PRISMA Promoting Rural Income through Support for Markets in Agriculture

ARISA Applied Research & Innovation Systems in Agriculture

Pig Market in Nusa Tenggara Timur (NTT)

Pig Demand and Strategy Implications

May 2017

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Table of Contents

Executive Summary

The total human population of Nusa Tenggara Timur - NTT is over 5 million and the population growth rate has been stable over the years at 1.65%. The GDRP (Gross Regional Domestic Products) in constant prices is currently at IDR 57,000 billion, and has grown at a 2012-2015 CAGR of 4%. By island, average per capita expenditure is IDR 7.4 million in Timor in 2015, 7.3 million in Flores, and 6.9 million in Sumba. In terms of GDRP per capita, Timor ranks first at 14 million, but Flores and Sumba are at similar levels with approximately 9 million GDRP per capita each. **Although productivity varies across islands, average expenditure per person is similar. Pig consumption thus does not correlate to regency GDRP and expenditure per capita.**

In NTT, the population of pigs is higher than any other non-poultry animal, with 1.8 million pigs in NTT in 2015. Flores island has the largest share of the pig population, with 753,810 animals or about 42% of NTT's pig population. Timor is the second largest island in terms of pig population, with 686,880 animals or 38% of NTT pig population. Sumba only has 118,410 pigs as of 2015, or only about 7% of the NTT total.

The demand for pigs for all three islands, as per field interviews, totals at 1,134,552 animals per year. Flores has the highest pig consumption of almost 485,000 pigs with a human population of 2,029,537, followed by Timor at around 346,000 animals with a human population of 1,943,344. Sumba may appear to have the lowest pig consumption at 304,000, but when considering the human population of 785,174, per capita consumption is much higher than the other islands.

Comparing consumption with pig inventory available for slaughter, Flores almost meets demand with a pig surplus of 10,159 animals, Timor has a 71,647 surplus of pigs, while Sumba has a very large demand gap of 235,355. In total, there is a demand gap among all three islands of 153,549 pigs. Because Sumba imports many of its pigs from Flores, and to a lesser extent Timor, there is likely a large demand gap in Flores, and Timor is only just meeting demand. Non-Muslim per capita consumption of pork for NTT is only at 12 kg per person, with Sumba at the highest consumption of 19 kg per capita, Flores at 13 kg and Timor at 8 kg. These figures are rather low when comparing other pork consuming countries such as the Philippines (35 kg per year), and indicates that there is significant room for growth in pig meat demand.

The demand for pigs in NTT can be split into three main categories: commercial consumption, traditional ceremonies, and religious ceremonies. When looking at the breakdown of the 3 demand categories, Timor is a rather balanced market with commercial demand representing 32% of total demand, traditional at 27% and religious demand at 41%. Flores and especially Sumba are much more traditional markets, with traditional and religious events taking up 95% and 98% of demand respectively.

The key demand drivers are static traditional/religious event demand, event seasonality, commercial demand in terms of restaurant development, and tourism mainly in Flores and to a lesser extend in Timor. The differences in demand category by island and the status of economic and tourism development will greatly influence PRISMA pig intervention strategy per geography.

With the high growth of foreign tourist arrivals in Flores and government commitment to develop the tourism industry there, tourism will likely be a key engine to economic growth for the island and the multiplier effects will most likely impact the pig value chain. In Timor, the development of the local market and an increasing demand for commercial pig production will most likely be the key driver to pig demand. In Sumba, the traditional and religious event market will dominate in the near future, with tourism most likely playing a role in the pig value chain before commercial consumption

Purpose of the Study

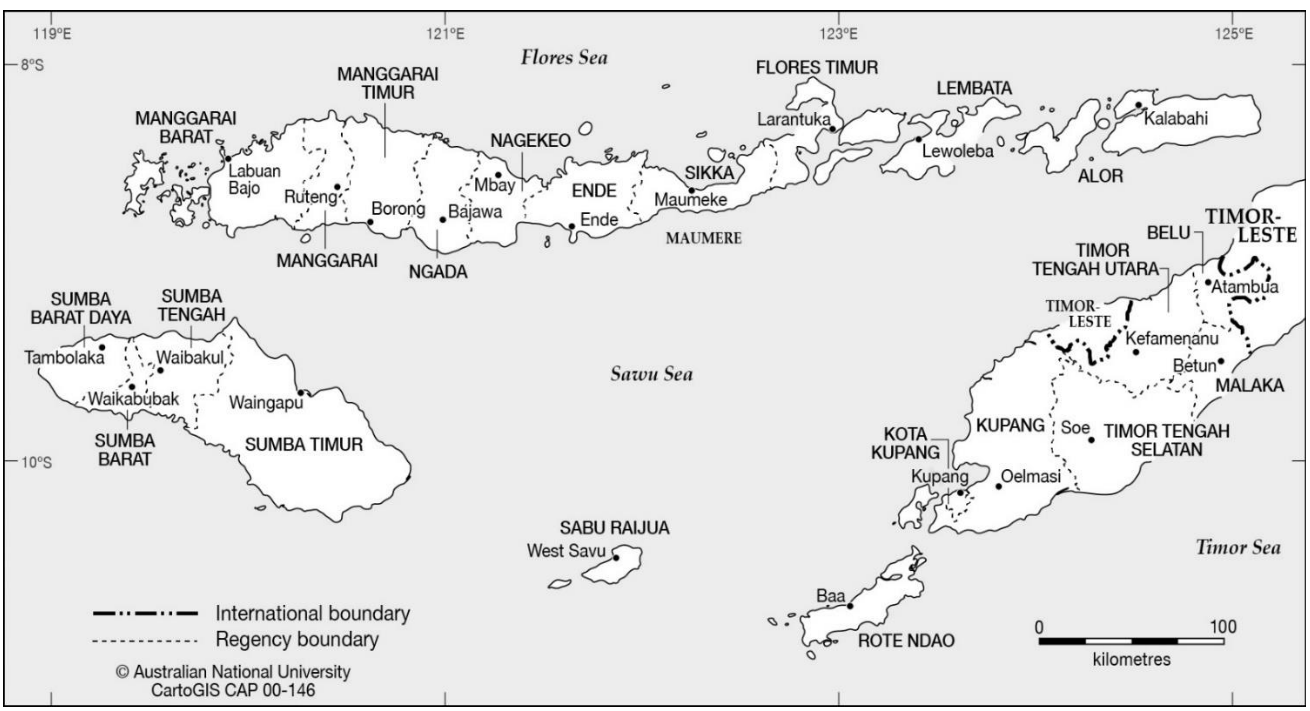
The PRISMA Pigs Sector Team has been working to implement interventions in the pig sector given the condition that the commercial pig industry in Nusa Tenggara Timur (NTT) is growing and there is an opportunity for smallholder pig farmers to become more involved in pig business and market development to improve their welfare. Pigs are the most important livestock type for smallholder farmers in NTT. They have traditionally played an important role in religious and social activities of communities and are a critical source of protein for domestic consumption where about 90% of the population of 5 million are non-Muslim and considered as pork eaters.

The pilot interventions to address the problems around pig industry at the upstream side was implemented, and is considered a successful intervention, which is now being scaled up. One the interventions is promoting improved feed, breeds and good rearing practices as well as developing decentralised commercial distribution channels so that the farmers in more remote areas have better access to better pig farming inputs. This has led to questions as to whether demand can absorb additional supply.

This study aims to explore the demand characteristics in NTT, private sector partner opportunities in the NTT pig market and better map opportunities in the sector, as well as highlight key areas for further study. The study also aims to provide initial strategy recommendations to the PRISMA team to further address and strengthen the pig market in NTT.

Survey Method and Data Sources

A survey on pig consumption in NTT split demand into three categories, commercial, traditional and religious, and was conducted by the AIP-Rural ARISA team in partnership with PRISMA. The pig consumption survey focused on the three largest Islands of NTT, Timor, Flores and Sumba. The smaller islands of Alor, Lembata, Rote and Sabu were not included in this study. The sampling location was by regency, and the team interviewed key informants and government offices by regency, for example in Flores visiting Manggarai Barat, Nagakeo or Sikka separately.



The field team collected data during December 2016 over the span of 2 weeks in select regencies.

- Regencies visited in Timor Island: Kupang city (Kota Kupang), Kupang District, Timor Tengah Selatan (TTS), Timor Tengah Utara (TTU) and Belu.
- Regencies visited in Flores Island: Manggrai barat, Manggarai, Manggarai Timur, Ngada, Ende and Sikka
- Regencies visited in Sumba island: Sumba Barat Daya (SBD).

Key institutions were interviewed, who gave the team information per regency, and information on regencies not visited during the study. These key institutions include the Dinas Peternakan (Province and District); Statistic Bureau (Province and District) and Key persons along the value chain (governments, privates, farmers, academics, traders, pig collectors). Interviews were also conducted with key persons in wet markets, traditional pig markets, and slaughter houses.

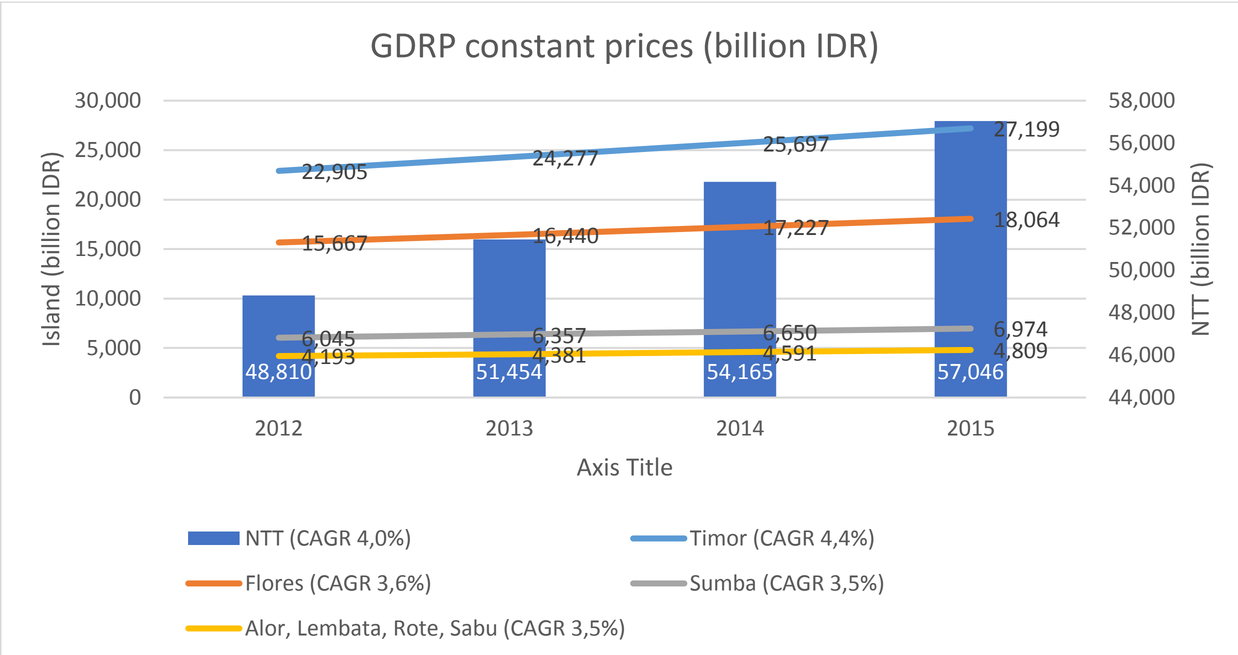
Secondary data sources are all BPS (Badan Pusat Statistik) statistical data at both a national level and NTT local level unless otherwise stated.

NTT Economy and Expenditure Snapshot

The NTT provincial economy is weaker than the Indonesian average, making it one of the poorest provinces in Indonesia.

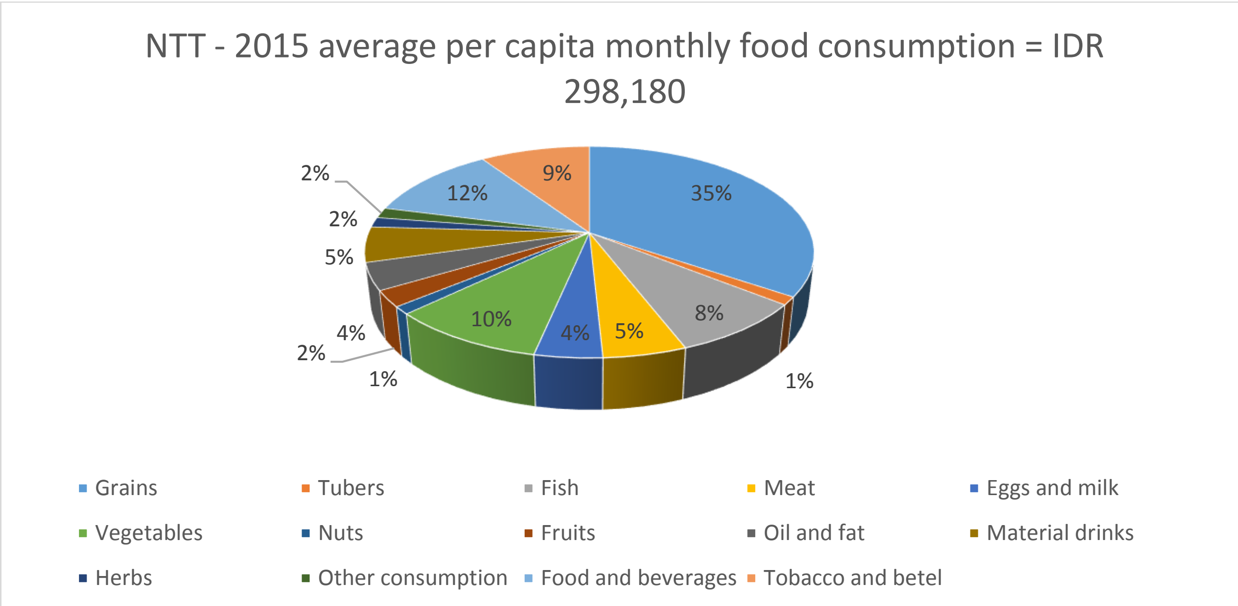
The total human population of NTT is over 5 million and population growth rate has been stable over the years at 1.65%. The GDRP (Gross Regional Domestic Products) in constant prices is currently at IDR 57,000 billion, and has grown at a 2012-2015 CAGR of 4%.

By island, average per capita expenditure is 7.4 million in Timor in 2015, with Kupang city having a significantly higher expenditure at 12.5 million, while the Kupang district regency and Belu rank second with expenditures close to the average. **In Flores, yearly expenditure per capita in 2015 was 7.3 million**, with Ngada and Ende above the island average at around 8 million. Manggarai Timur is the most economically disadvantaged region in Flores with a per capita GDRP and expenditure of 5.9 million and 5.2 million respectively. **Sumba per capita expenditure is at 6.9 million**, with Sumba Timur having the highest per capita GDRP and expenditure at 14 million and 8.9 million.



In terms of constant GDRP, Timor ranks first followed by Flores then Sumba. However, in terms of GDRP per capita, Timor again ranks first at 14 million, but Flores and Sumba are at similar levels at approximately 9 million GDRP per capita each. In terms of expenditure, Timor and Flores are similar at around 7.4 million, while Sumba is not far off at 6.9 million**. Although productivity varies across islands, average expenditure per person is rather similar. Pig consumption thus does not correlate to regency GDRP and expenditure per capita.** Annex A includes an economic breakdown by Island.

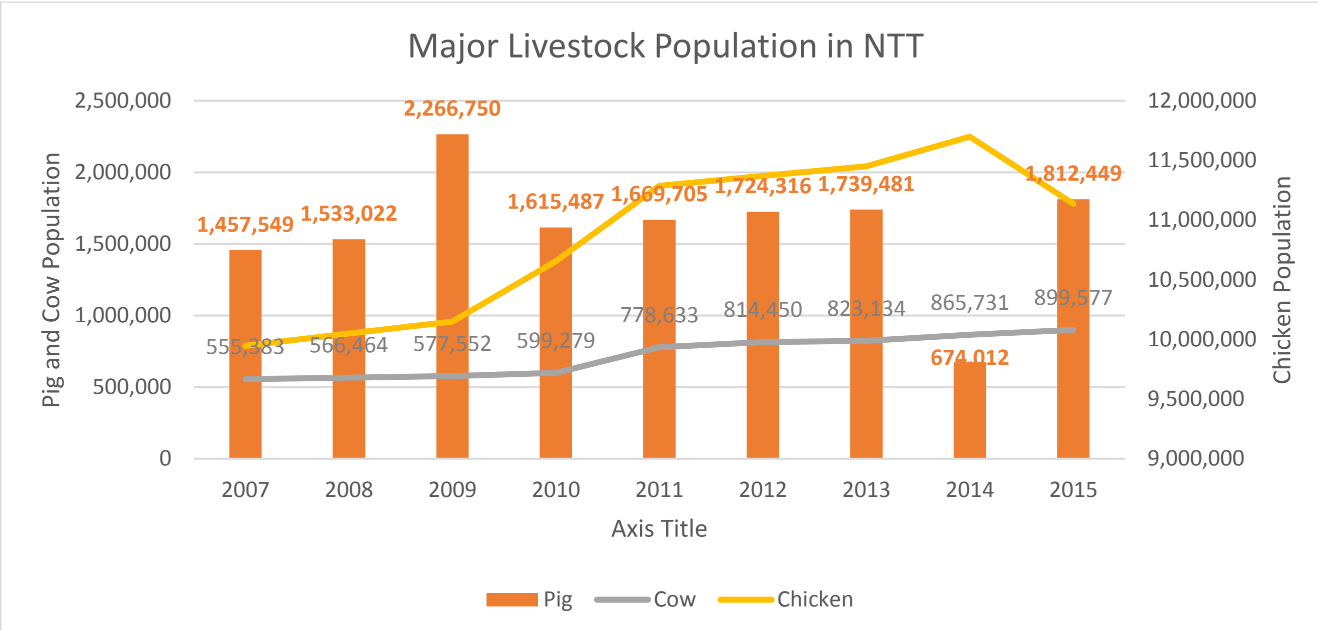
Total household monthly expenditure was IDR 533,890 in 2015, which has increased from IDR 333,008 in 2010, and 485,342 in 2014. **56% of total household monthly expenditure in 2015 is for food consumption**, down from 59% in 2010. When breaking down the 2015 average monthly expenditure for food consumption, **monthly meat consumption is only 5% of food expenditures**, or around IDR 15,071 (180,852 for the year). Other proteins dominate such as fish at 8% of expenditure (25,083) and eggs and milk at 4% (12,218).



As mentioned in the study below, **pig consumption most likely is not included in monthly meat consumption figures, as most pig consumption is considered adat**, or the payment families pool together to finance traditional ceremonies and events, from pigs are purchased and consumed as a community.

Pig supply

In NTT, the population of pigs is higher than any other non-poultry animal, with 1.8 million pigs in NTT in 2015. Cows are the second largest non-poultry animal with a population of almost 900,000 in 2015. Flores island has the largest share of the pig population, with 753,810 animals or about 42% of NTT's pig population. Timor is the second largest island in terms of pig population, with 686,880 animals or 38% of NTT pig population. Sumba only has 118,410 pigs as of 2015, or only about 7% of the NTT total. **The 2010-2015 pig population CAGR is similar across all islands at around 1.8%.**



Pigs are also the most slaughtered non-poultry animals in NTT. According to BPS data[1], Timor slaughtering 322,150 animals in 2015, the largest in the region, and Flores slaughtering 307,265 pigs, with Sumba only slaughtering 52,255 pigs. On all islands, pig slaughtering has grown significantly from 2013 to 2015 by around 27%.

In NTT, most pigs are slaughtered outside of formal slaughter houses. **Informal Slaughtering is on the rise for all islands, with a 2013 slaughtering breakdown of 25% official slaughter and 75% informal slaughter, while in 2015 20% of pigs were slaughtered officially and 80% informally.**

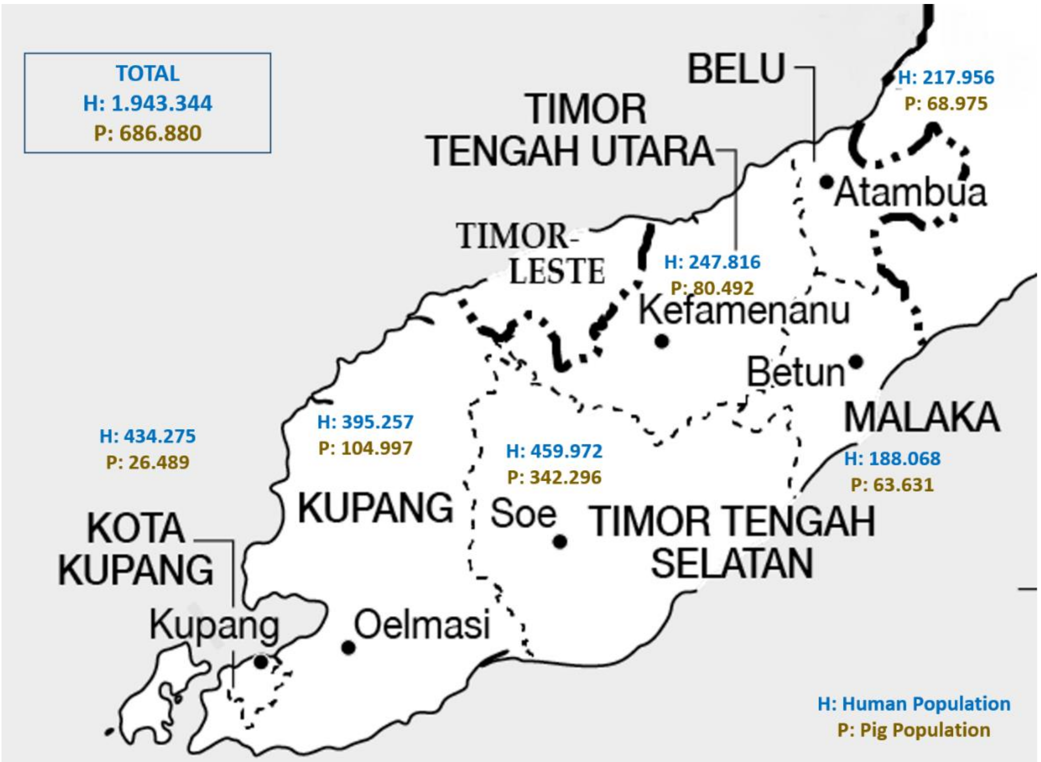
In NTT, slaughter houses have been decreasing, from 56 slaughterhouses (2 private, 54 state) in 2013, to only 30 slaughterhouses in 2015 (3 private, 27 state). According to field observations, the decrease may be explained by a lack of state certification of formal slaughterhouses. Currently, the state does not offer certification or incentives for better hygiene to increase butcher price premiums, and butchers still must pay a fee to the state and transportation costs. Butchers are thus incentivized to continue informal slaughter to meet demand. **Abbatoire development and the demand for hygiene certificates may be boosted most by continued hotel and restaurant development (commercial consumption).**

Timor Pig Supply

In Timor, Timor Tengah Selatan has the most pigs out of all regencies, followed by Kupang. The pig population CAGR is stable for most regions at around 1.8%.

[1] BPS slaughter data varies from the studies pig inventory assumptions (defined below), The BPS slaughter numbers are less than the studies pig inventory assumptions, but are used here for comparison purposes with other livestock..

Timor 2015 Human and Pig Population



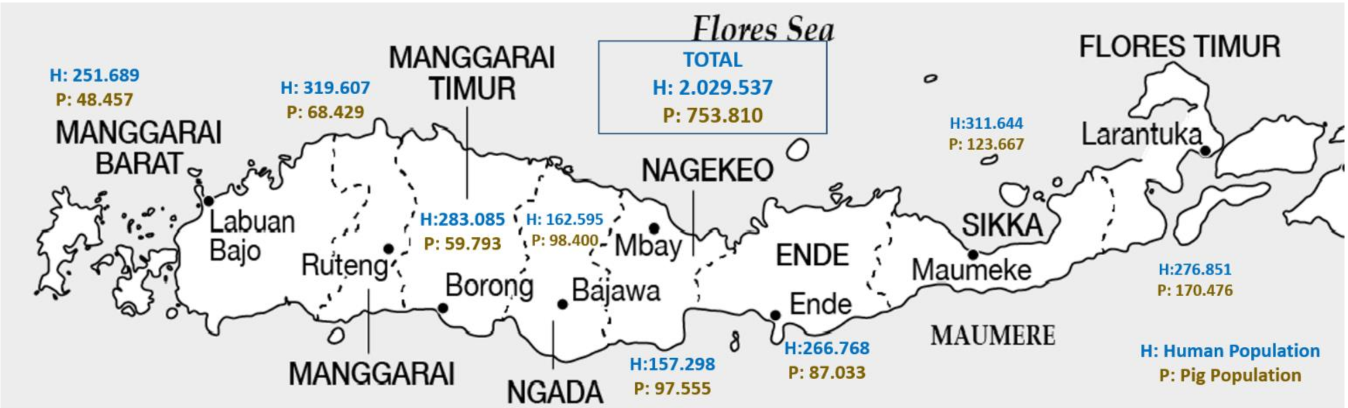
Splitting the Timor pig population by age and sex, male boars account for 45% of the total population while female sows account for 55%, and 29% of the total population are piglets. The percent split in the table below is similar across all regencies except Timor city (Kota Kupang), where piglets only are 5% of the total Kupang city pig population. In Timor, sows are are typically slaughtered for Se'I, which may explain the lower sow population when compared to Flores below.

Timor Pig Population Split		
Total pig population	**686.880**	**% of total**
A Male Piglet	98.906	14%
B Young Male pig /boar	114.909	17%
C Mature Male pig / boar	97.060	14%
Total Boar (A+B+C)	**310.875**	**45%**
D Female piglet	103.956	15%
E Young female pig /sow	111.201	16%
F Mature female pig /sow	160.848	23%
Total female pig/ sow (D+E+F)	**376.005**	**55%**

Flores Pig Supply

Flores Timur has the largest population of pigs in 2015 on the island, followed by Sikka (also in east Flores), then Nagakeo and Ngada (both in central Flores), and Ende. The pig population CAGR is slightly higher than Timor at around 1.9% and is stable across all regions. Notably, Manggarai Timur only produced 1,000 KGs of pork in 2015, according to the BPS, indicating that Manggarai Timur is mainly a live pig supply area, which are then slaughtered in other regencies.

Flores 2015 Human and Pig Population



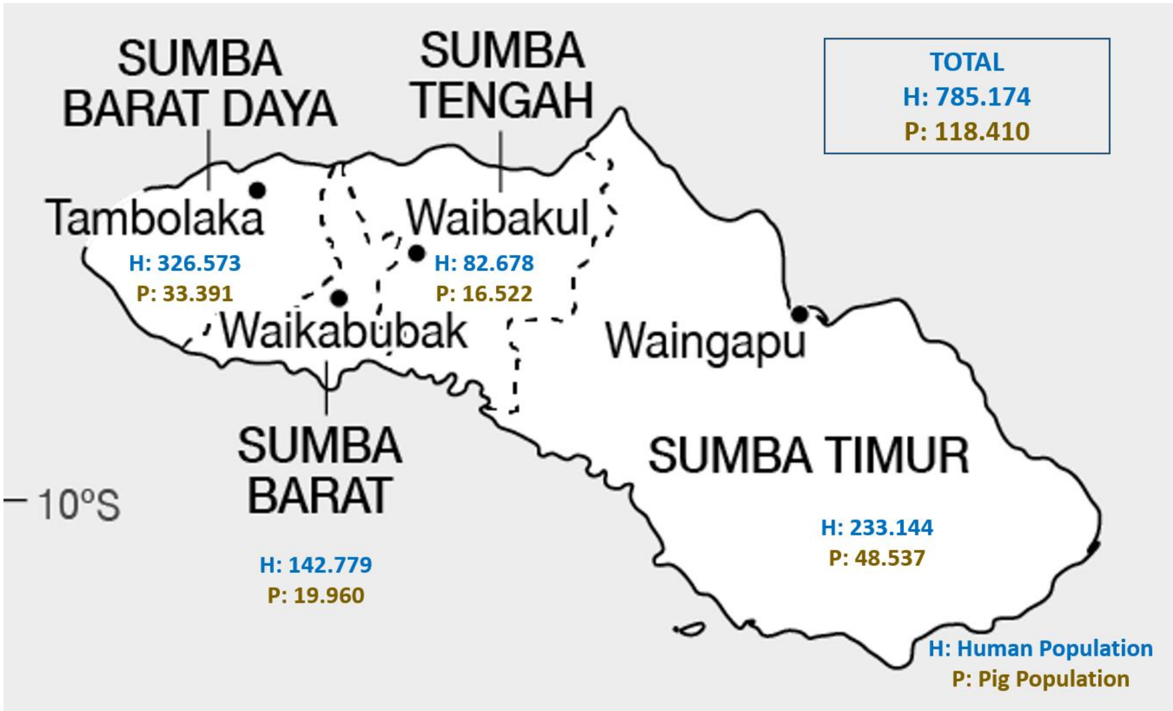
In Flores, boars make up 41% of the total pig population, lower than in Timor, and sows make up 59% of the population, higher than Timor. In Flores, mature female sows account for 30% of the total population while in Timor this figure is 23%. The percent split of the pig population for Flores is similar across all regencies. Demand for adat in Flores mostly is for boars, and are valued is higher than sows, which may explain the low mature boar to mature sow population ratio.

Flores Pig Population Split		
Total pig population	**753.810**	**% of total**
A Male Piglet	86.462	11%
B Young Male pig /boar	107.372	14%
C Mature Male pig / boar	114.982	15%
Total Boar (A+B+C)	**308.816**	**41%**
D Female piglet	102.043	14%
E Young female pig /sow	117.189	16%
F Mature female pig /sow	225.762	30%
Total female pig/ sow (D+E+F)	**444.994**	**59%**

Sumba Pig Supply

In Sumba, the largest regency and economic center of Sumba Timur has the largest pig population at 48,537., followed by Sumba Barat Daya (which is at the extreme west of the Island and an emerging tourist destination). Pig population growth is similar in Sumba to Flores with a population CAGR of about 1.9%. The largest constraints to pig rearing in Sumba have mainly been high mortality, low availability of feed and poor rearing practices and lack of veterinary services.

Sumba 2015 Human and Pig Population



In Sumba, Female sows account for 57% of the population, a figure lower than Flores but higher than Timor, while male boars are 43% of the population. The age and sex split is similar across all regencies.

Sumba Pig Population Split		
Total pig population	**118.410**	**% of total**
A Male Piglet	19.197	16%
B Young Male pig /boar	17.182	15%
C Mature Male pig / boar	14.827	13%
Total Boar (A+B+C)	**51.206**	**43%**
D Female piglet	19.256	16%
E Young female pig /sow	18.738	16%
F Mature female pig /sow	29.210	25%
Total female pig/ sow (D+E+F)	**67.204**	**57%**

Pig Demand

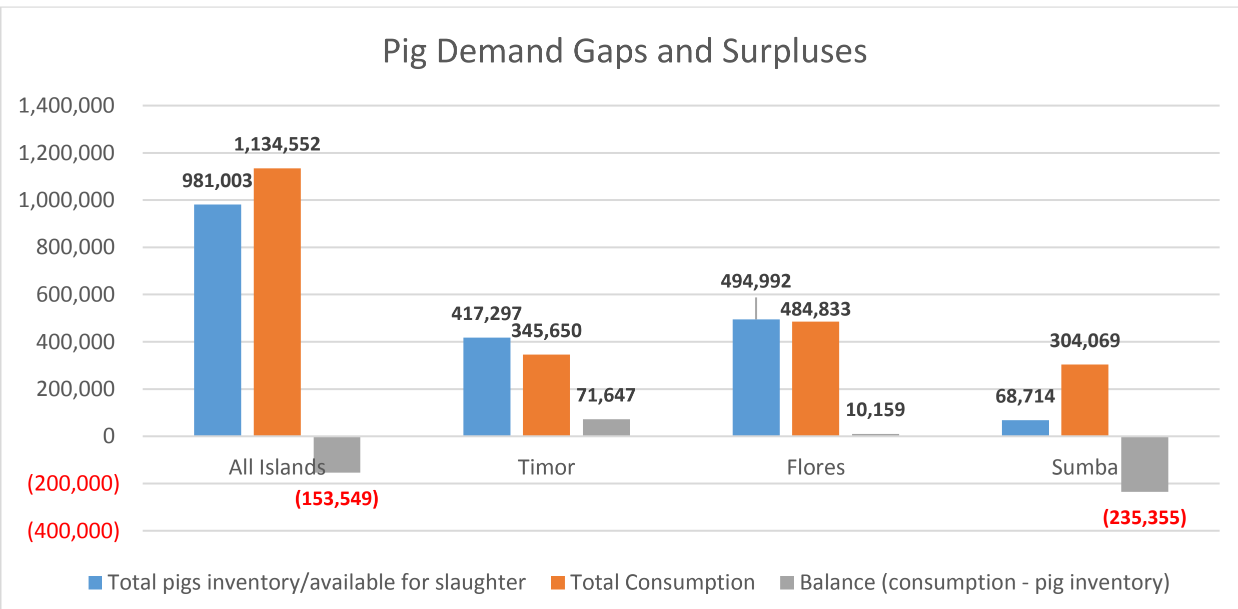
The total demand for pigs for all three islands, as per field interviews, totals at 1,134,552 animals per year.

Flores registered the highest pig consumption at almost 485,000 pigs with a human population of 2,029,537, **followed by Timor at around 346,000 animals** with a human population of 1,943,344. **Sumba may appear to have the lowest pig consumption at 304,000, but when considering the human population of 785,174, per capita consumption is much higher than the other islands.**

The demand for pigs in NTT can be split into three main categories: commercial consumption, traditional ceremonies, and religious ceremonies. In this study, commercial consumption is considered as restaurant and hotel consumption, and sales in meat shops, with se'i shops being the most common type of meat shop. Flores and Sumba particularly consume pigs during traditional events. Religious events dominate Timor consumption, and Timor also has the highest commercial consumption, mainly due to the more developed se'i meat shop market and restaurants market.

When looking at the breakdown of the 3 demand categories, Timor is a rather balanced market, while Flores and especially Sumba are a much more traditional market.

Demand Type	NTT	Timor	Flores	Sumba
Commercial Consumption	12%	32%	5%	2%
Traditional/Cultural Events	56%	27%	63%	79%
Religious Events	31%	41%	32%	20%



Pig inventory assumptions[2]

As seen in the graph above, Flores almost meets demand, Timor has a surplus of pigs, while Sumba has a very large demand gap. In total, there is a demand gap among all three islands. In order to meet the demand gap, Sumba imports many live pigs from Flores, so Flores is likely to also have a demand gap. Timor informally is known to export pigs to Sumba, as well as to NTB and Timor Leste.

Consumption of pigs not correlated to income (especially in the Sumba case). Expenditure per capita is similar across all islands, and the price per pig does not seem to affect consumption. In Flores, the price of each animal

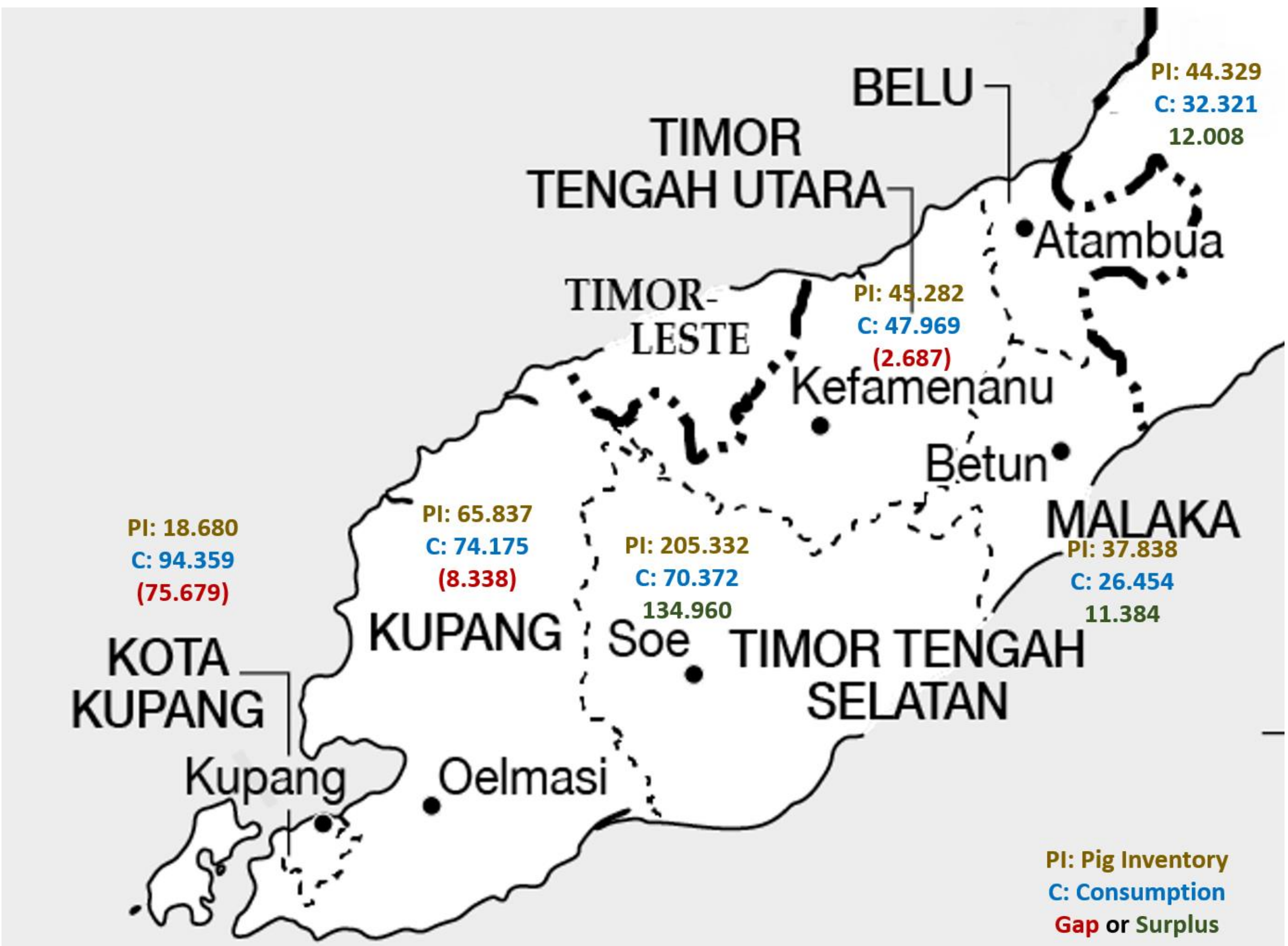
[2] The total pig inventory available for slaughter adds the total of both young and adult boars, and adult females. In addition, 40% of the female young sow population is added, with the assumption that the remaining females are kept for breeding. Piglets are not included. This number is higher than the bps slaughter figures.

depends on the pig's size, which may vary from IDR 3.5 million to 4 million per live pig, and the price is similar in Timor. In Sumba, the price of live pigs can vary from IDR 4 million to 20 million per pig. However, despite higher pig prices and a slightly lower expenditure than average, Sumba demand for pigs per capita is significantly higher than Timor or Flores. This can be explained by the very strong demand for pigs at cultural events - adat. For adat, rural households put money together to buy pigs as a community for the events, and is not reflected in household food expenditure.

Assuming that on average one live pig yields 45kg of meat, per capita consumption of pork meat in NTT is 12 kg per person among the non-Muslim population. In Timor, the non-Muslim per capita consumption is 8 kg, in Flores 13 kg and in Sumba 19 kg. These figures are rather low when comparing other pork consuming countries such as the Philippines (35 kg per year), and indicated there is significant room for growth in pig meat demand.

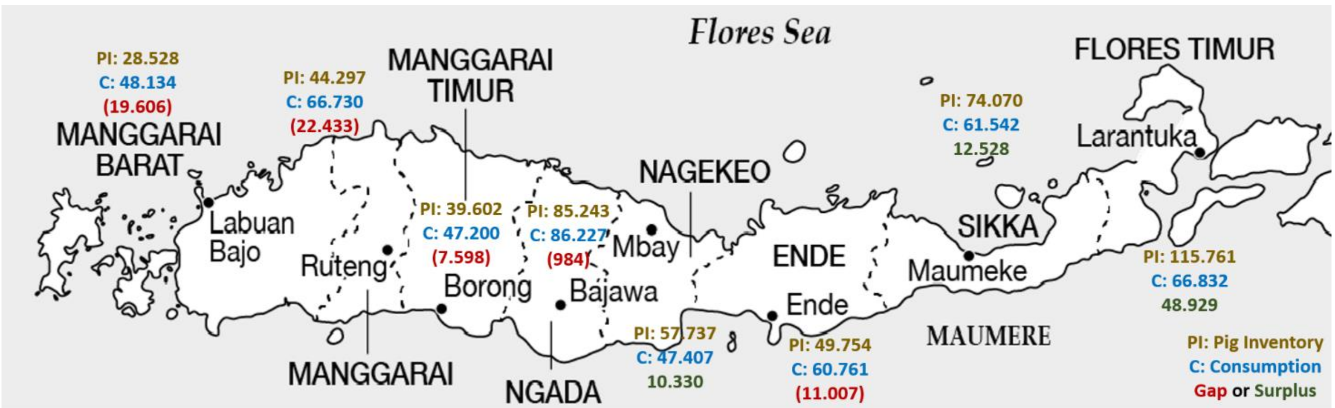
Timor Demand by Regency

Examining pig consumption by regency in Timor, the city of Kupang has the largest demand gap, which is explained by the large urban population and little rural supply of pigs within the city. This is followed by the Kupang regency and Timor Tengah Utara regency in the north part of the Island. Timor Tengah Selatan (central part of the island) is the largest pig producing region, and most likely is the source of most of Kupang's pig supply.



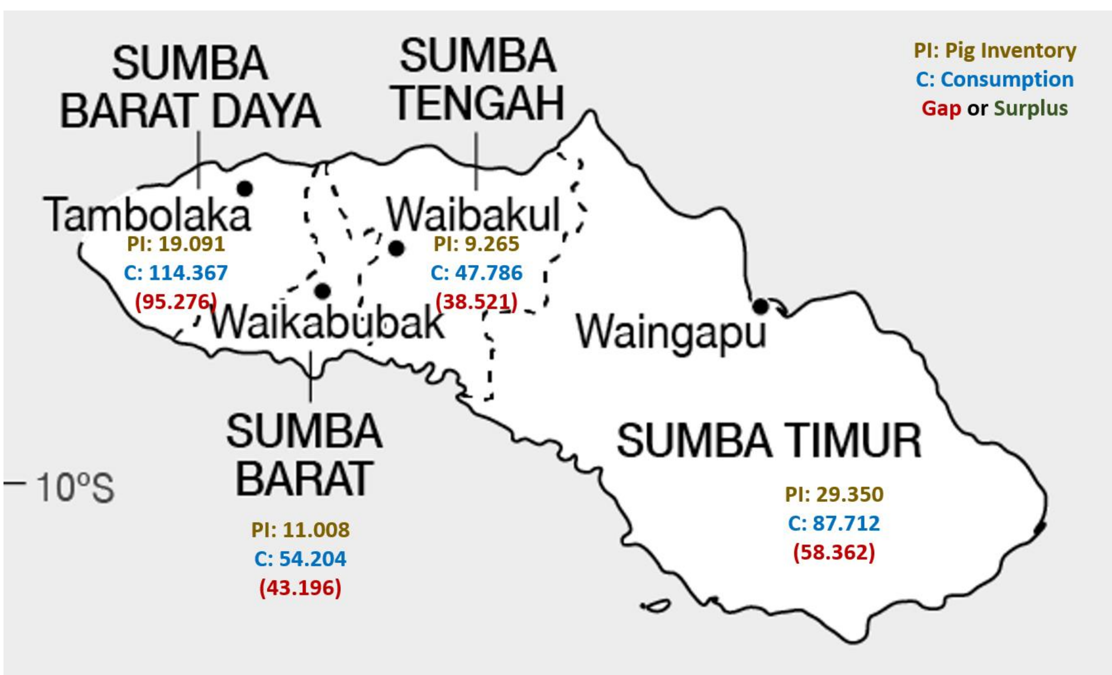
Flores Demand by Regency

In Flores, the western part of the island and tourism center Manggarai Barat (with Labuan Bajo), Manggarai and Manggarai Timur all comprise the largest portion of the demand gap in Flores. Another urban and potential tourism center, Ende also has a gap. The eastern part of Flores, Sikka and Flores Timur, have the largest surpluses on the island, and most likely also supply Ende. Central Nagakeo has a surplus that could partially satisfy western Flores. From anecdotal field interviews, buyers in Manggarai Barat travel to Nagakeo and Ngada (central Flores) to buy pigs.



Sumba Demand by Regency

In Sumba, all regions experience demand that greatly exceeds supply. This is validated by field evidence that Sumba mainly imports pigs from Flores, to a lesser extent and informally from Timor, and in the recent past from Sumbawa.



The above highlights opportunities to further develop pig rearing, especially in Sumba, but also identifies major pig producing regions where feed could be marketed immediately.

Trade

NTT's trade and transportation infrastructure is limites. According to an 2010 study from The Asia Foundation, NTT has only five commercial seaports, and only the Port of Tenau (Kupang) can accommodate large vessels of up to 10,000 dead weight tons (DWT) with container facilities, while other seaports have much smaller maximum capacities (<2,000 DWT). Ferry terminal conditions are also limited, all terminals have only 1 pier, except for the Bolok Ferry Teminal (Kupang) with 2 piers. In the study, national highways used by trucks and sampled in this study are in generally good condition, while the coverage and quality of regency/municipal roads is still poor.

In Timor, overland transport of pigs from Kefa (central Timor) to Kupang is typically about IDR 70,000 per truck. In Flores, transportation costs of pigs are typically paid for by the butcher, and transport costs are normally per truck/car and not per animal, which is about 350,000 to 500,000 per truck depending on the amount of pigs and distance travelled. In Sumba there are 3 types of transport costs: truck costs within Flores to transport pigs to the Flores port (around 600,000 per truck), retribution (fee to local government) 3,000 per pig, and the ferry cost of 40,000 per pig from Flores to Sumba. This results in a high live pig price in Sumba.

Sumba imports most of its pigs, and as of 2015 there were 2 ways to import from Flores through Aimere harbor and from Bima or Sumbawa island (NTB). However, beginning from the end of 2016, the Sumbawa import route was halted by the government to prevent the spread of pig disease. However, the trade market is difficult to define, as the grey market is large and there are many informal routes to inter-island trade and also trade with Timor Leste.

Demand Drivers

TRADITIONAL AND RELIGIOUS CEREMONIES: **this is the largest driver of current demand, and while "static", understanding this segment provides marketing opportunities for feed companies and other players along the pig value chain.** Traditional and religious ceremony demand will most likely grow as a function of population growth, and thus is more static than commercial demand. However, this segment of demand may slowly decrease over the years, if commercial demand further develops and consumers begin buying pig meat through commercial sources for these ceremonies. **An increasing commercial segment and decreasing traditional segment scenario is most likely in Timor, will be slower to materialize in Flores, and Sumba will most likely continue to provide the bulk of traditional demand in the future.**

Pigs are highly significant in the culture across the islands of NTT. They are typically slaughtered at cultural events such as traditional ceremonies, weddings, funerals and other celebrations. Dowry payments for brides are also important drivers of demand, which require large numbers of pigs, at times up to 40, depending on the status of the bride. These ceremonies and events are the main drivers for pig buyers in NTT, and traditional ceremonies have the greatest influence on consumers. Sumba is an exceptional case, as the pig population is low but demand for ceremonies is very high in relation to the human population.

Annex B lists the traditional and cultural events associated with all islands. In Timor, births, marriages, funerals account for over 70% of the demand for these types of events. In Flores, Peminangan (marriage proposal ceremony), marriages, kenduri (thanks giving at 100th day anniversary of a death) make up almost 30% of traditional ceremony demand, while funerals almost 20%. East Flores (Sikka and Flores Timur) dominate between 15-20% of total island traditional ceremony demand with region specific events like Antar belis (delivery of dowry payment), Sikat tubak - tanam benih (seeding ceremony), and Bele Kemie (pemecahan kemiri untuk kesuburan tanamaan) (community prayer event to God for better harvest yields). In Sumba, traditional ceremonies make up almost 80% of total pig demand, and thus the split is more even among traditional ceremonies. Funerals account for about 20% of traditional ceremony demand, while marriages and dowry represent over 20%, woleka adat (an annual thanksgiving celebration of the family group in a tribe) about 12-15%, and pemindahan tulang belulang (pindah kubur) (transferring bones to a new grave) and building a new house both about 10%.

DEMAND SEASONALITY: **relating to traditional and religious demand, understanding seasonality is important for pig value chain players in business planning.** Pig rearing and feed sales marketing could be timed months before clusters of major events to ensure pigs are ready in time. **Most pig demand is during the second semester of the year, June to December.** However, there are year-round events where pigs are consumed, such as births and funerals, and marriages typically occur as soon as dry season begins from April to November. Seasonality by major ceremony is found in Annex B.

COMMERCIAL MARKET: **The restaurant and meat shop market in NTT is underdeveloped and represents an area with the largest potential for growth in pig demand.** Flores and Timor have over 400 restaurants per island, while Sumba only has 47. When comparing 2011 and 2015 restaurant figures restaurant establishments are growing by about 6% across NTT with the highest growth seen in Flores and Sumba, while Timor is relatively stable.

Number of Restaurants by Island			
Island	**2011**	**2015**	**CAGR**
Timor	392	413	1%
Flores	242	429	12%
Sumba	29	47	10%
NTT	704	960	6%

The field team for this study surveyed the approximate number of restaurants that serve pork, and the majority of restaurants still do not serve pork. **In Timor, approximately 55 restaurants serve pork** with most centered in Kupang city, or 13% of restaurants out of the total in Timor island. **In Flores there are approximately 38 restaurants serving pork** or 16% of the total, and **in Sumba only around 4 pork restaurants** were accounted for, or 14% of the total

Number of Restaurants by Regency (2015)

Flores	Total	Flores Timur	Sikka	Ende	Ngada	Manggarai	Manggarai Barat	Nagekeo	Manggarai Timur
	429	24	55	53	88	72	33	92	12

Timor	Total	Kabupaten Kupang	Timor Tengah Selatan	Timor Tengah Utara	Belu	Malaka	Kota Kupang
	413	15	15	52	78	0	253

Sumba	Total	Sumba Barat	Sumba Timur	Sumba Tengah	Sumba Barat Daya
	47	21	14	6	6

The constraint for restaurants serving pork may be difficulty in the butchering sector (hygiene and timely delivery), and commercial pork demand does not seem well developed in NTT, as most consumers are used to eating pork during large events and ceremonies. Based on field interviews, since 2014 restaurants in Labuan Bajo have limited serving pork and instead have changed their menu to serve more chicken, fish or meat. As the coordinator of warung restaurants in Labua Bajo (Manggarai Barat) told the field researchers, a few years ago there were 8 warungs serving pork in one market, but has then decreased to 1 warung serving pork currently. This was the case for a few restaurants reviewed in Labuan Bajo as well.

The opportunity for restaurants lies mainly in Flores and Timor where pork restaurants are slowly growing. Se'i is growing in popularity across all of NTT (to a lesser degree in Sumba), and marketing efforts could help to popularize the dish in its home market Timor and in new markets such as Flores.

Kupang, its continuing urbanization and the city's rising middle class will be key influencing factors in commercial demand development. The rest of NTT is likely to remain mainly rural. NTT is among one of the Indonesian provinces with the lowest predicted urbanization rate, according to a UNFPA study projecting the 2010 to 2035 population of Indonesia. In 2010, 19.3 % of the population was living in urban areas, and 34.6% are predicted to urbanize in 2035 in NTT. This figure is much lower than the national average at 49.8% urbanized in 2010 and 66.6% in 2035. Much of NTT's urban development will remain in Kupang, and the city should be targeted at the center of commercial demand.

TOURISM: **Tourism is expected to be a significant driver for the entire NTT economy, as the province is rising as a primary tourism destination in Indonesia, mainly driven by Labuan Bajo in Flores.** 441,316 tourists visited the NTT province in 2015, consisting of 66,860 foreign tourists and 374,456 domestic tourists. Kupang City dominates tourism arrivals at 192,505 tourists in 2015, followed by Manggarai Barat with 71,681 tourists.

The 2012-2015 CAGR for tourist arrivals for all NTT is 3%, however when splitting local and foreign tourists, local tourism numbers are much higher but with only a 3% growth rate, while foreign tourist arrivals is growing more rapidly at 8%, 2 percentage points higher than the Indonesia national CAGR of 6%. Foreign tourism is experiencing faster growth in Flores and Timor, with a 10% and 6% CAGR respectively, while local tourism is growing faster in Sumba with a 6% CAGR. Compared to the national Indonesia foreign tourist arrivals CAGR of 6%, Timor island is on par, Flores is growing 4 percentage points higher, and Sumba is lower performing.

Island	Tourist Arrivals	2012	2013	2014	2015	CAGR
Timor	Local	202.575	208.483	185.290	220.359	2%
	Foreign	8.357	8.809	6.182	10.667	6%
	Total	**210.932**	**217.292**	**191.472**	**231.026**	**2%**
Flores	Local	109.973	91.754	125.321	128.269	4%
	Foreign	36.887	34.363	57.874	54.316	10%
	Total	**146.860**	**126.117**	**183.195**	**182.585**	**6%**
Sumba	Local	15.350	13.640	14.227	19.609	6%
	Foreign	1.242	1.276	1.676	1.375	3%
	Total	**16.592**	**14.916**	**15.903**	**20.984**	**6%**
NTT	Local	338.472	318.658	331.604	374.456	3%
	Foreign	48.608	45.107	65.939	66.860	8%
	Total	**387.080**	**363.765**	**397.543**	**441.316**	**3%**
Indonesia National	**Foreign**	**8.044.462**	**8.802.129**	**9.435.411**	**10.230.775**	**6%**

Hotels	2012	2013	2014	2015	CAGR
Flores	153	148	n.d.	186	**5%**
Timor	87	93	n.d.	100	**4%**
Sumba	13	23	n.d.	23	**15%**
NTT	**276**	**285**	**n.d.**	**334**	**5%**
Indonesia National	**15.998**	**16.685**	**17.484**	**18.353**	**3,5%**

Rooms	2012	2013	2014	2015	CAGR
Flores	2.227	2.006	n.d.	2.686	**5%**
Timor	649	751	n.d.	2.892	**45%**
Sumba	281	455	n.d.	482	**14%**
NTT	**5.147**	**5.223**	**n.d.**	**6.491**	**6%**
Indonesia National	**405.778**	**430.793**	**469.277**	**507.201**	**5,7%**

Overall, NTT performs higher in hotel growth at 5% compared to the Indonesia national CAGR of 3.5%, and all islands are growing faster than national. NTT rooms growth is also slightly higher at 6% than the national average of 5.7%, but this is mainly due to Flores' slower room growth compared to the much faster growing Timor.

Comparing growth rates of hotels and hotel rooms can also indicate potential demand in hotel restaurants. For example, there are 100 hotels in Timor in 2015, with a 2012-2015 CAGR of 4%, but hotel rooms have grown by

45% to 2,892 rooms in 2015. **This indicates high capacity hotels have developed in Timor, where there are likely more sophisticated restaurants that may serve pork on their menus.** In Flores, there are 186 hotels as of 2015, with a 5% CAGR, and 2,686 hotel rooms that grew by only a 5% CAGR. **This indicates that the Flores hotel market is dominated by smaller hotels, many of which most likely do not have a star rating. These smaller hotels are less likely to have restaurants on the property.**

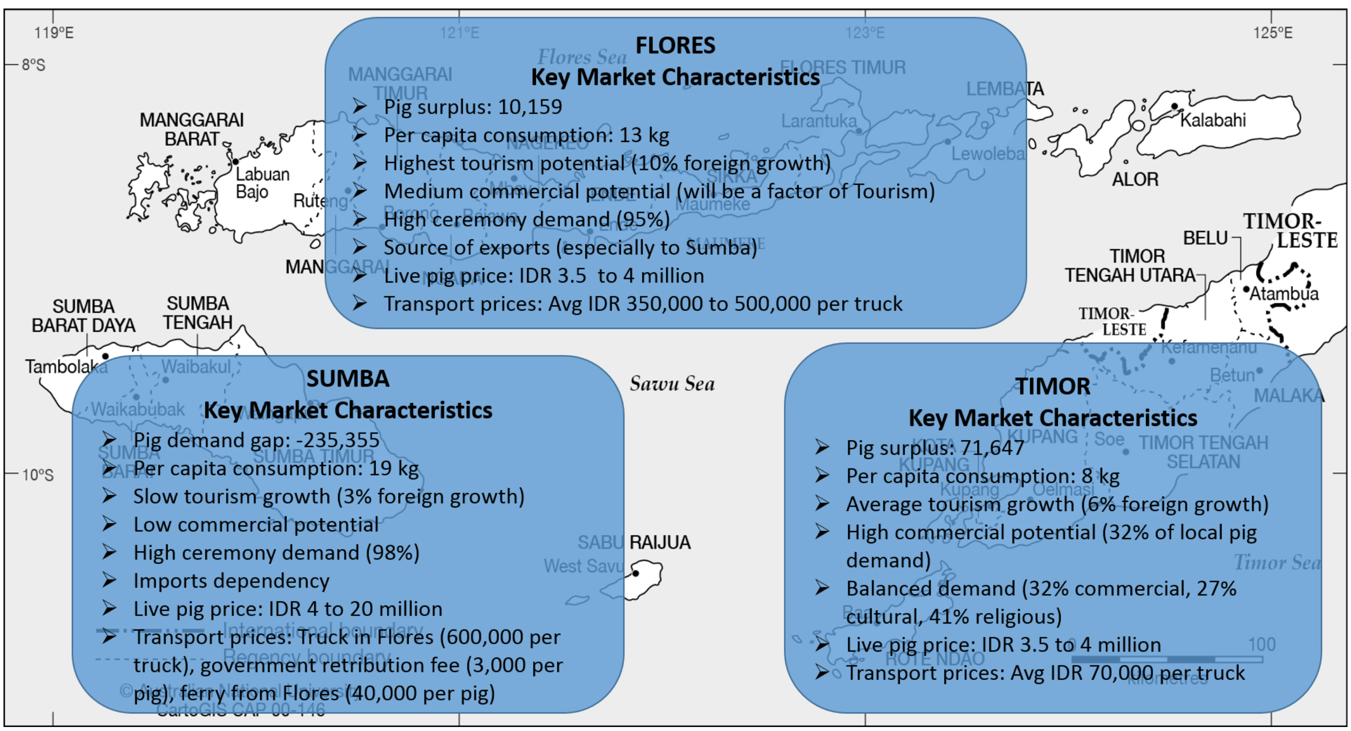
Tourism development is constrained by infrastructure and government budget for tourism. In 2017, the local Tourism and Creative Economy Office Chief, Marius Ardu Jelamu, stated that the budget to support tourism in the East Nusa Tenggara (NTT) Province is not adequate for improving the supporting infrastructure and promoting tourism destinations. The allocation of funds from the regional budget to support tourism in 2017 is only IDR 19 billion, but according to the Chief, this amount is not sufficient for tourism promotion and improving the supporting infrastructure. The province`s tourism sector has become one of the priorities of the local government, but it has not been supported with adequate funding. He pointed out that budget support for the agricultural sector reached IDR 60-Rp70 billion, while for tourism, significantly less than IDR 19 billion.

Pig Sector Strategy

With the high arrivals of foreign tourism growth in Flores and government commitment to develop the tourism industry there, tourism will likely be a key engine to economic growth for the island and the multiplier effects will most likely impact the pig value chain in the future.

In Timor, the development of the local market and an increasing demand for commercial pig production will most likely be the key driver to pig demand.

In Sumba, the traditional and religious ceremony market will dominate in the near future, with tourism most likely playing a role in the pig value chain before commercial consumption.



TIMOR: With 253 restaurants in Kupang city alone, Timor will be the market leader for the commercialization of pig consumption in the future. With already 32% of demand coming from commercial consumption, Timor would be the ideal start of a commercial intervention, by developing se'i and pig meat serving restaurants and developing the butcher segment to complement. The commercial market will most likely be led by the middle class, and Kupang city, with the highest expenditure and GDRP per capita, will continue to be an engine of urbanization and economic growth in NTT. There are also opportunities to further develop and open the export market from Timor to Sumba and to Timor Leste. Tourism may not be as strong as in Flores, but international visitor growth is still high compared to local visitor growth, and larger hotels have been built on the island, all of which will influence the market in the near future.

FLORES: Tourism is by far the most developed and has the highest potential in Flores, boasting key tourism hotspots such as Labuan Bajo/Komodo, Mount Kelimutu and the Maumere area. However, hotels in Flores tend to be smaller and/or boutique, and many foreign tourists arrive in Flores to take boat trips around Komodo and more off the beaten path trips around the rest of Flores. Still, there are many cultural events and tourism festivals across the island which represent avenues to raising awareness of local pig products and dishes. The large number of foreign tourists will also likely influence local market reactions and restaurant/hotel menus. Se'i, although from Timor, can potential be a centerpiece local pig product if marketed as a must-try NTT dish, similar to babi guling in Bali. Further tourism development is likely to have the strongest multiplier effect on the Flores economy, and a commercial intervention with a tourism partnership focus may potentially help feature pig production as a unique local product. However, in the short-term the market anchors in Flores will be traditional and religious ceremony demand, still at 95% of demand, and exports to satisfy Sumbanese demand. The current feed and any new rearing intervention can continue to support these market anchors – understanding the types of ceremonies and timing, and pig supply and demand by regency will be important in effectively marketing feed and targeting good rearing practice locations.

SUMBA: Traditional and religious ceremony consumption will likely continue as the key demand driver in the medium-term, still at 98% of demand. Sumba pig prices are the highest, and the adat contibutions by household in Sumba will dominate and impede commercial demand, which will only grow with increased household income and lower pig prices. As Sumba is highly dependent on pig imports from especially Flores to satisfy demand, there is much room for local pig production development. Interventions in Sumba should be focused on pig breeding and rearing, and good quality feed. Local pig production development will decrease prices in Sumba, freeing up room for other commercial markets to potentially grow in the long term. Tourism, while slow to develop, will likely become a more significant economic engine in the long term, perhaps more significant than in Timor. There are currently a few large chain hotels in the development pipeline, for example Plataran Sumba, and the island is rich in cultural and natural tourism potential.

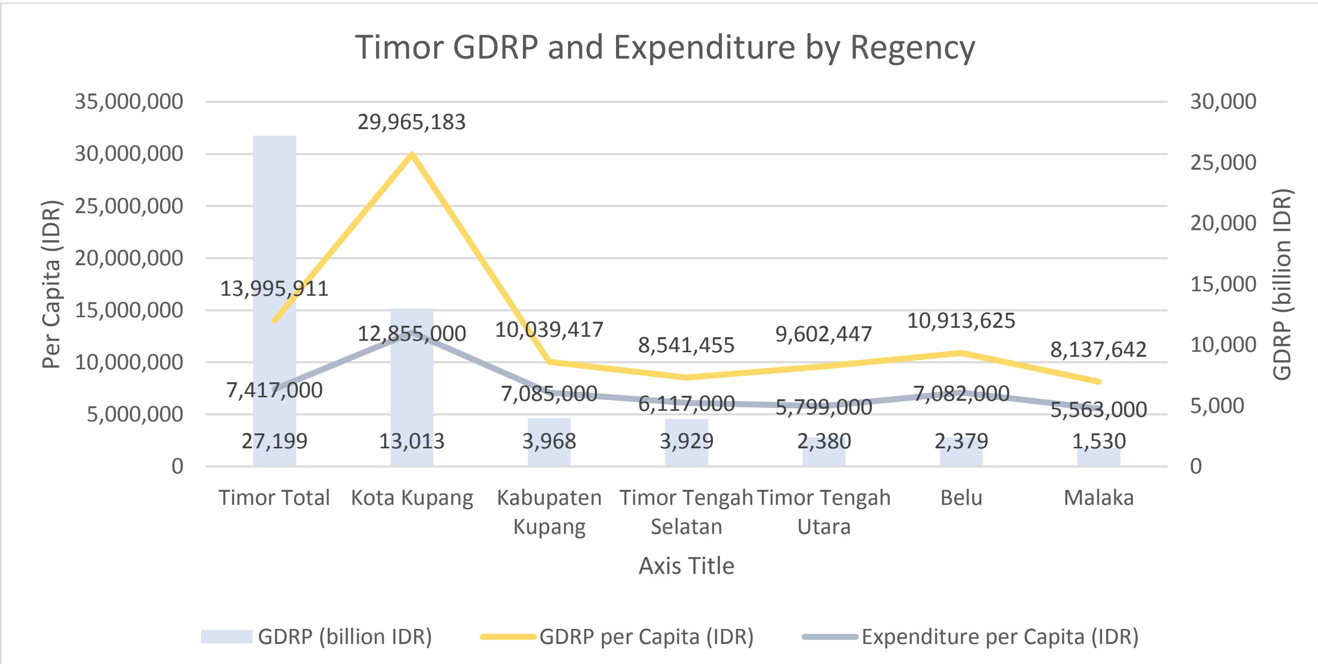
B**elow are potential intervention targets with key market influencers and outreach potential.** Note that the below table is general and each island characteristic will change the degree of influencing factors.

Intervention Type	Commercial Intervention	Pig rearing and feed
Traditional Demand	May decrease in long-term but unlikely	Will support static tradition demand
Commercial Demand	Will increase with marketing and price decrease	Provides better quality meat to commercial
Butchery	More incentive to develop	No significant effect in long term without commercial development
Tourism (International)	Will influence hotel and restaurant menus	No significant effect in long term without commercial development
Tourism (Local)	Depending on type – no effect or positive effect in some areas	No significant effect in long term without commercial development
Urban Population	Key driver to commercial demand	Kupang largest pig consuming area and demand destination – will grow as city grows
Rural Population	Low driver	Key driver in traditional demand
Income/Expenditure	Target group is middle class and urban populations with rising income.	Improved supply but same quantity will increase prices and potentially negatively affect demand. Increased quantity will lower prices and increase demand.
Consumption	Will increase with restaurant development and socialization	Will increase if prices lower
Pig price	Will decrease pig meat prices and boost demand further	Increase with improved quality, decrease with supply quantity
Transport/Infrastructure	Will negatively affect price and demand if not improved	Will negatively affect price and demand if not improved
Imports/Exports	Potential to export processed pork to other islands and Indonesia (potentially Timor Leste)	Additional quantity will serve export market – increased quality can open markets beyond NTT in long-term
Outreach potential	**Medium – will strengthen current beneficiaries while adding new ones**	**High – will increase access to beneficiary ratio with increased income.**

Annex A: Economic Breakdown by Island

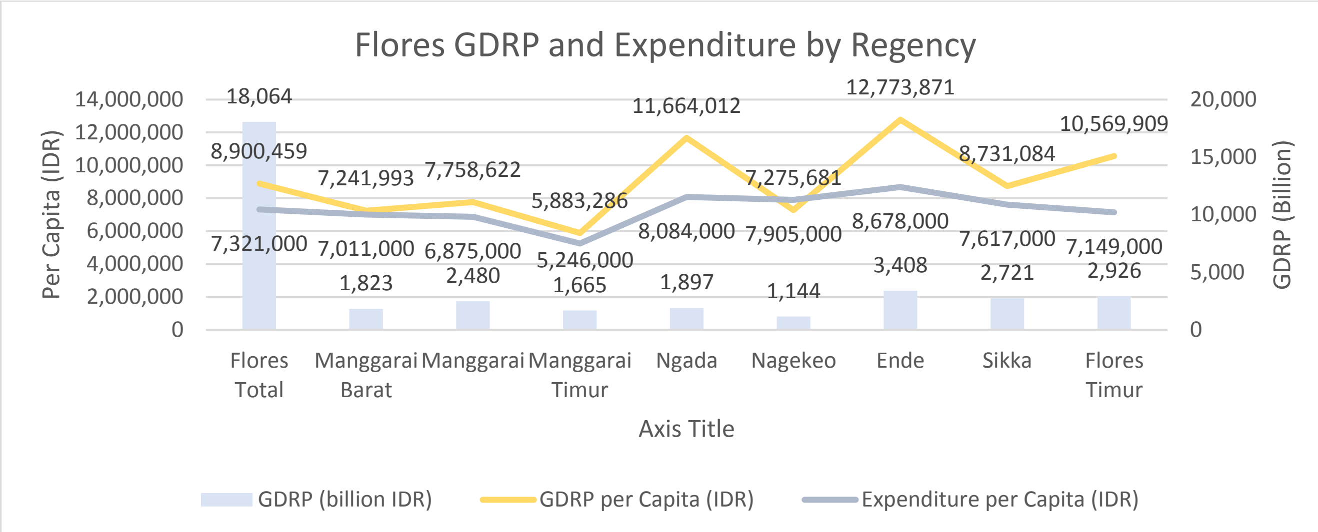
Timor Island

Timor Island's GDRP per capita is IDR 14 million on average. Kupang city is the most productive regency in Timor at IDR 30 million GDRP per capita, while the Kupang district regency and Belu are second with per capita at approximately IDR 10 million each. Average per capita expenditure is 7.4 million in Timor in 2015, and Kupang city has the highest expenditure, while again the Kupang district regency and Belu rank second.



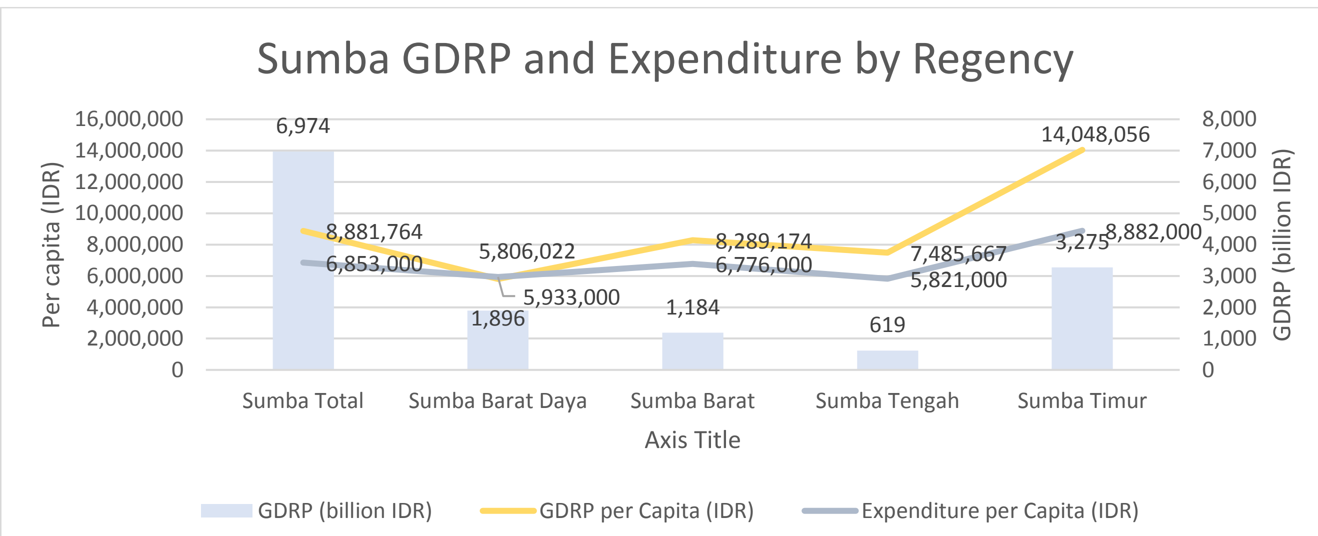
Flores Island

Flores island's GDRP per capita in 2015 was IDR 9 million, with Ende and Ngada having the largest per capita GDRP at IDR 12.8 million and 11.7 million respectively. Yearly expenditure per capita in 2015 was 7.3 million, with again Ngaga and Ende above the island average. Manggarai Timur is the most economically disadvantaged region with a per capita GDRP and expenditure of 5.9 million and 5.2 million respectively. Interestingly, Nagakeo's GDRP per capita is 7.3 million, slightly lower than the regency's expenditure per capita of 7.9 million.



Sumba

In Sumba, GDRP per capita was at 8.9 million, while expenditure at 6.9 million, with Sumba Timur having the highest per capita GDRP and expenditure at 14 million and 8.9 million. The Sumba Timur regency comprises almost half of the island and is the largest region with the economic center of Waingapu located within the regency.



Per capita expenditure similar across all islands

In terms of absolute GDRP, Timor ranks first followed by Flores then Sumba. However, in terms of GDRP per capita, Timor again ranks first at 14 million, but Flores and Sumba are at similar levels with approximately 9 million GDRP per capital each. In terms of expenditure, Timor and Flores are similar at around 7.4 million while Sumba is not far off at 6.9 million. Although productivity varies across islands, average expenditure per person is rather similar.

Annex B: Traditional and Religious Ceremonies

Major Demand Segments by Island:

Timor Demand Share	Ceremony
70%	Birth
	Marriage
	Funeral

Flores Demand Share	Ceremony
30%	Peminangan (marriage proposal ceremony)
	Marriage
	Kenduri (thanks giving at 100th day anniversary of a death)
15-20% (East Flores only - Sikka and Flores Timur)	Antar belis (delivery of dowry payment)
	Sikat tubak - tanam benih (seeding ceremony)
	Bele Kemie (community prayer event to God for better harvest yields)

Sumba Demand Share	Ceremony
20%	Funeral
20%	Marriages
	Dowry
12-15%	Woleka adat (an annual thanksgiving celebration of the family group in a tribe)
10%	Pemindahan tulang belulang (pindah kubur) (transferring bones to a new grave)
	Building new house

List of Traditional and Cultural Events Surveyed

Island	Traditional/Cultural Events	Description
Sumba	Birth (syukuran kelahiran)	Birth (birth celebration)
Sumba + Nagada	Building new house or traditional house	Building new house or traditional house
All	Dowry (belis/mas kawin)	Dowry (bride price / dowry)
All	Funeral	
All	Graduation from school/university	Graduation from school / university
Sumba	Marriage (nikah adat)	Marriage (traditional marriage)
Mostly Sumba	Pemindahan tulang belulang (pindah kubur)	The transfer of the bones (moving graves)
Flores + Sumba	Penen raya (thanks giving to ancestors)	Great harvest celebration (giving thanks to ancestors)
All	Political events/campaign - per candidate	Political events / campaign - per candidate

All	Wedding aniversary/birthday	Wedding aniversary / birthday
Sumba	Woleka (adat)	Annually thanksgiving celebration of family group in a tribe
Flores	40 hari kematian	Thanksgiving celebration for 40th day of death
Flores	Acara sekolah kemah	Learning for students final exam preparation
Flores	Acara sekolah Slengka	In village thanksgiving celebration after graduation
Flores (Ende)	Antar belis	Dowry payment deliver
Flores	Bele Kemie (pemecahan kemiri untuk kesuburan tanamaan)	Community pray event to God for better harvest yield
Flores (Ngada)	Bhajar tinu	Thanksgiving celebration for deceased parents
Flores (Sikka)	Cukur Rambut	New baby 7th day old ritual, symbolized with baby's haircut
Flores	Kematian	Ceremony and thanksgiving of a person's death
Flores	Kenduri	Thanksgiving at 100th day of a person's death
Flores + Sumba	Peminangan	Marriage proposal ceremony
Flores (Manggarai)	Penti	Annual tribe harvest thanksgiving celebration
Flores (Ngada)	Reba	Thanksgiving celebration for good harvesting yield
Flores (Ngada)	Sapu/kiki	Maturity testimony ritual of a boy/girl to be a man/women in a cultural ritual
Flores (ende)	Sikat tubak (tanam benih)	Seeding ceremony
Flores (Nagekeo)	Tinju Adat (Kecamatan Boawae)	Traditional Boxing (Subdistrict Boawae)
Flores	Turun tanah	Ritual of bride moving to husband's house
Sumba	Syukur sambut hujan (marapu)	Gratitude welcoming the rainy season (by marapau)
Sumba	Pasola	Annual horseback wood-lance throwing battle between different tribes
Sumba	Peresmian kantor bupati (district new office)	The inauguration of the office of regent (new district office)
Sumba	Syukur menyambut musim hujan	Gratitude welcomes the rainy season
Sumba	Tarik batu kubur	Headstone ceremony in Sumba
Sumba	Upacara Adat Zaiso	Ceremony
Sumba	Wullapodu	Family thanksgiving by serving each other among family member in the party

Religious Events	Description
Baptisan	

Christmas	
Easter	
First communion (Catholic)	
New year (1st January)	
Pesta nikah gereja	
Sidi (Protestant)	
Syukuran	
Ulang Tahun Gereja	

Traditional Event Seasonality

Island	Traditional Ceremony	Timing
Timor	Birth	Year-round
Timor	Marriage	April – November (during dry season)
Timor	Funeral	Year-round
Flores	Funerals	Year-round
Flores	Peminangan	August
Flores	Marriage	April – November (during dry season)
Flores	Kenduri	uncertain
Flores (Sikka and Flores Timur)	Antar belis	uncertain
Flores (Sikka and Flores Timur)	Sikat tubak (tanam benih)	End of November-early December
Flores (Sikka and Flores Timur)	Bele Kemie (pemecahan kemiri untuk kesuburan tanamaan)	July - September
Sumba	Funerals	uncertain
Sumba	woleka (adat)	Post Harvesting time (June-August)
Sumba	Pemindahan tulang belulang (pindah kubur)	uncertain
Sumba	Building a new house	Uncertain (usually dry season)

Religious Ceremony Seasonality

Island	Religious Ceremony	Timing
Timor	Baptism	April and December
Timor	First Communion	April or September/October
Timor	Sidi	April
Flores	Baptism	April and December
Flores	First Communion	uncertain
Flores	Pesta nikah gereja	uncertain
Sumba	Sidi	April
Sumba	Christmas	December
Sumba	Easter	April
Sumba	New Year	December-1st January
Sumba	Pesta nikah gereja	uncertain

Annex C: Major Tourism Events

Event	Time
CACI WHIP FIGHTING	17 August 2017, Motang Rua Field, Ruteng
EASTER PROCESSION IN LARANTUKA	10-15 April 2017, Larantuka, Flores Timur
IKAT WEAVING	
NGGUA SAGA, HARVESTING CEREMONY	September 2017, Detusoko, Ende District
NGGUA UWI, JOKA JU AND TEAS WELA	October 2017, Detusoko Village, Ende District
PATI KA DU'A BAPU ATA MATA AT KELIMUTU	14 August 2017, Kelimutu National Park
PENTI, CELEBRATION OF HARVEST SEASON	November 2017, Wae Rebo Village, Manggarai District
REBA, CEREMONY AT BENA & BE'A VILLAGE	December 2017, Bena Village & Be'a Village, Ngada District
REBA, CEREMONY AT GURUSINA	January 2017, Gurusina Village, Ngada, Flores
REBA, CEREMONY AT TOLOLELA VILLAGE	December 2017, Tololela Village, Ngada District
REBA, THANKSGIVING CELEBRATIONS	February 2017, Belaraghi Village, Ngada, Flores
SAGI, TRADITIONAL BOXING	June - July 2017, Tutubhada Village, Boawae, Riung and Soa-Mangeruda
TOBA BOBU	26 December 2017, Sikka Village, Sikka District

Annex D: Island Data Comparison

Island (2015):	TOTAL	Timor	Flores	Sumba
Total population	**4.758.055**	**1.943.344**	**2.029.537**	**785.174**
Non Muslim Population	4.353.008	1.879.732	1.744.615	728.661
Total non-Muslim population	92%	97%	86%	93%
Number of village	2.855	907	1.478	470
Number of kampung	6.736	1.882	3.444	1.410
Number of household	590.953	494.953	0	96.000
Total pig population	**1.559.100**	**686.880**	**753.810**	**118.410**
A Male Piglet	204.565	98.906	86.462	19.197
B Young Male pig /boar	239.463	114.909	107.372	17.182
C Mature Male pig / boar	226.869	97.060	114.982	14.827
Total Boar (A+B+C)	670.897	310.875	308.816	51.206
D Female piglet	225.255	103.956	102.043	19.256
E Young female pig /sow	247.128	111.201	117.189	18.738
F Mature female pig /sow	415.820	160.848	225.762	29.210
Total female pig/ sow (D+E+F)	888.203	376.005	444.994	67.204
Total pigs ready to slaughter (B+C+E+F)	1.129.280	484.018	565.305	79.957
Total pigs inventory/available for slaughter (B	**981.003**	**417.297**	**494.992**	**68.714**
Commercial Consumption	140.252	111.168	24.038	5.046
Commercial Consumption (kg pork - head equ	1.820	288	1.388	144
Traditional/Cultural Events	637.757	92.739	305.676	239.342
Religious Events	356.543	141.743	155.119	59.681
Total Consumption	**1.134.552**	**345.650**	**484.833**	**304.069**
Balance (consumption - pig population)	424.548	341.230	268.977	(185.659)
x total inventory	(5.272)	138.368	80.472	(224.112)
Balance (consumption - pig inventory)	**(153.549)**	**71.647**	**10.159**	**(235.355)**
Pig Consumption KG (*45KG average)	51.054.831	15.554.250	21.817.476	13.683.105
Consumption per Capita (KG)	**11**	**9**	**12**	**19**
Non-Muslim Consumption per Capita (KG)	**12**	**8**	**13**	**19**
Pig Population in KG	77.955.000	34.344.000	37.690.500	5.920.500
Consumption per capita from pig pop	16	18	19	8
ECONOMIC DATA	**NTT**	**Timor**	**Flores**	**Sumba**
GNP per Island (Billion)	57.046	27.199	18.064	6.974
GNP per Capita (IDR)	11.989.353	13.995.911	8.900.459	8.881.764
GNP 2012-2015 CAGR	4,0%	4,4%	3,6%	3,5%
TOURISM	**NTT**	**Timor**	**Flores**	**Sumba**
Number of Accomodation	334	100	186	23
Number of Rooms	6.491	2.892	2.686	482
Accomodation 2012-2015 CAGR	5%	3,5%	5,0%	15,3%
Rooms 2012-2015 CAGR	6%	45,3%	4,8%	14,4%
Tourist Arrivals - Local	374.456	220.359	128.269	19.609
Tourist Arrivals - Foreign	66.860	10.667	54.316	1.375
Tourist Arrivals - Local 2012-2015 CAGR	3%	2%	4%	6%
Tourist Arrivals - Foreign 2012-2015 CAGR	8%	6%	10%	3%

Annex E: Timor Regency Comparison

TIMOR PIG CONSUMPTION	Kota Kupang	Kabupaten Kupang	Timor Tengah Selatan	Timor Tengah Utara	Belu	Malaka		TOTAL
Total population	434.275	395.257	459.972	247.816	217.956	188.068		1.943.344
Non Muslim Population	390.457	388.261	446.035	244.173	212.246	186.827		1.879.732
Total non-muslim population	90%	98%	97%	99%	97%	99%		97%
Number of village	51	177	278	193	81	127		907
Number of kampung	424	0	834	0	243	381		1.882
Number of household	230.200	120.000	12.500	124.453	7.800	0		494.953
Total pig population	**26.489**	**104.997**	**342.296**	**80.492**	**68.975**	**63.631**		**686.880**
A Male Piglet	3.719	13.346	52.293	11.659	8.130	9.759		98.906
B Young Male pig /boar	570	16.391	63.763	14.761	10.293	9.131		114.909
C Mature Male pig / boar	5.237	15.026	50.673	8.104	9.263	8.757		97.060
Total Boar (A+B+C)	9.526	44.763	166.729	34.524	27.686	27.647		310.875
D Female piglet	794	15.618	51.887	15.582	9.371	10.704		103.956
E Young female pig /sow	5.494	16.993	54.640	13.281	11.909	8.884		111.201
F Mature female pig /sow	10.675	27.623	69.040	17.105	20.009	16.396		160.848
Total Sow (D+E+F)	16.963	60.234	175.567	45.968	41.289	35.984		376.005
Total pigs ready to slaughter (B+C+E+F)	21.976	76.033	238.116	53.251	51.474	43.168		484.018
Total pigs inventory/available for slaughter (B+C+F+E(40%))	**18.680**	**65.837**	**205.332**	**45.282**	**44.329**	**37.838**		**417.297**
								0
Commercial Consumption (head)	78.600	14.880	8.100	1.728	7.560	300		111.168
Traditional/Cultural Events	8.160	15.045	22.796	16.712	13.016	17.010		92.739
Religious Events	7.599	44.250	39.476	29.529	11.745	9.144		141.743
Total Consumption	**94.359**	**74.175**	**70.372**	**47.969**	**32.321**	**26.454**		**345.650**
								0
Balance (consumption - pig population)	**(67.870)**	**30.822**	**271.924**	**32.523**	**36.654**	**37.177**		**341.230**
x total inventory	(72.383)	1.858	167.744	5.282	19.153	16.714		138.368
Balance (consumption - pig inventory)	**(75.679)**	**(8.338)**	**134.960**	**(2.687)**	**12.008**	**11.384**		**71.647**
Pig Consumption KG (*50KG average)	4.717.950	3.708.750	3.518.600	2.398.450	1.616.050	1.322.700		17.282.500
Consumption per Capita (KG)	**10,86**	**9,38**	**7,65**	**9,68**	**7,41**	**7,03**		**8,89**
Non-Muslim Consumption per Capita (KG)	**12,08**	**9,55**	**7,89**	**9,82**	**7,61**	**7,08**		**9,19**
Pig Population in KG	1.324.450	5.249.850	17.114.800	4.024.600	3.448.750	3.181.550		34.344.000
Consumption per Capita (from pig pop)	3,05	13,28	37,21	16,24	15,82	16,92		17,67

ECONOMIC DATA	Kota Kupang	Kabupaten Kupang	Timor Tengah Selatan	Timor Tengah Utara	Belu	Malaka		Total
GNP per Regency (Billion IDR)	13.013	3.968	3.929	2.380	2.379	1.530		27.199
GNP per Capita	**29.965.183**	**10.039.417**	**8.541.455**	**9.602.447**	**10.913.625**	**8.137.642**		**13.995.911**
Per Capita Expenditure	**12.855.000**	**7.085.000**	**6.117.000**	**5.799.000**	**7.082.000**	**5.563.000**		**7.417.000**

Annex F: Flores Regency Comparison

FLORES PIG CONSUMPTION	Manggarai Barat	Manggarai	Manggarai Timur	Ngada	Nagekeo	Ende	Sikka	Flores Timur	TOTAL
Total population	251.689	319.607	283.085	162.595	157.298	266.768	311.644	276.851	2.029.537
Non Muslim Population	194.530	300.686	259.674	151.408	140.294	192.366	276.522	225.467	1.744.615
Total non-muslim population	77%	94%	92%	93%	89%	72%	89%	81%	86%
Number of village	169	171	176	161	113	278	160	250	1.478
Number of kampung	-	513	528	0	339	834	480	750	3.444
Total pig population	**48.457**	**68.429**	**59.793**	**98.400**	**97.555**	**87.033**	**123.667**	**170.476**	**753.810**
A Male Piglet	6.340	7.654	7.068	nd	16.583	13.567	17.462	17.788	86.462
B Young Male pig /boar	6.898	10.241	8.650	23.842	13.103	8.971	12.506	23.161	107.372
C Mature Male pig / boar	5.898	8.341	10.565	23.671	12.502	8.679	13.633	31.693	114.982
Total Boar (A+B+C)	19.136	26.236	26.283	47.513	42.188	31.217	43.601	72.642	308.816
D Female piglet	7.828	9.440	8.101	nd	17.602	16.180	21.125	21.767	102.043
E Young female pig /sow	9.602	11.730	8.370	21.928	9.388	12.554	18.350	25.267	117.189
F Mature female pig /sow	11.891	21.023	17.039	28.959	28.377	27.082	40.591	50.800	225.762
Total Sow (D+E+F)	29.321	42.193	33.510	50.887	55.367	55.816	80.066	97.834	444.994
Total pigs ready to slaughter (B+C+E+F)	34.289	51.335	44.624	98.400	63.370	57.286	85.080	130.921	565.305
Total pigs inventory/available for slaughter (B+C+F+E(40%))	**28.528**	**44.297**	**39.602**	**85.243**	**57.737**	**49.754**	**74.070**	**115.761**	**494.992**
Commercial Consumption (head)	828	8.813	3.024	3.003	531	3.771	2.736	1.332	24.038
Traditional/Cultural Events	37.166	47.486	38.544	62.677	33.655	25.298	33.600	27.250	305.676
Religious Events	10.140	10.431	5.632	20.547	13.221	31.692	25.206	38.250	155.119
Total Consumption	**48.134**	**66.730**	**47.200**	**86.227**	**47.407**	**60.761**	**61.542**	**66.832**	**484.833**
Balance (consumption - pig population)	**323**	**1.699**	**12.593**	**12.173**	**50.148**	**26.272**	**62.125**	**103.644**	**268.977**
x total inventory	(13.845)	(15.395)	(2.576)	12.173	15.963	(3.475)	23.538	64.089	80.472
Balance (consumption - pig inventory)	**(19.606)**	**(22.433)**	**(7.598)**	**(984)**	**10.330**	**(11.007)**	**12.528**	**48.929**	**10.159**
Pig Consumption KG (*50KG average)	2.406.700	3.336.490	2.360.000	4.311.350	2.370.350	3.038.050	3.077.100	3.341.600	24.241.640
Consumption per Capita (KG)	**9,56**	**10,44**	**8,34**	**26,52**	**15,07**	**11,39**	**9,87**	**12,07**	**11,94**
Non-Muslim Consumption per Capita (KG)	**12,37**	**11,10**	**9,09**	**28,47**	**16,90**	**15,79**	**11,13**	**14,82**	**13,90**
Pig Population in KG	2.422.850	3.421.450	2.989.650	4.920.000	4.877.750	4.351.650	6.183.350	8.523.800	37.690.500
Consumption per Capita (from pig pop)	9,63	10,71	10,56	30,26	31,01	16,31	19,84	30,79	18,57

ECONOMIC DATA	Manggarai Barat	Manggarai	Manggarai Timur	Ngada	Nagekeo	Ende	Sikka	Flores Timur	Total
GDRP per Regency (Billion IDR)	1.823	2.480	1.665	1.897	1.144	3.408	2.721	2.926	18.064
GDRP per Capita	**7.241.993**	**7.758.622**	**5.883.286**	**11.664.012**	**7.275.681**	**12.773.871**	**8.731.084**	**10.569.909**	**8.900.459**
Per Capita Expenditure	**7.011.000**	**6.875.000**	**5.246.000**	**8.084.000**	**7.905.000**	**8.678.000**	**7.617.000**	**7.149.000**	**7.321.000**

Annex G: Sumba Regency Comparison

SUMBA PIG CONSUMPTION	Sumba Barat Daya	Sumba Barat	Sumba Tengah	Sumba Timur		TOTAL
Total population	326.573	142.779	82.678	233.144		785.174
Non Muslim Population	321.087	134.441	81.810	186.002		728.661
Total non-muslim population	98%	94%	99%	80%		93%
Number of village	175	74	65	156		470
Number of kampung	525	222	195	468		1.410
Number of household	48.000	48.000	0	0		96.000
Total pig population	**33.391**	**19.960**	**16.522**	**48.537**		**118.410**
A Male Piglet	5.492	3.829	2.412	7.464		19.197
B Young Male pig /boar	4.131	2.259	2.698	8.094		17.182
C Mature Male pig / boar	4.025	2.600	2.010	6.192		14.827
Total Boar (A+B+C)	13.648	8.688	7.120	21.750		51.206
D Female piglet	5.957	3.629	2.878	6.792		19.256
E Young female pig /sow	4.751	2.490	3.278	8.219		18.738
F Mature female pig /sow	9.035	5.153	3.246	11.776		29.210
Total Sow (D+E+F)	19.743	11.272	9.402	26.787		67.204
Total pigs ready to slaughter (B+C+E+F)	21.942	12.502	11.232	34.281		79.957
Total pigs inventory/available for slaughter (B+C+F+E(40%))	**19.091**	**11.008**	**9.265**	**29.350**		**68.714**
Commercial Consumption (head)	2.256	1.584	270	936		5.046
Traditional/Cultural Events	90.912	43.368	38.666	66.396		239.342
Religious Events	21.199	9.252	8.850	20.380		59.681
Total Consumption	**114.367**	**54.204**	**47.786**	**87.712**		**304.069**
Balance (consumption - pig population)	**(80.976)**	**(34.244)**	**(31.264)**	**(39.175)**		**(185.659)**
x total inventory	(92.425)	(41.702)	(36.554)	(53.431)		(224.112)
Balance (consumption - pig inventory)	**(95.276)**	**(43.196)**	**(38.521)**	**(58.362)**		**(235.355)**
Pig Consumption KG (*50KG average)	5.718.350	2.710.200	2.389.300	4.385.600		15.203.450
Consumption per Capita (KG)	**17,51**	**18,98**	**28,90**	**18,81**		**19,36**
Non-Muslim Consumption per Capita (KG)	**17,81**	**20,16**	**29,21**	**23,58**		**20,86**
Pig Population in KG	1.669.550	998.000	826.100	2.426.850		5.920.500
Consumption per Capita (from pig pop)	5,11	6,99	9,99	10,41		7,54
ECONOMIC DATA	**Sumba Barat Daya**	**Sumba Barat**	**Sumba Tengah**	**Sumba Timur**		**Total**
GDRP per Regency (Billion IDR)	1.896	1.184	619	3.275		6.974
GDRP per Capita	**5.806.022**	**8.289.174**	**7.485.667**	**14.048.056**		**8.881.764**
Per Capita Expenditure	**5.933.000**	**6.776.000**	**5.821.000**	**8.882.000**		**6.853.000**