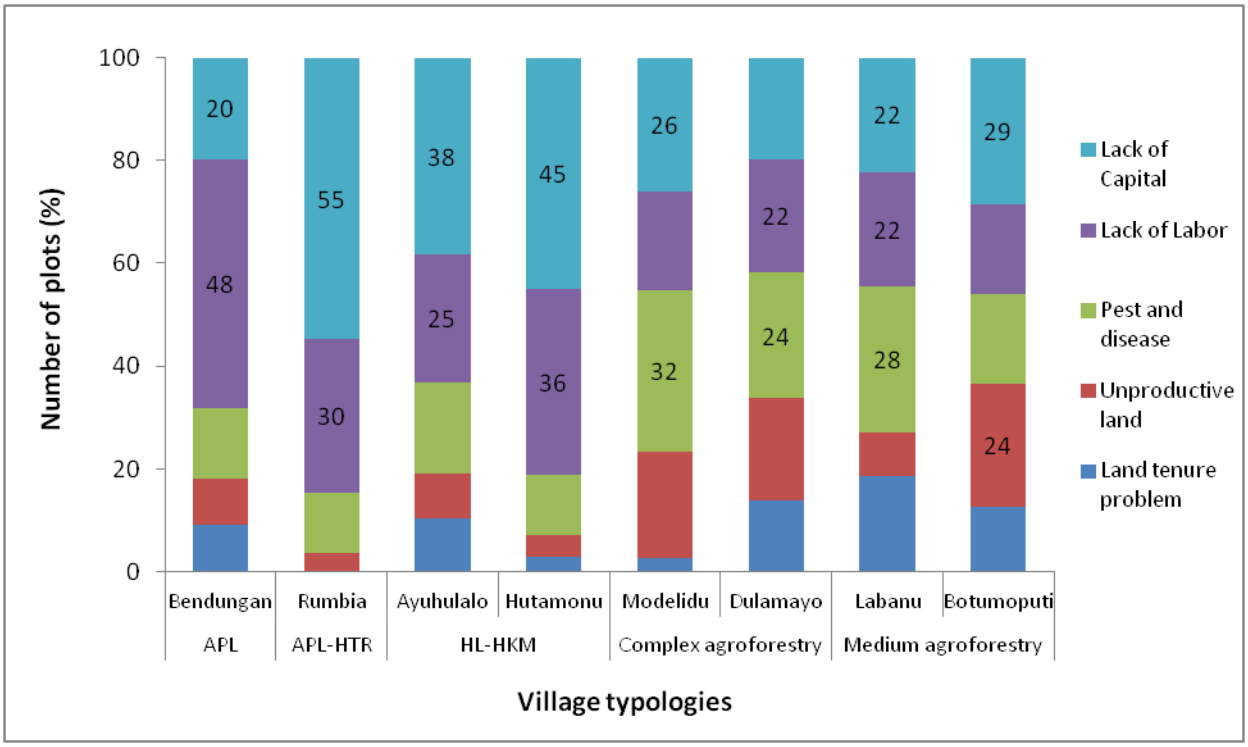


Figure 29. Reasons for not cultivating the fields in Gorontalo

Table 30. Sources of Income in Gorontalo in 2014

| Source of Income | Average income per household per village | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | APL | | APL-HTR | | HL-HKM | | | | Complex Agroforestry | | | | Medium Agroforestry | | | |
| | Bendungan | | Rumbia | | Ayuhulalo | | Hutamonu | | Modelidu | | Dulamayo | | Labanu | | Botumoputi | |
| | IDR | % | IDR | % | IDR | % | IDR | % | IDR | % | IDR | % | IDR | % | IDR | % |
| **1. On-farm/agriculture** | 397,552,342 | 70.70 | 533,355,639 | 68.36 | 727,980,714 | 83.77 | 677,953,464 | 88.24 | 445,222,057 | 63.80 | 1,029,859,114 | 75.17 | 792,878,133 | 79.58 | 290,758,036 | 58.48 |
| Maize fields | 121,082,985 | 21.53 | 101,669,729 | 13.03 | 296,763,286 | 34.15 | 165,245,686 | 21.51 | 1,010,000 | 0.14 | 0 | 0.00 | 111,798,690 | 11.22 | 24,868,643 | 5.00 |
| Chili fields | 3,127,429 | 0.56 | 53,335,643 | 6.84 | 13,610,000 | 1.57 | 141,597,200 | 18.43 | 58,801,000 | 8.43 | 2,055,000 | 0.15 | 52,325,000 | 5.25 | 52,118,071 | 10.48 |
| Coconut agroforest | 62,167,500 | 11.06 | 92,814,375 | 11.90 | 66,882,143 | 7.70 | 83,699,543 | 10.89 | 8,605,500 | 1.23 | 0 | 0.00 | 152,223,500 | 15.28 | 77,592,750 | 15.61 |
| Agroforestry | 66,841,429 | 11.89 | 69,417,393 | 8.90 | 61,923,286 | 7.13 | 103,864,036 | 13.52 | 123,412,557 | 17.68 | 798,906,614 | 58.31 | 128,442,086 | 12.89 | 37,165,714 | 7.47 |
| Timber | 0 | 0.00 | 15,569,500 | 2.00 | 17,315,000 | 1.99 | 0 | 0.00 | 47,755,000 | 6.84 | 22,136,000 | 1.62 | 59,163,857 | 5.94 | 7,626,857 | 1.53 |
| Other agricultural | 45,413,000 | 8.08 | 93,263,000 | 11.95 | 91,957,000 | 10.58 | 66,231,000 | 8.62 | 72,136,000 | 10.34 | 58,936,000 | 4.30 | 78,810,000 | 7.91 | 32,126,000 | 6.46 |
| Agriculture enterprise | 3,000,000 | 0.53 | 18,484,000 | 2.37 | 70,866,000 | 8.15 | 40,000,000 | 5.21 | 8,027,000 | 1.15 | 129,075,500 | 9.42 | 87,280,000 | 8.76 | 47,520,000 | 9.56 |
| Agriculture wage | 94,160,000 | 16.75 | 85,827,000 | 11.00 | 93,808,000 | 10.79 | 72,006,000 | 9.37 | 106,320,000 | 15.24 | 18,750,000 | 1.37 | 104,080,000 | 10.45 | 11,480,000 | 2.31 |
| Forest product | 1,760,000 | 0.31 | 2,975,000 | 0.38 | 14,856,000 | 1.71 | 5,310,000 | 0.69 | 19,155,000 | 2.74 | 0 | 0.00 | 18,755,000 | 1.88 | 260,000 | 0.05 |
| **2. Off-farm/non-agriculture** | 164,750,000 | 29.30 | 246,860,000 | 31.64 | 141,062,000 | 16.23 | 90,350,000 | 11.76 | 252,635,000 | 36.20 | 340,144,000 | 24.83 | 203,480,000 | 20.42 | 206,468,000 | 41.52 |
| Nonagriculture enterprise | 70,000,000 | 12.45 | 52,200,000 | 6.69 | 55,392,000 | 6.37 | 26,400,000 | 3.44 | 66,720,000 | 9.56 | 201,694,000 | 14.72 | 47,380,000 | 4.76 | 47,448,000 | 9.54 |
| Nonagriculture wage | 90,650,000 | 16.12 | 189,160,000 | 24.24 | 85,670,000 | 9.86 | 52,950,000 | 6.89 | 182,765,000 | 26.19 | 131,450,000 | 9.59 | 95,700,000 | 9.60 | 136,870,000 | 27.53 |
| Remittance | 4,100,000 | 0.73 | 5,500,000 | 0.70 | 0 | 0.00 | 11,000,000 | 1.43 | 3,150,000 | 0.45 | 7,000,000 | 0.51 | 60,400,000 | 6.06 | 22,150,000 | 4.45 |
| **3. Total income per year** | 562,302,342 | 100 | 780,215,639 | 100 | 869,042,714 | 100 | 768,303,464 | 100 | 697,857,057 | 100 | 1,370,003,114 | 100 | 996,358,133 | 100 | 497,226,036 | 100 |

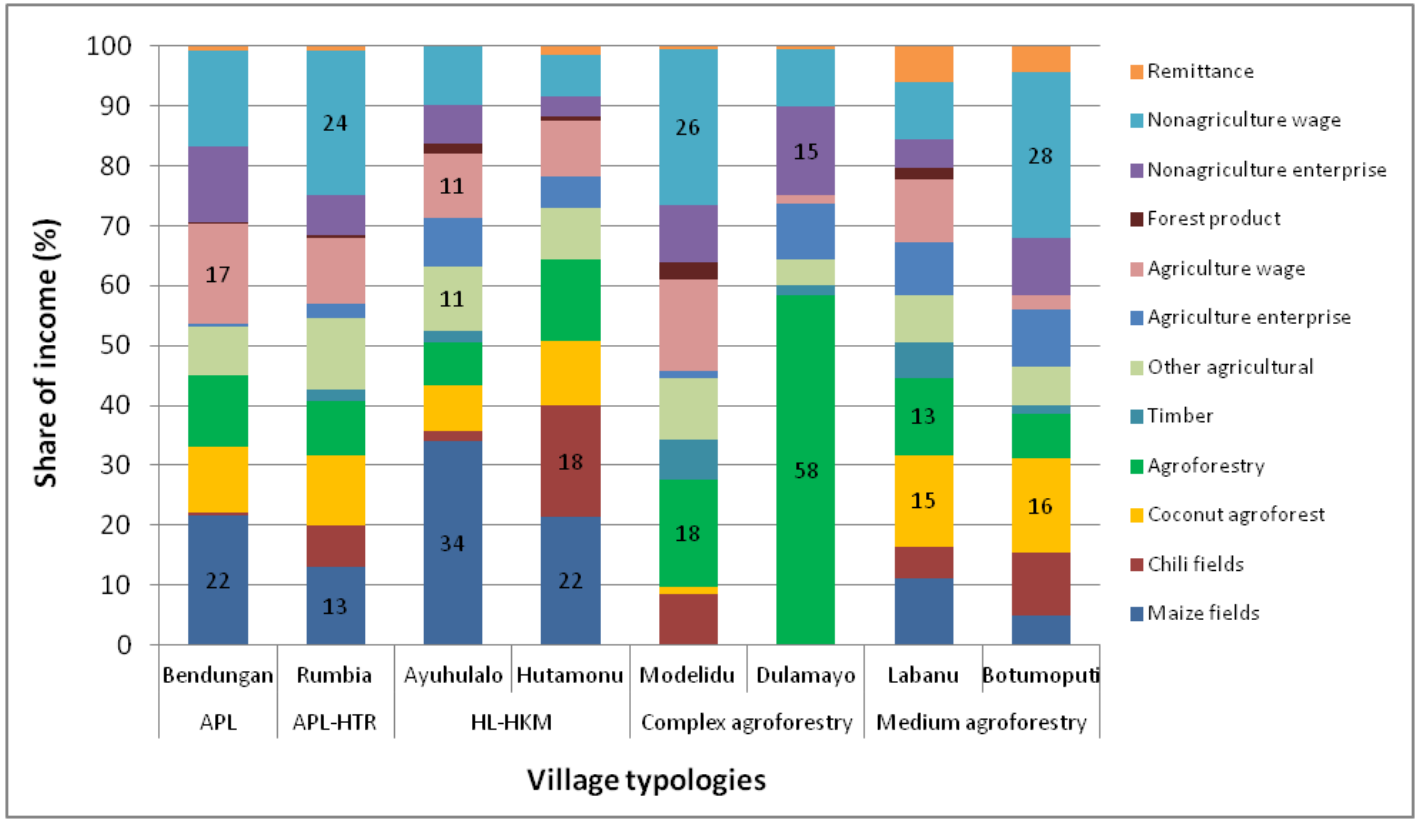


Figure 30. Sources of Income in Gorontalo in 2014

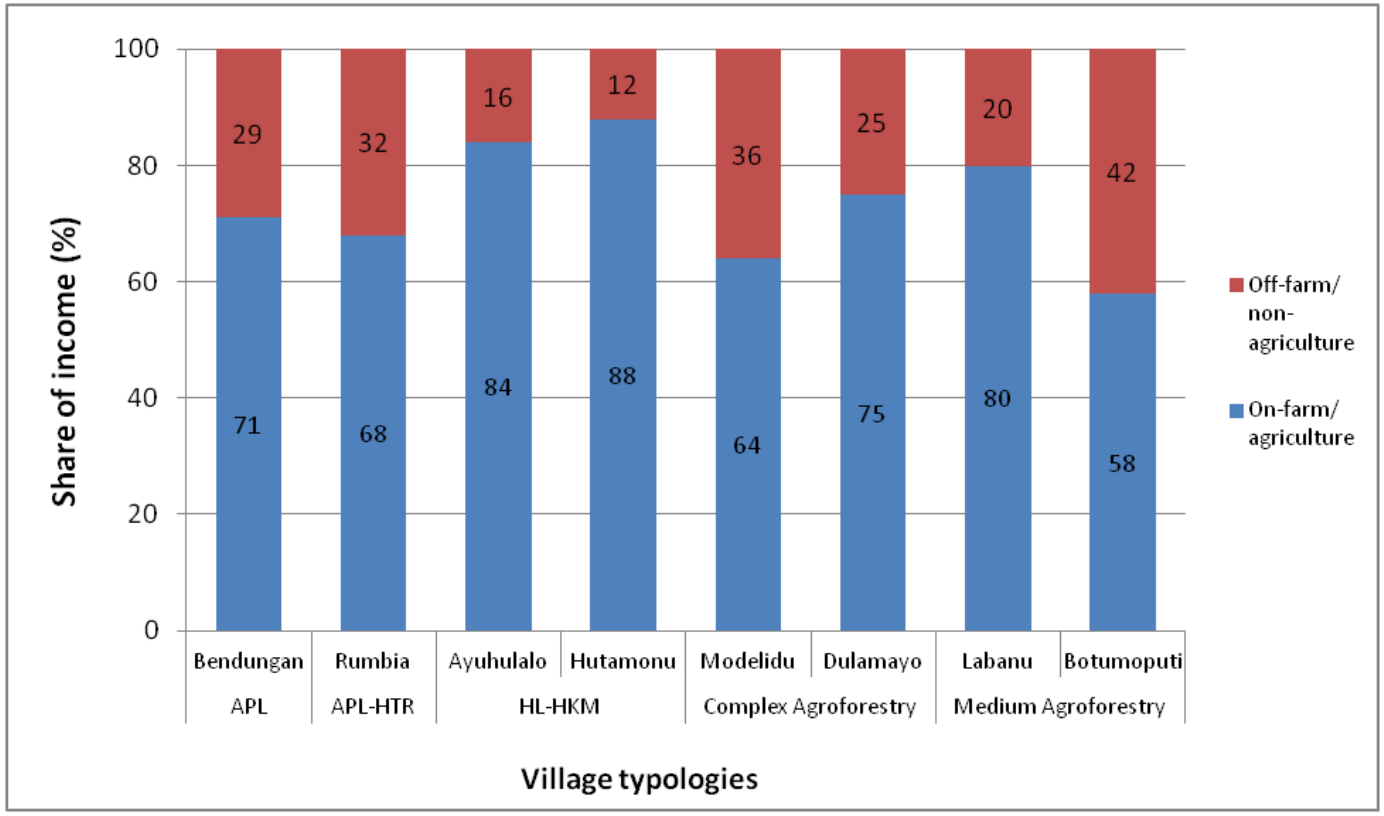


Figure 31. Sources of Income in Gorontalo in 2014

Table 31. Income per capita in Gorontalo in 2014

| Source of Income | Average income per capita per village | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | APL | APL-HTR | HL-HKM | | Complex Agroforestry | | Medium Agroforestry | |
| | Bendungan | Rumbia | Ayuhulalo | Hutamonu | Modelidu | Dulamayo | Labanu | Botumoputi |
| **1. On-farm/agriculture** | 3,312,936 | 4,232,981 | 5,599,852 | 6,107,689 | 3,297,941 | 8,955,297 | 5,216,304 | 3,825,764 |
| Maize fields | 1,009,025 | 806,903 | 2,282,795 | 1,488,700 | 7,481 | 0 | 735,518 | 327,219 |
| Chili fields | 26,062 | 423,299 | 104,692 | 1,275,650 | 435,563 | 17,870 | 344,243 | 685,764 |
| Coconut agroforest | 518,063 | 736,622 | 514,478 | 754,050 | 63,744 | 0 | 1,001,470 | 1,020,957 |
| Agroforestry | 557,012 | 550,932 | 476,333 | 935,712 | 914,167 | 6,947,014 | 845,014 | 489,023 |
| Timber | 0 | 123,567 | 133,192 | 0 | 353,741 | 192,487 | 389,236 | 100,353 |
| Other agricultural | 378,442 | 740,183 | 707,362 | 596,676 | 534,341 | 512,487 | 518,487 | 422,711 |
| Agriculture enterprise | 25,000 | 146,698 | 545,123 | 360,360 | 59,459 | 1,122,396 | 574,211 | 625,263 |
| Agriculture wage | 784,667 | 681,167 | 721,600 | 648,703 | 787,556 | 163,043 | 684,737 | 151,053 |
| Forest product | 14,667 | 23,611 | 114,277 | 47,838 | 141,889 | 0 | 123,388 | 3,421 |
| **2. Off-farm/non-agriculture** | 1,372,917 | 1,959,206 | 1,085,092 | 813,964 | 1,871,370 | 2,957,774 | 1,338,684 | 2,716,684 |
| Nonagriculture enterprise | 583,333 | 414,286 | 426,092 | 237,838 | 494,222 | 1,753,861 | 311,711 | 624,316 |
| Nonagriculture wage | 755,417 | 1,501,270 | 659,000 | 477,027 | 1,353,815 | 1,143,043 | 629,605 | 1,800,921 |
| Remittance | 34,167 | 43,651 | 0 | 99,099 | 23,333 | 60,870 | 397,368 | 291,447 |
| **3. Total income per year** | 4,685,853 | 6,192,188 | 6,684,944 | 6,921,653 | 5,169,312 | 11,913,071 | 6,554,988 | 6,542,448 |
| **Income per capita per day (IDR)** | 12,838 | 16,965 | 18,315 | 18,963 | 14,162 | 32,639 | 17,959 | 17,925 |
| **Income per capita per day (USD)** | 1.10 | 1.45 | 1.57 | 1.62 | 1.21 | 2.79 | 1.53 | 1.53 |

**Sumber: oanda.com**
**average dari 15 October 2013 - 14 OCTOBER 2014**
**USD 1 = IDR 11,700**

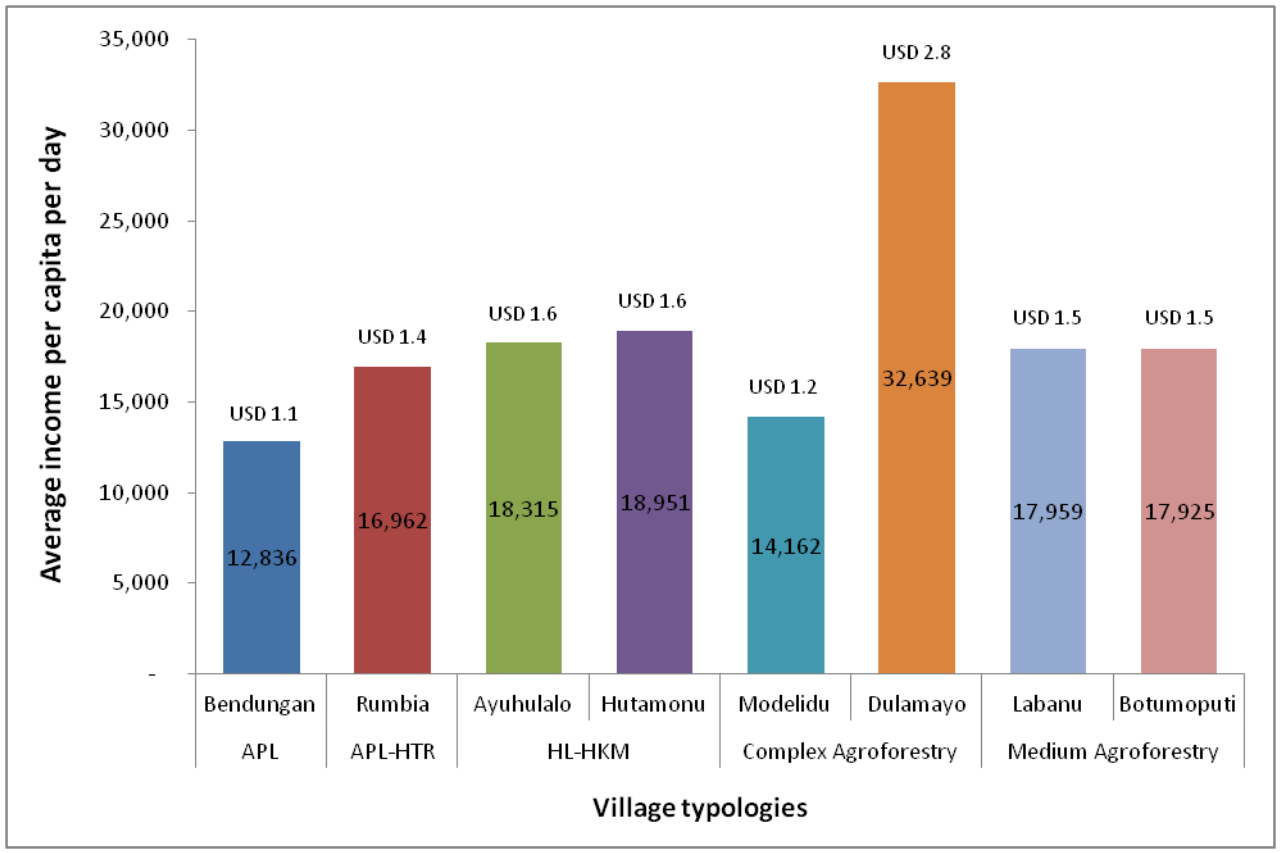


Figure 32. Income per capita in Gorontalo in 2014

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

Table 32. The role of women in land management in Gorontalo

| Village typologies | Villages | n | The role of women in land management | | | |
|---|---|---|---|---|---|---|
| | | | A role exists | | No role exists | |
| | | | n | % | n | % |
| APL | Bendungan | 30 | 21 | 70 | 9 | 30 |
| APL-HTR | Rumbia | 30 | 26 | 87 | 4 | 13 |
| HL-HKM | Ayuhulalo | 30 | 28 | 93 | 2 | 7 |
| | Hutamonu | 30 | 24 | 80 | 6 | 20 |
| Complex agroforestry | Modelidu | 30 | 25 | 83 | 5 | 17 |
| | Dulamayo | 30 | 28 | 93 | 2 | 7 |
| Medium agroforestry | Labanu | 30 | 24 | 80 | 6 | 20 |
| | Botumoputi | 30 | 27 | 90 | 3 | 10 |

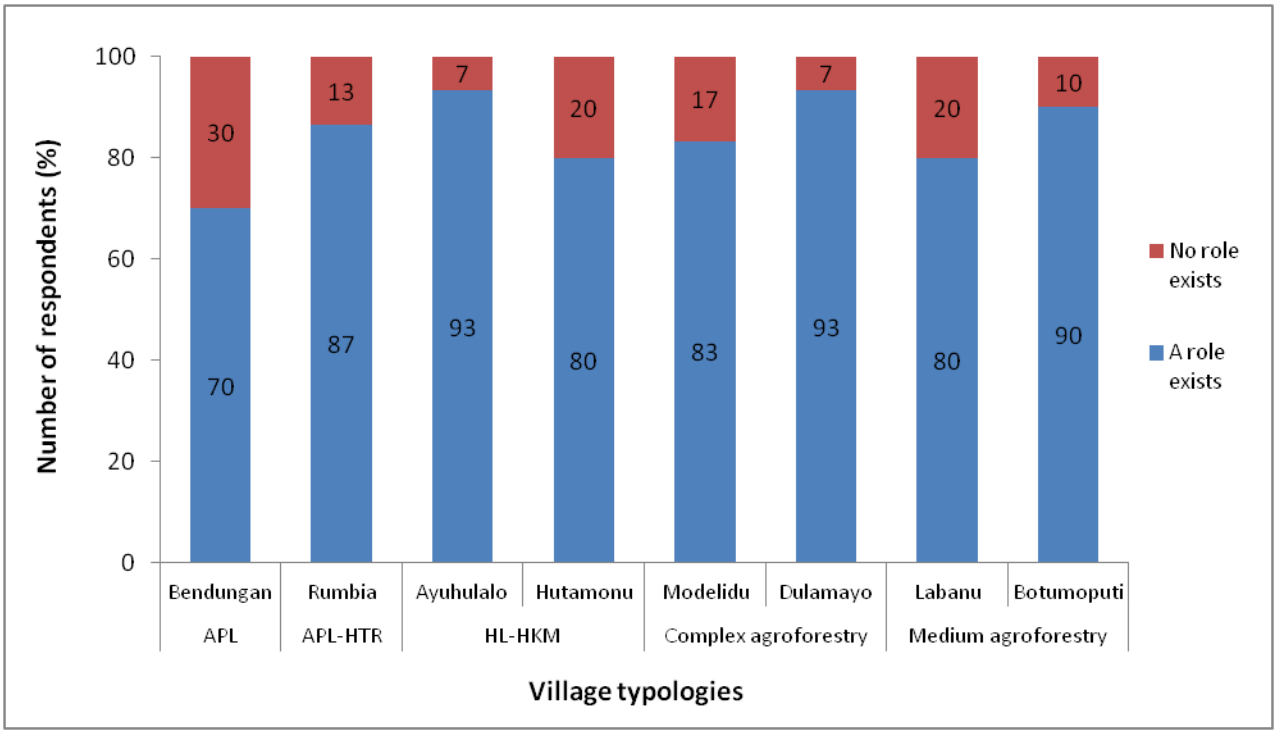


Figure 33. The role of women in land management in Gorontalo

Table 33. The role of women in decision making in Gorontalo

| Activity | Villages | n | The role of women in decision making | | | |
|---|---|---|---|---|---|---|
| | | | Man | | Woman | |
| | | | n | % | n | % |
| Kind of perennials to be planted | Bendungan | 30 | 29 | 97 | 1 | 3 |
| | Rumbia | 30 | 29 | 97 | 1 | 3 |
| | Ayuhulalo | 30 | 30 | 100 | 0 | 0 |
| | Hutamonu | 30 | 28 | 93 | 2 | 7 |
| | Modelidu | 30 | 30 | 100 | 0 | 0 |
| | Dulamayo | 30 | 29 | 97 | 1 | 3 |
| | Labanu | 30 | 30 | 100 | 0 | 0 |
| | Botumoputi | 30 | 30 | 100 | 0 | 0 |
| Kind of crop to be planted | Bendungan | 30 | 27 | 90 | 3 | 10 |
| | Rumbia | 30 | 27 | 90 | 3 | 10 |
| | Ayuhulalo | 30 | 29 | 97 | 1 | 3 |
| | Hutamonu | 30 | 25 | 83 | 5 | 17 |
| | Modelidu | 30 | 29 | 97 | 1 | 3 |
| | Dulamayo | 30 | 28 | 93 | 2 | 7 |
| | Labanu | 30 | 24 | 80 | 6 | 20 |
| | Botumoputi | 30 | 27 | 90 | 3 | 10 |
| Time to start planting | Bendungan | 30 | 29 | 97 | 1 | 3 |
| | Rumbia | 30 | 29 | 97 | 1 | 3 |
| | Ayuhulalo | 30 | 30 | 100 | 0 | 0 |
| | Hutamonu | 30 | 28 | 93 | 2 | 7 |
| | Modelidu | 30 | 30 | 100 | 0 | 0 |
| | Dulamayo | 30 | 29 | 97 | 1 | 3 |
| | Labanu | 30 | 29 | 97 | 1 | 3 |
| | Botumoputi | 30 | 28 | 93 | 2 | 7 |
| Planting other plants | Bendungan | 30 | 29 | 97 | 1 | 3 |
| | Rumbia | 30 | 28 | 93 | 2 | 7 |
| | Ayuhulalo | 30 | 27 | 90 | 3 | 10 |
| | Hutamonu | 30 | 27 | 90 | 3 | 10 |
| | Modelidu | 30 | 29 | 97 | 1 | 3 |
| | Dulamayo | 30 | 29 | 97 | 1 | 3 |
| | Labanu | 30 | 28 | 93 | 2 | 7 |
| | Botumoputi | 30 | 30 | 100 | 0 | 0 |
| Applying fertilizer & medicine | Bendungan | 30 | 29 | 97 | 1 | 3 |
| | Rumbia | 30 | 28 | 93 | 2 | 7 |
| | Ayuhulalo | 30 | 30 | 100 | 0 | 0 |
| | Hutamonu | 30 | 26 | 87 | 4 | 13 |
| | Modelidu | 30 | 30 | 100 | 0 | 0 |
| | Dulamayo | 30 | 29 | 97 | 1 | 3 |
| | Labanu | 30 | 28 | 93 | 2 | 7 |
| | Botumoputi | 30 | 30 | 100 | 0 | 0 |
| Marketing agricultural yield | Bendungan | 30 | 27 | 90 | 3 | 10 |
| | Rumbia | 30 | 29 | 97 | 1 | 3 |
| | Ayuhulalo | 30 | 29 | 97 | 1 | 3 |
| | Hutamonu | 30 | 27 | 90 | 3 | 10 |
| | Modelidu | 30 | 29 | 97 | 1 | 3 |
| | Dulamayo | 30 | 28 | 93 | 2 | 7 |
| | Labanu | 30 | 27 | 90 | 3 | 10 |
| | Botumoputi | 30 | 27 | 90 | 3 | 10 |

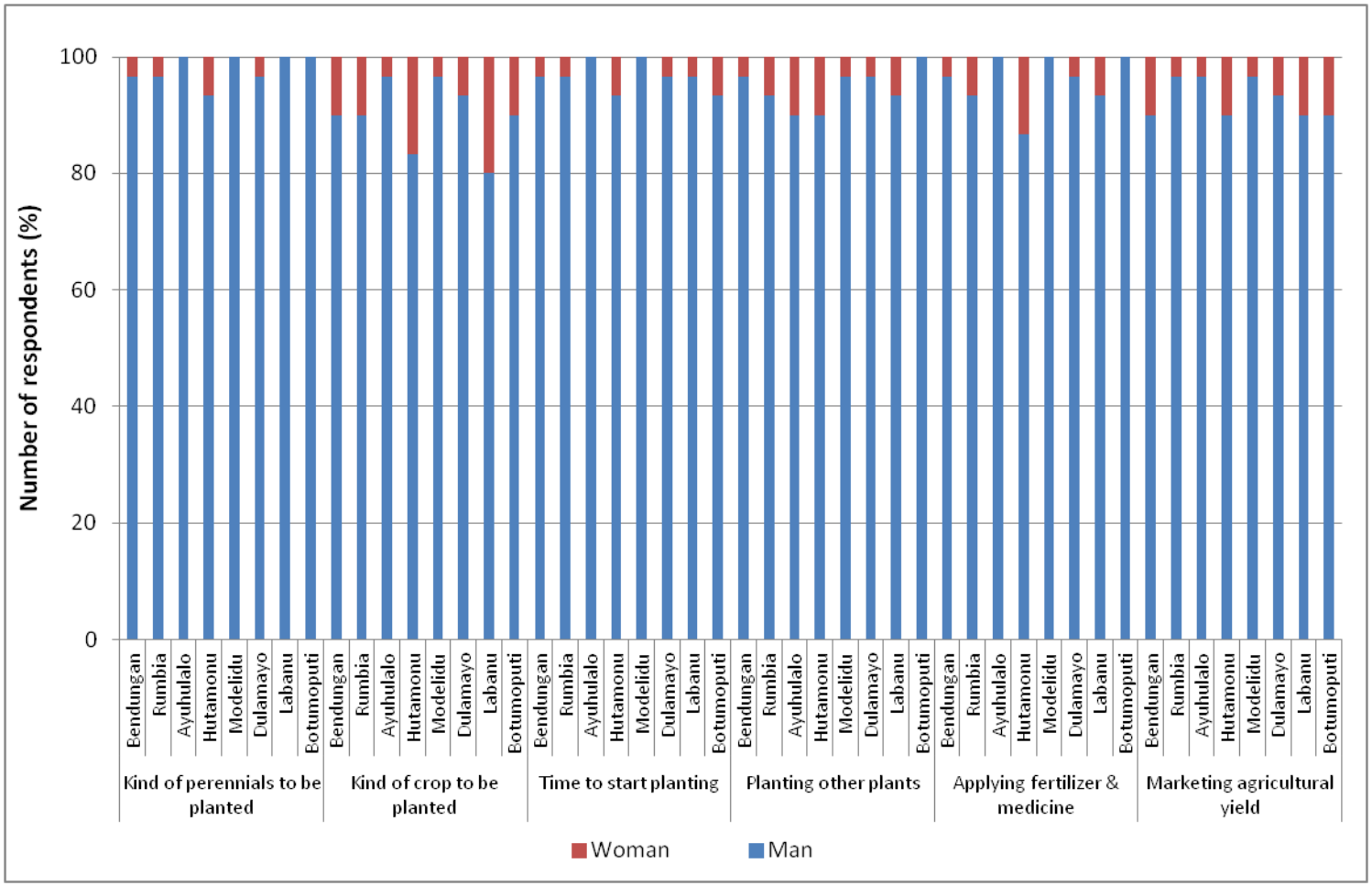


Figure 34. The role of women in decision making in Gorontalo

Table 34. The role of women in farming system activities of maize fields in Gorontalo

| Activity | Villages | n | The role of women in farming system activities | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Woman > man | | Woman = man | | Woman < man | | No woman role | |
| | | | n | % | n | % | n | % | n | % |
| Land Preparation | Bendungan | 27 | 1 | 4 | 0 | 0 | 11 | 41 | 15 | 56 |
| | Rumbia | 22 | 0 | 0 | 2 | 9 | 19 | 86 | 1 | 5 |
| | Ayuhulalo | 22 | 0 | 0 | 3 | 14 | 12 | 55 | 7 | 32 |
| | Hutamonu | 29 | 0 | 0 | 1 | 3 | 12 | 41 | 16 | 55 |
| | Modelidu | 16 | 0 | 0 | 0 | 0 | 15 | 94 | 1 | 6 |
| | Dulamayo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Labanu | 15 | 0 | 0 | 2 | 13 | 6 | 40 | 7 | 47 |
| | Botumoputi | 15 | 0 | 0 | 3 | 20 | 8 | 53 | 4 | 27 |
| Planting | Bendungan | 27 | 4 | 15 | 9 | 33 | 9 | 33 | 5 | 19 |
| | Rumbia | 22 | 1 | 5 | 9 | 41 | 12 | 55 | 0 | 0 |
| | Ayuhulalo | 22 | 0 | 0 | 11 | 50 | 11 | 50 | 0 | 0 |
| | Hutamonu | 29 | 2 | 7 | 5 | 17 | 14 | 48 | 8 | 28 |
| | Modelidu | 16 | 0 | 0 | 8 | 50 | 8 | 50 | 0 | 0 |
| | Dulamayo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Labanu | 15 | 1 | 7 | 5 | 33 | 7 | 47 | 2 | 13 |
| | Botumoputi | 15 | 0 | 0 | 7 | 47 | 8 | 53 | 0 | 0 |
| Crop care | Bendungan | 27 | 1 | 4 | 2 | 7 | 16 | 59 | 8 | 30 |
| | Rumbia | 22 | 0 | 0 | 4 | 18 | 16 | 73 | 2 | 9 |
| | Ayuhulalo | 22 | 1 | 5 | 4 | 18 | 15 | 68 | 2 | 9 |
| | Hutamonu | 29 | 2 | 7 | 2 | 7 | 16 | 55 | 9 | 31 |
| | Modelidu | 16 | 0 | 0 | 1 | 6 | 14 | 88 | 1 | 6 |
| | Dulamayo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Labanu | 15 | 0 | 0 | 3 | 20 | 10 | 67 | 2 | 13 |
| | Botumoputi | 15 | 1 | 7 | 6 | 40 | 8 | 53 | 0 | 0 |
| Harvesting | Bendungan | 27 | 3 | 11 | 6 | 22 | 13 | 48 | 5 | 19 |
| | Rumbia | 22 | 2 | 9 | 10 | 45 | 10 | 45 | 0 | 0 |
| | Ayuhulalo | 22 | 1 | 5 | 12 | 55 | 8 | 36 | 1 | 5 |
| | Hutamonu | 29 | 5 | 17 | 7 | 24 | 10 | 34 | 7 | 24 |
| | Modelidu | 16 | 1 | 6 | 4 | 25 | 11 | 69 | 0 | 0 |
| | Dulamayo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Labanu | 15 | 2 | 13 | 3 | 20 | 8 | 53 | 2 | 13 |
| | Botumoputi | 15 | 2 | 13 | 6 | 40 | 7 | 47 | 0 | 0 |
| Post-harvesting | Bendungan | 27 | 1 | 4 | 5 | 19 | 14 | 52 | 7 | 26 |
| | Rumbia | 22 | 0 | 0 | 4 | 18 | 12 | 55 | 6 | 27 |
| | Ayuhulalo | 22 | 0 | 0 | 5 | 23 | 9 | 41 | 8 | 36 |
| | Hutamonu | 29 | 0 | 0 | 2 | 7 | 16 | 55 | 11 | 38 |
| | Modelidu | 16 | 2 | 13 | 0 | 0 | 14 | 88 | 0 | 0 |
| | Dulamayo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Labanu | 15 | 0 | 0 | 4 | 27 | 9 | 60 | 2 | 13 |
| | Botumoputi | 15 | 1 | 7 | 4 | 27 | 9 | 60 | 1 | 7 |
| Marketing | Bendungan | 27 | 2 | 7 | 3 | 11 | 9 | 33 | 13 | 48 |
| | Rumbia | 22 | 1 | 5 | 1 | 5 | 4 | 18 | 16 | 73 |
| | Ayuhulalo | 22 | 1 | 5 | 1 | 5 | 5 | 23 | 15 | 68 |
| | Hutamonu | 29 | 1 | 3 | 4 | 14 | 9 | 31 | 15 | 52 |
| | Modelidu | 16 | 2 | 13 | 0 | 0 | 8 | 50 | 6 | 38 |
| | Dulamayo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Labanu | 15 | 0 | 0 | 2 | 13 | 4 | 27 | 9 | 60 |
| | Botumoputi | 15 | 3 | 20 | 1 | 7 | 2 | 13 | 9 | 60 |

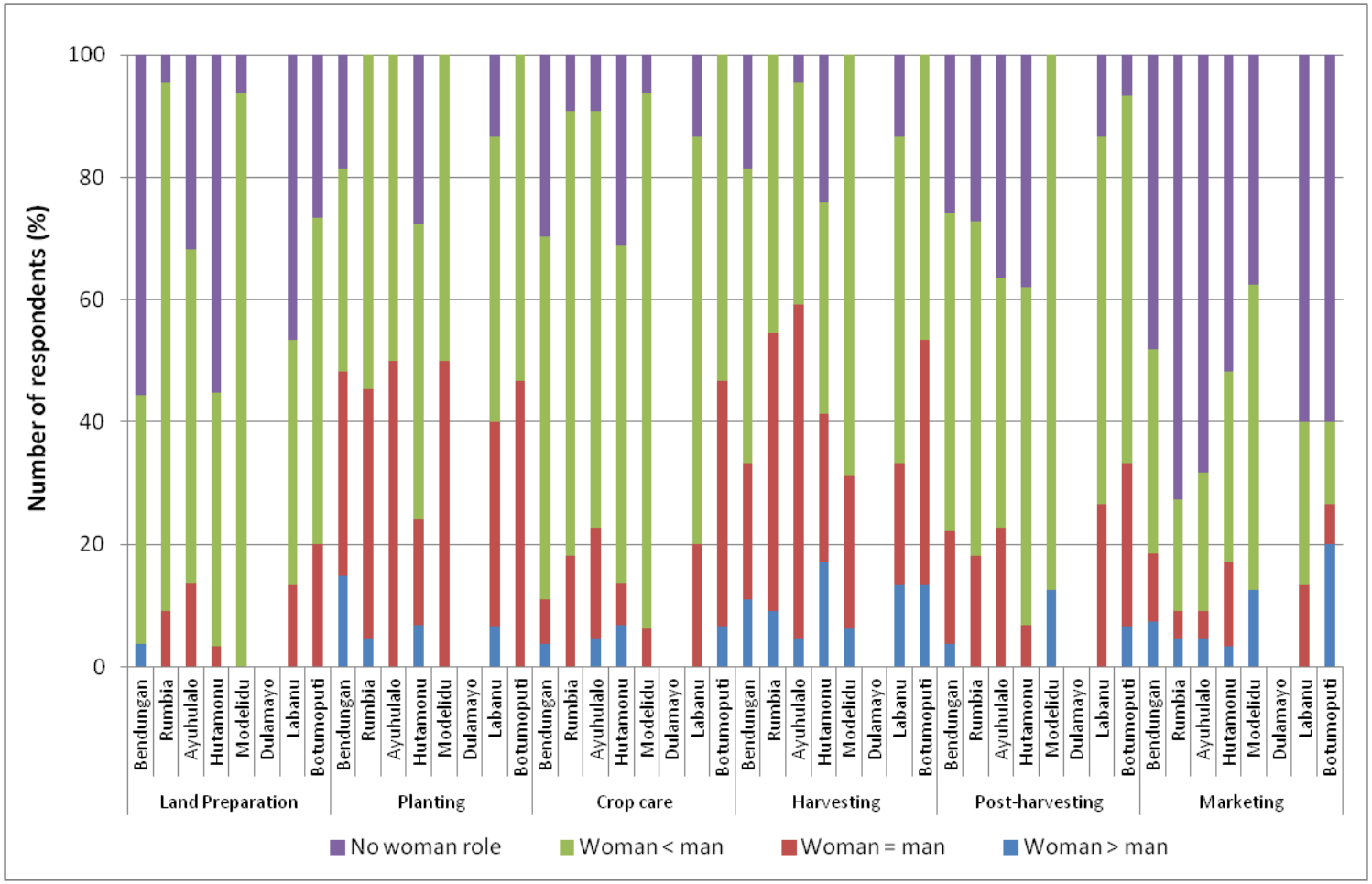


Figure 35. The role of women in farming system activities of maize fields in Gorontalo

Table 35. The role of women in farming system activities of agroforestry system in Gorontalo

| Activity | Villages | n | The role of women in farming system activities | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Woman > man | | Woman = man | | Woman < man | | No woman role | |
| | | | n | % | n | % | n | % | n | % |
| Land Preparation | Bendungan | 9 | 0 | 0 | 0 | 0 | 2 | 22 | 7 | 78 |
| | Rumbia | 8 | 1 | 13 | 0 | 0 | 3 | 38 | 4 | 50 |
| | Ayuhulalo | 10 | 0 | 0 | 0 | 0 | 4 | 40 | 6 | 60 |
| | Hutamonu | 9 | 1 | 11 | 0 | 0 | 1 | 11 | 7 | 78 |
| | Modelidu | 21 | 0 | 0 | 0 | 0 | 15 | 71 | 6 | 29 |
| | Dulamayo | 30 | 0 | 0 | 0 | 0 | 24 | 80 | 6 | 20 |
| | Labanu | 14 | 0 | 0 | 1 | 7 | 6 | 43 | 7 | 50 |
| | Botumoputi | 8 | 0 | 0 | 0 | 0 | 7 | 88 | 1 | 13 |
| Planting | Bendungan | 9 | 0 | 0 | 2 | 22 | 2 | 22 | 5 | 56 |
| | Rumbia | 8 | 1 | 13 | 1 | 13 | 2 | 25 | 4 | 50 |
| | Ayuhulalo | 10 | 1 | 10 | 2 | 20 | 4 | 40 | 3 | 30 |
| | Hutamonu | 9 | 2 | 22 | 1 | 11 | 3 | 33 | 3 | 33 |
| | Modelidu | 21 | 0 | 0 | 5 | 24 | 11 | 52 | 5 | 24 |
| | Dulamayo | 30 | 0 | 0 | 2 | 7 | 20 | 67 | 8 | 27 |
| | Labanu | 14 | 0 | 0 | 1 | 7 | 12 | 86 | 1 | 7 |
| | Botumoputi | 8 | 0 | 0 | 1 | 13 | 7 | 88 | 0 | 0 |
| Cultivation | Bendungan | 9 | 0 | 0 | 1 | 11 | 3 | 33 | 5 | 56 |
| | Rumbia | 8 | 1 | 13 | 1 | 13 | 2 | 25 | 4 | 50 |
| | Ayuhulalo | 10 | 1 | 10 | 2 | 20 | 5 | 50 | 2 | 20 |
| | Hutamonu | 9 | 1 | 11 | 1 | 11 | 4 | 44 | 3 | 33 |
| | Modelidu | 21 | 0 | 0 | 1 | 5 | 16 | 76 | 4 | 19 |
| | Dulamayo | 30 | 1 | 3 | 0 | 0 | 23 | 77 | 6 | 20 |
| | Labanu | 14 | 0 | 0 | 1 | 7 | 11 | 79 | 2 | 14 |
| | Botumoputi | 8 | 0 | 0 | 1 | 13 | 7 | 88 | 0 | 0 |
| Harvesting | Bendungan | 9 | 0 | 0 | 3 | 33 | 2 | 22 | 4 | 44 |
| | Rumbia | 8 | 1 | 13 | 0 | 0 | 5 | 63 | 2 | 25 |
| | Ayuhulalo | 10 | 0 | 0 | 4 | 40 | 5 | 50 | 1 | 10 |
| | Hutamonu | 9 | 1 | 11 | 3 | 33 | 3 | 33 | 2 | 22 |
| | Modelidu | 21 | 0 | 0 | 4 | 19 | 15 | 71 | 2 | 10 |
| | Dulamayo | 30 | 1 | 3 | 1 | 3 | 24 | 80 | 4 | 13 |
| | Labanu | 14 | 0 | 0 | 3 | 21 | 10 | 71 | 1 | 7 |
| | Botumoputi | 8 | 1 | 13 | 1 | 13 | 6 | 75 | 0 | 0 |
| Post-harvesting | Bendungan | 9 | 0 | 0 | 2 | 22 | 1 | 11 | 6 | 67 |
| | Rumbia | 8 | 1 | 13 | 0 | 0 | 5 | 63 | 2 | 25 |
| | Ayuhulalo | 10 | 0 | 0 | 0 | 0 | 4 | 40 | 6 | 60 |
| | Hutamonu | 9 | 1 | 11 | 1 | 11 | 5 | 56 | 2 | 22 |
| | Modelidu | 21 | 0 | 0 | 6 | 29 | 13 | 62 | 2 | 10 |
| | Dulamayo | 30 | 7 | 23 | 3 | 10 | 20 | 67 | 0 | 0 |
| | Labanu | 14 | 0 | 0 | 1 | 7 | 11 | 79 | 2 | 14 |
| | Botumoputi | 8 | 1 | 13 | 1 | 13 | 6 | 75 | 0 | 0 |
| Marketing | Bendungan | 9 | 1 | 11 | 1 | 11 | 1 | 11 | 6 | 67 |
| | Rumbia | 8 | 1 | 13 | 1 | 13 | 2 | 25 | 4 | 50 |
| | Ayuhulalo | 10 | 1 | 10 | 0 | 0 | 1 | 10 | 8 | 80 |
| | Hutamonu | 9 | 1 | 11 | 0 | 0 | 3 | 33 | 5 | 56 |
| | Modelidu | 21 | 3 | 14 | 1 | 5 | 8 | 38 | 9 | 43 |
| | Dulamayo | 30 | 4 | 13 | 3 | 10 | 10 | 33 | 13 | 43 |
| | Labanu | 14 | 1 | 7 | 2 | 14 | 5 | 36 | 6 | 43 |
| | Botumoputi | 8 | 1 | 13 | 0 | 0 | 4 | 50 | 3 | 38 |

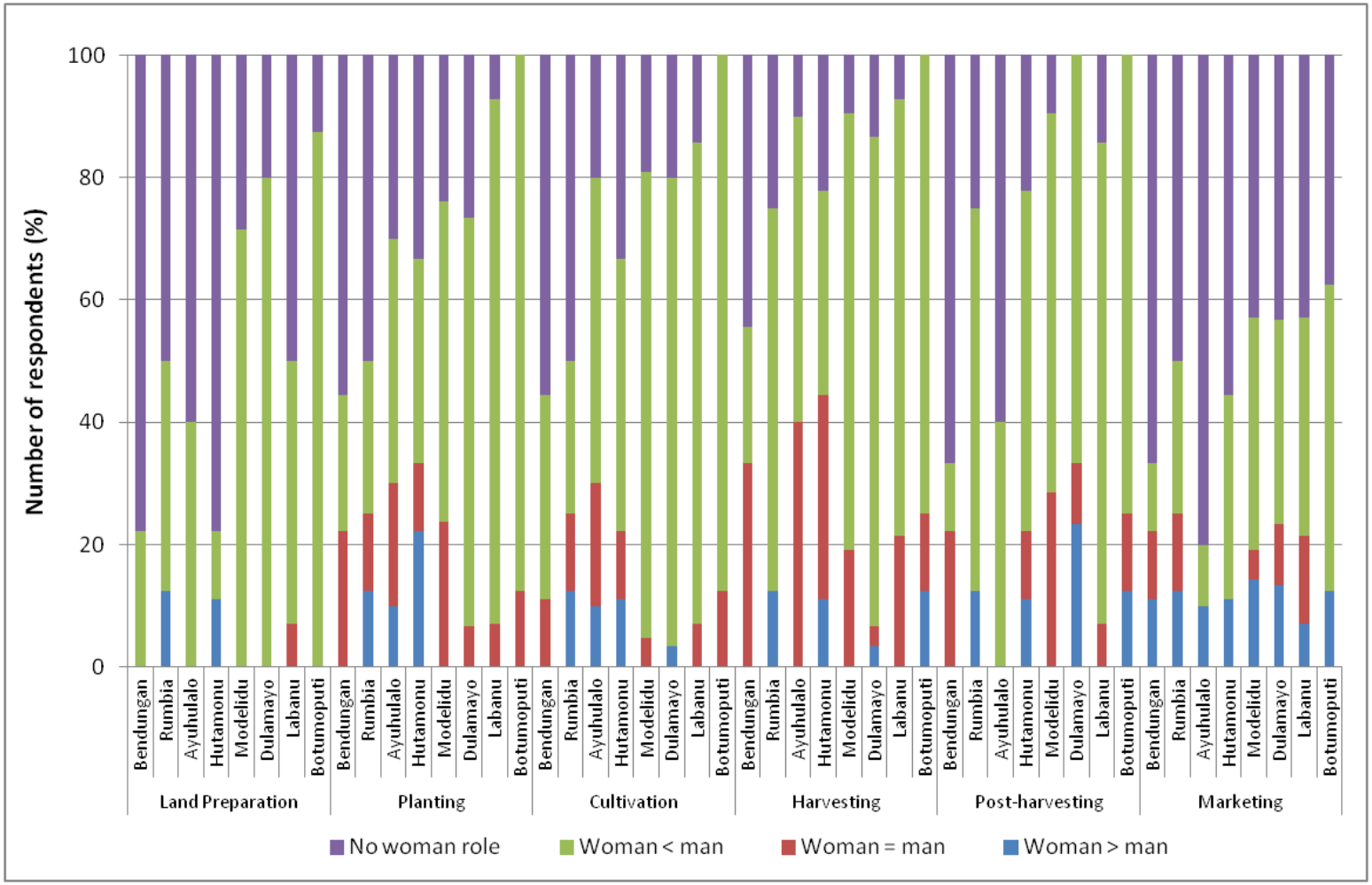


Figure 36. The role of women in farming system activities of agroforestry system in Gorontalo

Table 36. The role of women in farming system activities of timber or fruit based in Gorontalo

| Activity | Villages | n | The role of women in farming system activities | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Woman > man | | Woman = man | | Woman < man | | No woman role | |
| | | | n | % | n | % | n | % | n | % |
| Land Preparation | Bendungan | 9 | 0 | 0 | 1 | 11 | 2 | 22 | 6 | 67 |
| | Rumbia | 16 | 0 | 0 | 2 | 13 | 10 | 63 | 4 | 25 |
| | Ayuhulalo | 11 | 0 | 0 | 1 | 9 | 7 | 64 | 3 | 27 |
| | Hutamonu | 10 | 1 | 10 | 0 | 0 | 6 | 60 | 3 | 30 |
| | Modelidu | 10 | 0 | 0 | 1 | 10 | 8 | 80 | 1 | 10 |
| | Dulamayo | 10 | 0 | 0 | 0 | 0 | 9 | 90 | 1 | 10 |
| | Labanu | 10 | 0 | 0 | 2 | 20 | 3 | 30 | 5 | 50 |
| | Botumoputi | 20 | 0 | 0 | 2 | 10 | 13 | 65 | 5 | 25 |
| Planting | Bendungan | 9 | 0 | 0 | 1 | 11 | 2 | 22 | 6 | 67 |
| | Rumbia | 16 | 0 | 0 | 1 | 6 | 13 | 81 | 2 | 13 |
| | Ayuhulalo | 11 | 0 | 0 | 1 | 9 | 9 | 82 | 1 | 9 |
| | Hutamonu | 10 | 1 | 10 | 0 | 0 | 7 | 70 | 2 | 20 |
| | Modelidu | 10 | 0 | 0 | 1 | 10 | 6 | 60 | 3 | 30 |
| | Dulamayo | 10 | 0 | 0 | 0 | 0 | 8 | 80 | 2 | 20 |
| | Labanu | 10 | 1 | 10 | 1 | 10 | 7 | 70 | 1 | 10 |
| | Botumoputi | 20 | 0 | 0 | 3 | 15 | 15 | 75 | 2 | 10 |
| Cultivation | Bendungan | 9 | 0 | 0 | 1 | 11 | 3 | 33 | 5 | 56 |
| | Rumbia | 16 | 0 | 0 | 1 | 6 | 9 | 56 | 6 | 38 |
| | Ayuhulalo | 11 | 0 | 0 | 2 | 18 | 6 | 55 | 3 | 27 |
| | Hutamonu | 10 | 1 | 10 | 0 | 0 | 7 | 70 | 2 | 20 |
| | Modelidu | 10 | 0 | 0 | 0 | 0 | 9 | 90 | 1 | 10 |
| | Dulamayo | 10 | 0 | 0 | 0 | 0 | 5 | 50 | 5 | 50 |
| | Labanu | 10 | 0 | 0 | 0 | 0 | 8 | 80 | 2 | 20 |
| | Botumoputi | 20 | 0 | 0 | 4 | 20 | 14 | 70 | 2 | 10 |
| Harvesting | Bendungan | 9 | 0 | 0 | 2 | 22 | 1 | 11 | 6 | 67 |
| | Rumbia | 16 | 0 | 0 | 1 | 6 | 9 | 56 | 6 | 38 |
| | Ayuhulalo | 11 | 0 | 0 | 1 | 9 | 7 | 64 | 3 | 27 |
| | Hutamonu | 10 | 1 | 10 | 0 | 0 | 5 | 50 | 4 | 40 |
| | Modelidu | 10 | 0 | 0 | 0 | 0 | 9 | 90 | 1 | 10 |
| | Dulamayo | 10 | 0 | 0 | 0 | 0 | 6 | 60 | 4 | 40 |
| | Labanu | 10 | 0 | 0 | 0 | 0 | 9 | 90 | 1 | 10 |
| | Botumoputi | 20 | 0 | 0 | 2 | 10 | 14 | 70 | 4 | 20 |
| Post-harvesting | Bendungan | 9 | 0 | 0 | 1 | 11 | 2 | 22 | 6 | 67 |
| | Rumbia | 16 | 0 | 0 | 3 | 19 | 8 | 50 | 5 | 31 |
| | Ayuhulalo | 11 | 0 | 0 | 1 | 9 | 6 | 55 | 4 | 36 |
| | Hutamonu | 10 | 1 | 10 | 2 | 20 | 5 | 50 | 2 | 20 |
| | Modelidu | 10 | 1 | 10 | 0 | 0 | 9 | 90 | 0 | 0 |
| | Dulamayo | 10 | 3 | 30 | 1 | 10 | 5 | 50 | 1 | 10 |
| | Labanu | 10 | 0 | 0 | 1 | 10 | 7 | 70 | 2 | 20 |
| | Botumoputi | 20 | 2 | 10 | 3 | 15 | 12 | 60 | 3 | 15 |
| Marketing | Bendungan | 9 | 0 | 0 | 1 | 11 | 1 | 11 | 7 | 78 |
| | Rumbia | 16 | 0 | 0 | 2 | 13 | 7 | 44 | 7 | 44 |
| | Ayuhulalo | 11 | 0 | 0 | 1 | 9 | 2 | 18 | 8 | 73 |
| | Hutamonu | 10 | 2 | 20 | 1 | 10 | 4 | 40 | 3 | 30 |
| | Modelidu | 10 | 1 | 10 | 0 | 0 | 7 | 70 | 2 | 20 |
| | Dulamayo | 10 | 0 | 0 | 1 | 10 | 3 | 30 | 6 | 60 |
| | Labanu | 10 | 0 | 0 | 2 | 20 | 1 | 10 | 7 | 70 |
| | Botumoputi | 20 | 1 | 5 | 2 | 10 | 3 | 15 | 14 | 70 |

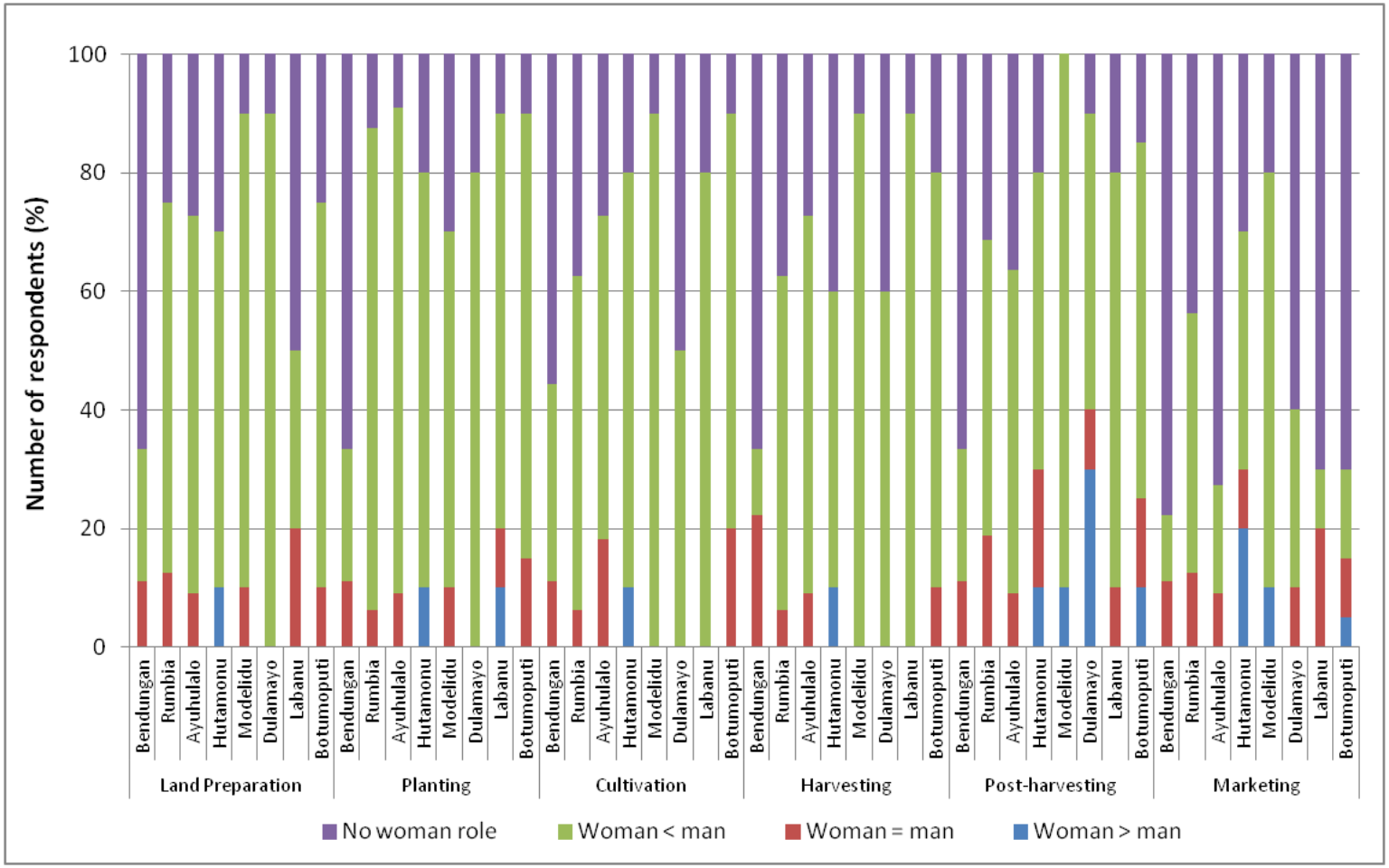


Figure 37. The role of women in farming system activities of timber or fruit based in Gorontalo

Table 37. The role of women in various types of land use in Gorontalo

| Types of Land | Villages | n | The role of women in various types of land | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Woman > man | | Woman = man | | Woman < man | | No woman role | |
| | | | n | % | n | % | n | % | n | % |
| Maize field | Bendungan | 24 | 2 | 8 | 3 | 13 | 17 | 71 | 2 | 8 |
| | Rumbia | 23 | 1 | 4 | 5 | 22 | 17 | 74 | 0 | 0 |
| | Ayuhulalo | 21 | 0 | 0 | 5 | 24 | 16 | 76 | 0 | 0 |
| | Hutamonu | 25 | 2 | 8 | 3 | 12 | 18 | 72 | 2 | 8 |
| | Modelidu | 13 | 0 | 0 | 1 | 8 | 12 | 92 | 0 | 0 |
| | Dulamayo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Labanu | 15 | 0 | 0 | 2 | 13 | 13 | 87 | 0 | 0 |
| | Botumoputi | 15 | 1 | 7 | 2 | 13 | 12 | 80 | 0 | 0 |
| Agroforestry | Bendungan | 7 | 0 | 0 | 2 | 29 | 5 | 71 | 0 | 0 |
| | Rumbia | 9 | 1 | 11 | 2 | 22 | 4 | 44 | 2 | 22 |
| | Ayuhulalo | 9 | 0 | 0 | 2 | 22 | 6 | 67 | 1 | 11 |
| | Hutamonu | 8 | 1 | 13 | 0 | 0 | 6 | 75 | 1 | 13 |
| | Modelidu | 22 | 0 | 0 | 0 | 0 | 22 | 100 | 0 | 0 |
| | Dulamayo | 30 | 1 | 3 | 0 | 0 | 29 | 97 | 0 | 0 |
| | Labanu | 14 | 0 | 0 | 1 | 7 | 12 | 86 | 1 | 7 |
| | Botumoputi | 7 | 0 | 0 | 0 | 0 | 7 | 100 | 0 | 0 |
| Timber or fruit based | Bendungan | 7 | 0 | 0 | 0 | 0 | 6 | 86 | 1 | 14 |
| | Rumbia | 12 | 0 | 0 | 1 | 8 | 8 | 67 | 3 | 25 |
| | Ayuhulalo | 11 | 0 | 0 | 1 | 9 | 10 | 91 | 0 | 0 |
| | Hutamonu | 10 | 0 | 0 | 1 | 10 | 9 | 90 | 0 | 0 |
| | Modelidu | 10 | 0 | 0 | 0 | 0 | 9 | 90 | 1 | 10 |
| | Dulamayo | 10 | 0 | 0 | 0 | 0 | 6 | 60 | 4 | 40 |
| | Labanu | 10 | 0 | 0 | 2 | 20 | 7 | 70 | 1 | 10 |
| | Botumoputi | 21 | 1 | 5 | 4 | 19 | 15 | 71 | 1 | 5 |

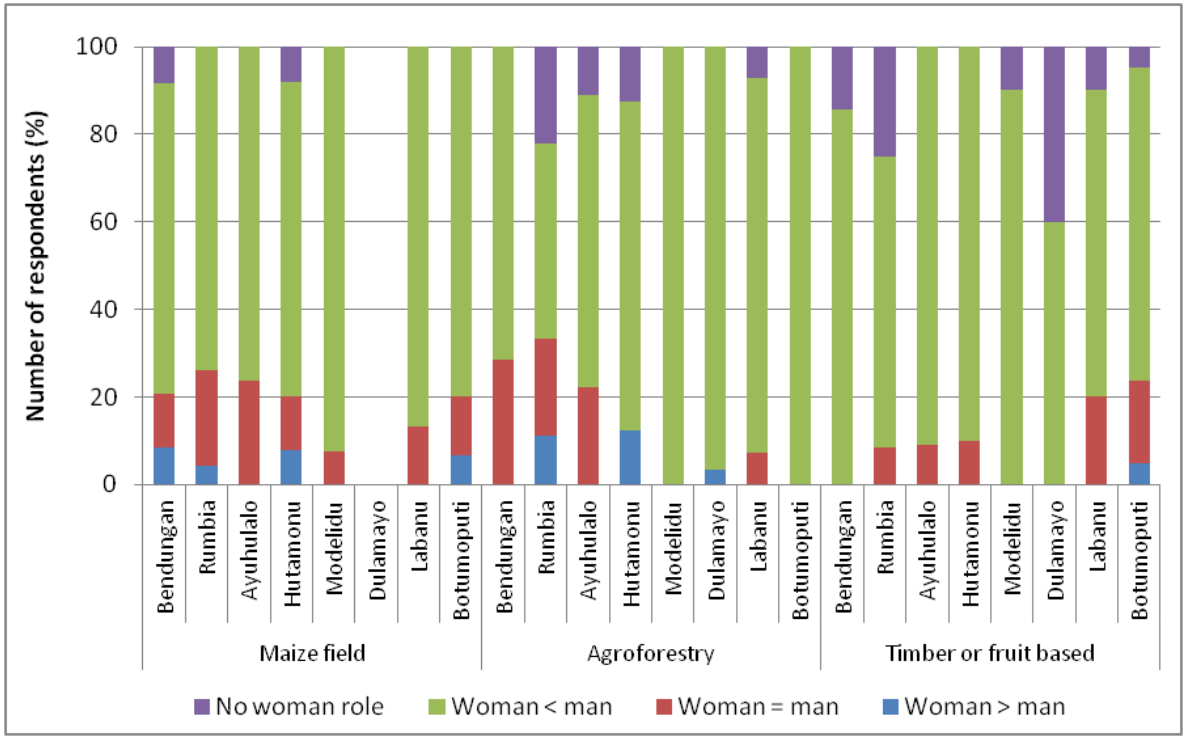


Figure 38. The role of women in various types of land use in Gorontalo

Table 38. Labour use in the various types of land use by village in Gorontalo

| Village typologies | Land use by village | Labor use | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Family | | | | Exchange | | | | Hire | | | | Total | | | |
| | | Male | | Female | | Male | | Female | | Male | | Female | | Male | | Female | |
| | | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| **Maize fields** | | **3,370** | **74** | **1,204** | **26** | **311** | **54** | **261** | **46** | **4,936** | **65** | **2,648** | **35** | **8,617** | **68** | **4,113** | **32** |
| APL | Bendungan | 922 | 76 | 288 | 24 | 9 | 42 | 12 | 58 | 910 | 67 | 456 | 33 | 1,840 | 71 | 756 | 29 |
| APL-HTR | Rumbia | 460 | 71 | 186 | 29 | 71 | 59 | 49 | 41 | 544 | 68 | 254 | 32 | 1,075 | 69 | 490 | 31 |
| HL-HKM | Ayuhulalo | 697 | 64 | 384 | 36 | 93 | 45 | 115 | 55 | 1,641 | 60 | 1,093 | 40 | 2,431 | 60 | 1,592 | 40 |
| | Hutamonu | 548 | 84 | 102 | 16 | 78 | 56 | 60 | 44 | 560 | 64 | 318 | 36 | 1,186 | 71 | 480 | 29 |
| Complex agroforestry | Modelidu | 79 | 56 | 63 | 44 | 5 | 64 | 3 | 36 | 0 | 0 | 0 | 0 | 85 | 56 | 66 | 44 |
| | Dulamayo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Medium agroforestry | Labanu | 460 | 78 | 127 | 22 | 0 | 0 | 12 | 100 | 1,055 | 70 | 442 | 30 | 1,514 | 72 | 580 | 28 |
| | Botumoputi | 204 | 79 | 54 | 21 | 55 | 86 | 9 | 14 | 227 | 73 | 85 | 27 | 486 | 77 | 148 | 23 |
| **Crop fields** | | **1,884** | **61** | **1,220** | **39** | **131** | **47** | **149** | **53** | **486** | **55** | **405** | **45** | **2,502** | **59** | **1,773** | **41** |
| APL | Bendungan | 20 | 59 | 14 | 41 | 0 | 0 | 0 | 0 | 15 | 55 | 13 | 45 | 35 | 57 | 27 | 43 |
| APL-HTR | Rumbia | 316 | 68 | 146 | 32 | 0 | 0 | 0 | 0 | 189 | 66 | 96 | 34 | 505 | 68 | 242 | 32 |
| HL-HKM | Ayuhulalo | 57 | 59 | 39 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 57 | 59 | 39 | 41 |
| | Hutamonu | 479 | 61 | 312 | 39 | 5 | 54 | 5 | 46 | 65 | 36 | 118 | 64 | 550 | 56 | 435 | 44 |
| Complex agroforestry | Modelidu | 571 | 59 | 396 | 41 | 126 | 47 | 144 | 53 | 39 | 56 | 31 | 44 | 735 | 56 | 571 | 44 |
| | Dulamayo | 57 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 57 | 100 | 0 | 0 |
| Medium agroforestry | Labanu | 4 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 100 | 0 | 0 | 6 | 100 | 0 | 0 |
| | Botumoputi | 380 | 55 | 312 | 45 | 0 | 0 | 0 | 0 | 177 | 55 | 147 | 45 | 557 | 55 | 460 | 45 |
| **Coconut agroforest** | | **1,592** | **77** | **466** | **23** | **187** | **75** | **61** | **25** | **1,472** | **71** | **603** | **29** | **3,250** | **74** | **1,129** | **26** |
| APL | Bendungan | 175 | 87 | 25 | 13 | 11 | 100 | 0 | 0 | 308 | 97 | 10 | 3 | 494 | 93 | 35 | 7 |
| APL-HTR | Rumbia | 140 | 77 | 43 | 23 | 24 | 100 | 0 | 0 | 110 | 36 | 196 | 64 | 274 | 54 | 238 | 46 |
| HL-HKM | Ayuhulalo | 221 | 85 | 40 | 15 | 69 | 63 | 40 | 37 | 82 | 42 | 114 | 58 | 373 | 66 | 194 | 34 |
| | Hutamonu | 241 | 86 | 40 | 14 | 21 | 74 | 7 | 26 | 305 | 72 | 118 | 28 | 567 | 77 | 165 | 23 |
| Complex agroforestry | Modelidu | 102 | 88 | 14 | 12 | 0 | 0 | 0 | 0 | 8 | 100 | 0 | 0 | 110 | 89 | 14 | 11 |
| | Dulamayo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Medium agroforestry | Labanu | 144 | 68 | 66 | 32 | 3 | 100 | 0 | 0 | 498 | 77 | 150 | 23 | 644 | 75 | 216 | 25 |
| | Botumoputi | 568 | 71 | 238 | 29 | 59 | 81 | 14 | 19 | 161 | 92 | 15 | 8 | 788 | 75 | 266 | 25 |

| **Cacao agroforest** | | **765** | **81** | **177** | **19** | **9** | **17** | **45** | **83** | **157** | **67** | **78** | **33** | **931** | **76** | **300** | **24** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APL | Bendungan | 409 | 84 | 80 | 16 | 0 | 0 | 0 | 0 | 111 | 73 | 40 | 27 | 521 | 81 | 120 | 19 |
| APL-HTR | Rumbia | 291 | 88 | 41 | 12 | 0 | 0 | 0 | 0 | 43 | 68 | 20 | 32 | 334 | 85 | 61 | 15 |
| HL-HKM | Ayuhulalo | 41 | 91 | 4 | 9 | 8 | 40 | 12 | 60 | 2 | 10 | 18 | 90 | 51 | 60 | 34 | 40 |
| | Hutamonu | 24 | 32 | 51 | 68 | 1 | 3 | 33 | 97 | 0 | 0 | 0 | 0 | 25 | 23 | 84 | 77 |
| Complex agroforestry | Modelidu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Dulamayo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Medium agroforestry | Labanu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Botumoputi | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Agroforestry** | | **4,692** | **74** | **1,642** | **26** | **294** | **78** | **84** | **22** | **2,599** | **85** | **466** | **15** | **7,585** | **78** | **2,191** | **22** |
| APL | Bendungan | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 47 | 56 | 53 | 80 | 59 | 56 | 41 |
| APL-HTR | Rumbia | 364 | 91 | 37 | 9 | 0 | 0 | 0 | 0 | 67 | 100 | 0 | 0 | 431 | 92 | 37 | 8 |
| HL-HKM | Ayuhulalo | 319 | 83 | 65 | 17 | 0 | 0 | 10 | 100 | 128 | 49 | 134 | 51 | 447 | 68 | 209 | 32 |
| | Hutamonu | 389 | 74 | 140 | 26 | 151 | 100 | 0 | 0 | 23 | 100 | 0 | 0 | 563 | 80 | 140 | 20 |
| Complex agroforestry | Modelidu | 1,365 | 85 | 240 | 15 | 76 | 76 | 24 | 24 | 143 | 100 | 0 | 0 | 1,583 | 86 | 264 | 14 |
| | Dulamayo | 1,424 | 63 | 847 | 37 | 63 | 57 | 48 | 43 | 1,717 | 98 | 40 | 2 | 3,204 | 77 | 935 | 23 |
| Medium agroforestry | Labanu | 656 | 70 | 282 | 30 | 3 | 66 | 2 | 34 | 416 | 64 | 229 | 36 | 1,075 | 68 | 513 | 32 |
| | Botumoputi | 145 | 82 | 32 | 18 | 2 | 100 | 0 | 0 | 55 | 91 | 6 | 9 | 202 | 84 | 38 | 16 |
| **Clove agroforest** | | **791** | **78** | **218** | **22** | **143** | **100** | **0** | **0** | **841** | **82** | **181** | **18** | **1,775** | **82** | **398** | **18** |
| APL | Bendungan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APL-HTR | Rumbia | 47 | 84 | 9 | 16 | 1 | 100 | 0 | 0 | 1 | 100 | 0 | 0 | 49 | 84 | 9 | 16 |
| HL-HKM | Ayuhulalo | 97 | 80 | 24 | 20 | 15 | 100 | 0 | 0 | 45 | 74 | 16 | 26 | 157 | 80 | 40 | 20 |
| | Hutamonu | 265 | 74 | 93 | 26 | 0 | 0 | 0 | 0 | 309 | 90 | 34 | 10 | 575 | 82 | 127 | 18 |
| Complex agroforestry | Modelidu | 3 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 100 | 0 | 0 |
| | Dulamayo | 380 | 80 | 92 | 20 | 127 | 100 | 0 | 0 | 485 | 79 | 130 | 21 | 992 | 82 | 222 | 18 |
| Medium agroforestry | Labanu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Botumoputi | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Timber** | | **709** | **79** | **187** | **21** | **78** | **95** | **4** | **5** | **288** | **69** | **127** | **31** | **1,075** | **77** | **319** | **23** |
| APL | Bendungan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APL-HTR | Rumbia | 221 | 83 | 47 | 17 | 4 | 50 | 4 | 50 | 32 | 100 | 0 | 0 | 257 | 84 | 51 | 16 |
| HL-HKM | Ayuhulalo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Hutamonu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Complex agroforestry | Modelidu | 283 | 77 | 84 | 23 | 74 | 100 | 0 | 0 | 7 | 64 | 4 | 36 | 364 | 81 | 88 | 19 |
| | Dulamayo | 5 | 50 | 5 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 50 | 5 | 50 |
| Medium agroforestry | Labanu | 140 | 76 | 44 | 24 | 0 | 0 | 0 | 0 | 241 | 66 | 123 | 34 | 380 | 69 | 168 | 31 |
| | Botumoputi | 59 | 90 | 7 | 10 | 0 | 0 | 0 | 0 | 9 | 100 | 0 | 0 | 68 | 91 | 7 | 9 |

Table 39. Respondents who had heard of the term ‘group marketing’ in Gorontalo

| Village typologies | Villages | n | Recognition of the term group marketing | | | |
|---|---|---|---|---|---|---|
| | | | Yes | | No | |
| | | | n | % | n | % |
| APL | Bendungan | 30 | 7 | 23 | 23 | 77 |
| APL-HTR | Rumbia | 30 | 5 | 17 | 25 | 83 |
| HL-HKM | Ayuhulalo | 30 | 6 | 20 | 24 | 80 |
| | Hutamonu | 30 | 5 | 17 | 25 | 83 |
| Complex agroforestry | Modelidu | 30 | 5 | 17 | 25 | 83 |
| | Dulamayo | 30 | 11 | 37 | 19 | 63 |
| Medium agroforestry | Labanu | 30 | 5 | 17 | 25 | 83 |
| | Botumoputi | 30 | 4 | 13 | 26 | 87 |

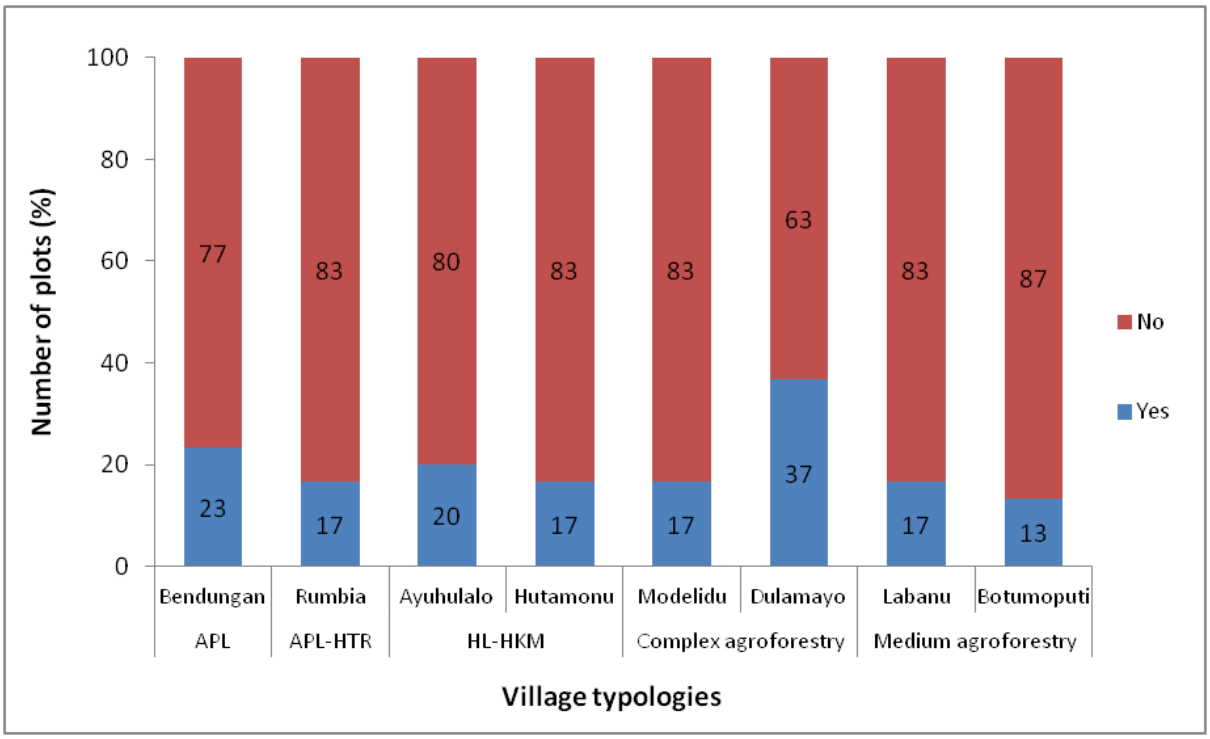


Figure 39. Respondents who had heard of the term ‘group marketing’ in Gorontalo

Table 40. Respondents who were interested to learn more about group marketing in Gorontalo

| Village typologies | Villages | n | Interest to learn more about group marketing | | | |
|---|---|---|---|---|---|---|
| | | | Yes | | No | |
| | | | n | % | n | % |
| APL | Bendungan | 30 | 26 | 87 | 4 | 13 |
| APL-HTR | Rumbia | 30 | 29 | 97 | 1 | 3 |
| HL-HKM | Ayuhulalo | 30 | 24 | 80 | 6 | 20 |
| | Hutamonu | 30 | 20 | 67 | 10 | 33 |
| Complex agroforestry | Modelidu | 30 | 26 | 87 | 4 | 13 |
| | Dulamayo | 30 | 29 | 97 | 1 | 3 |
| Medium agroforestry | Labanu | 30 | 28 | 93 | 2 | 7 |
| | Botumoputi | 30 | 26 | 87 | 4 | 13 |

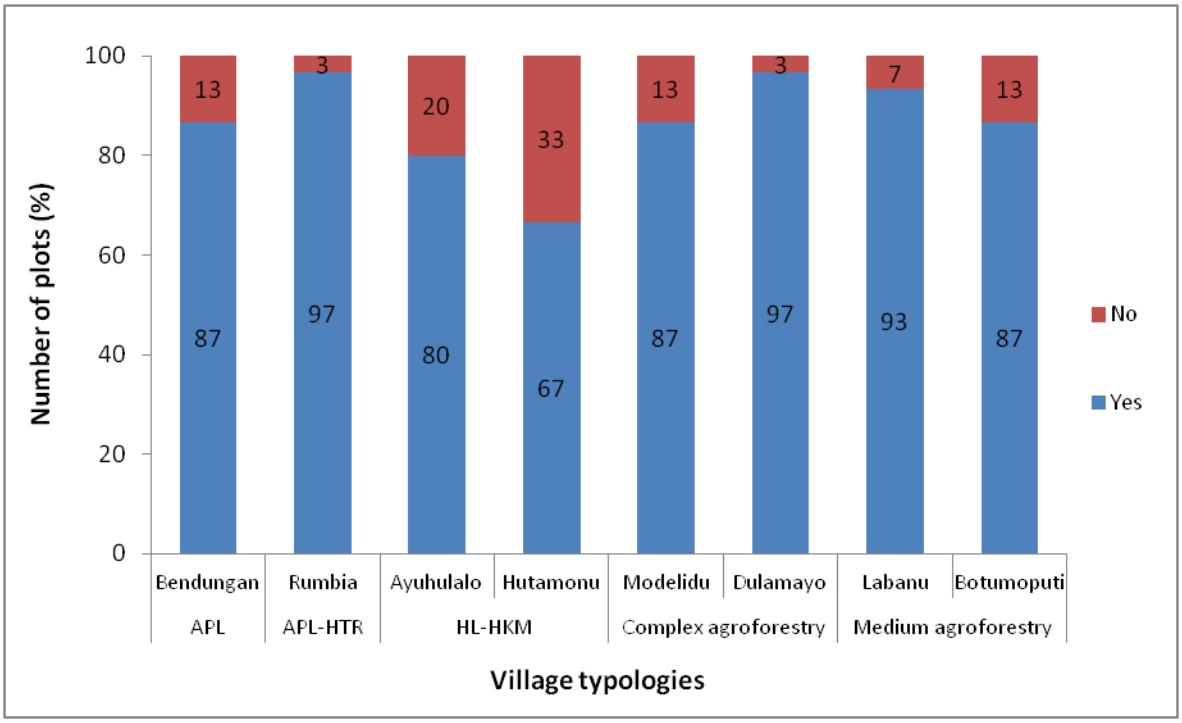


Figure 40.Respondents who were interested to learn more about group marketing in Gorontalo

Table 41. Respondents who were interested to market together as a group in Gorontalo

| Village typologies | Villages | n | Interested to market together as a group | | | |
|---|---|---|---|---|---|---|
| | | | Yes | | No | |
| | | | n | % | n | % |
| APL | Bendungan | 30 | 17 | 57 | 13 | 43 |
| APL-HTR | Rumbia | 30 | 20 | 67 | 10 | 33 |
| HL-HKM | Ayuhulalo | 30 | 13 | 43 | 17 | 57 |
| | Hutamonu | 30 | 15 | 50 | 15 | 50 |
| Complex agroforestry | Modelidu | 30 | 12 | 40 | 18 | 60 |
| | Dulamayo | 30 | 11 | 37 | 19 | 63 |
| Medium agroforestry | Labanu | 30 | 18 | 60 | 12 | 40 |
| | Botumoputi | 30 | 9 | 30 | 21 | 70 |

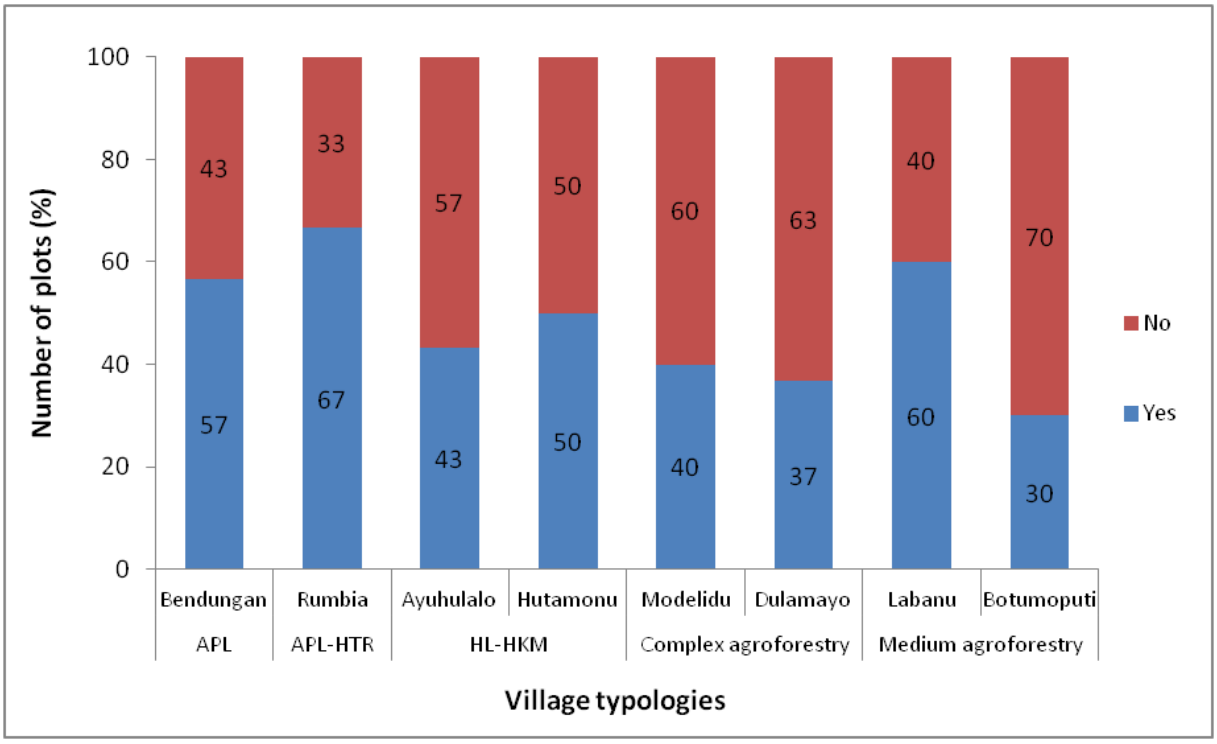


Figure 41.Respondents who were interested to market together as a group in Gorontalo

Table 42. Respondents who were interested in forming small-scale enterprises in Gorontalo

| Village typologies | Villages | n | Interested in forming small-scale enterprises | | | |
|---|---|---|---|---|---|---|
| | | | Yes | | No | |
| | | | n | % | n | % |
| APL | Bendungan | 17 | 17 | 100 | 0 | 0 |
| APL-HTR | Rumbia | 20 | 20 | 100 | 0 | 0 |
| HL-HKM | Ayuhulalo | 13 | 13 | 100 | 0 | 0 |
| | Hutamonu | 15 | 14 | 93 | 1 | 7 |
| Complex agroforestry | Modelidu | 12 | 12 | 100 | 0 | 0 |
| | Dulamayo | 11 | 11 | 100 | 0 | 0 |
| Medium agroforestry | Labanu | 18 | 17 | 94 | 1 | 6 |
| | Botumoputi | 9 | 9 | 100 | 0 | 0 |

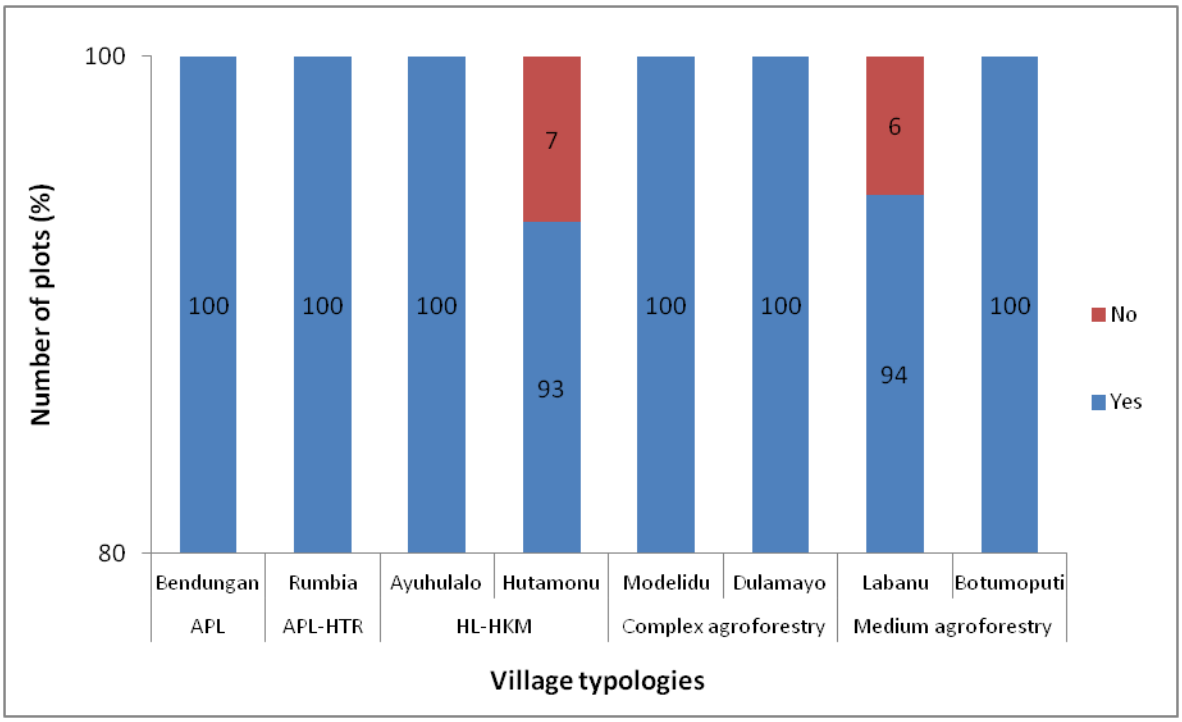


Figure 42. Respondents who were interested in forming small-scale enterprises in Gorontalo

Table 43. Respondents who were interested in learning about how to form enterprises in Gorontalo

| Village typologies | Villages | n | Interested in learning about how to form enterprises | | | |
|---|---|---|---|---|---|---|
| | | | Yes | | No | |
| | | | n | % | n | % |
| APL | Bendungan | 17 | 17 | 100 | 0 | 0 |
| APL-HTR | Rumbia | 20 | 20 | 100 | 0 | 0 |
| HL-HKM | Ayuhulalo | 13 | 13 | 100 | 0 | 0 |
| | Hutamonu | 14 | 14 | 100 | 0 | 0 |
| Complex agroforestry | Modelidu | 12 | 12 | 100 | 0 | 0 |
| | Dulamayo | 11 | 11 | 100 | 0 | 0 |
| Medium agroforestry | Labanu | 17 | 17 | 100 | 0 | 0 |
| | Botumoputi | 9 | 9 | 100 | 0 | 0 |

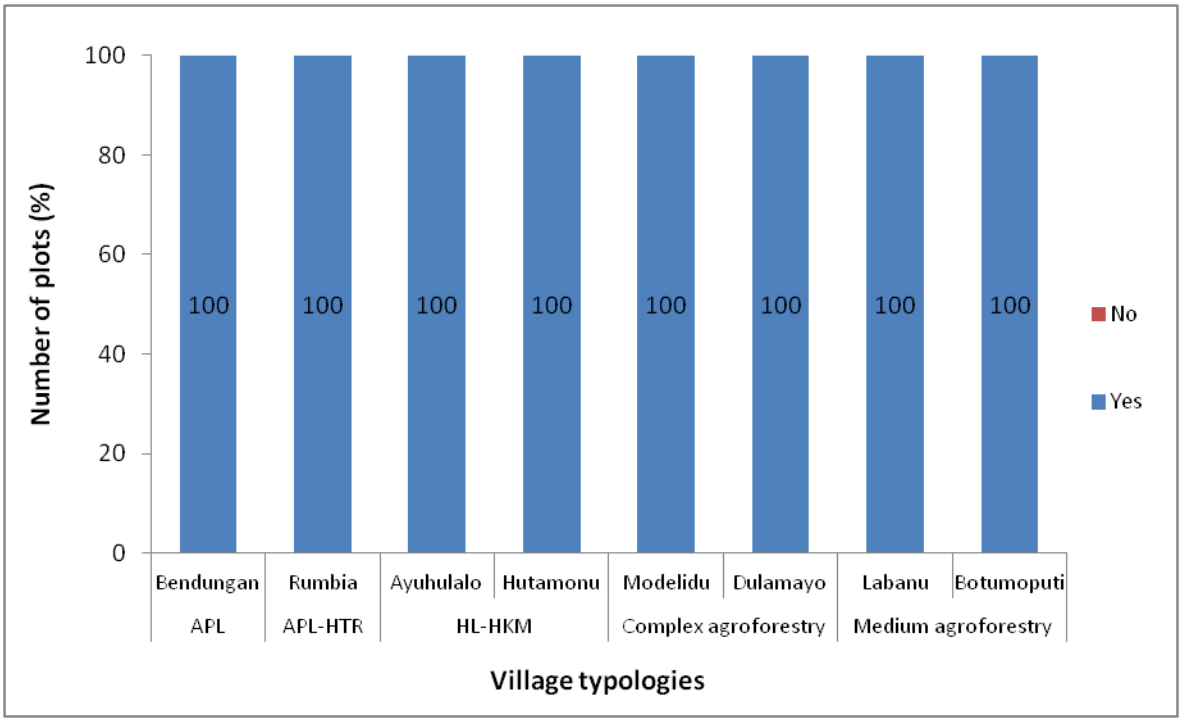


Figure 43. Respondents who were interested in learning about how to form enterprises in Gorontalo