

Social and economic conditions at Tari

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SUMMARY

A social and economic survey was conducted in 1984 to assess the impact of development at Tari and to supplement the demographic data being collected by the Tari Research Unit. Of 1604 adults aged 17 years and over selected from the demographic database, 1389 were interviewed and information was collected on the remainder from informants. The survey reveals an uneven pattern of change, with men living close to the town most advantaged in terms of education, employment, diet and possessions, and women in remote areas the least advantaged. There was, however, some evidence that peripheral parts of Tari were catching up with those in the centre. Observations since 1984, and some data collected in 1998, suggest that law and order problems and the decline in government services have led to a stagnation in social progress at Tari. This is despite considerable expansion of the district economy due to payments and remittances from resource projects operating in and around Tari. Women's educational status has nonetheless improved to some extent. Better governance and the restoration of services are required if the socioeconomic status of Tari people is to improve.

Introduction

In 1984, the staff of the Tari Research Unit carried out a survey to collect information about the social and economic conditions of the people living within the Unit's surveillance area. The aims of the survey were first, to investigate the impact of the Southern Highlands Rural Development Project and the vehicle road which first linked the Tari area to the rest of the highlands in 1978; and second, to provide a social and economic dimension to the detailed health and demographic data being continuously collected by the Unit.

Data collected during a family planning and fertility preferences study in 1998 (1) allow some limited comparisons to be made with the 1984 questionnaire. The analysis is supplemented by social observations made over two decades in the Tari District.

Description of the Tari Basin

People live in scattered homesteads across a range of environmental zones varying from flat swampland to volcanic ash slopes and

plateaux. The staple crop, sweet potato (*Ipomoea batatas*), is grown year round and people plant other crops and greens where soil fertility allows. Most people raise pigs and some have coffee trees. Population densities are low in remote areas and dense around the Haeapugua swamp and close to Tari town.

Most people live in bush houses made of timber and woven cane grass (*Miscanthus*), and roofed with kunai (*Imperata*) grass (or, in a few areas, pandanus leaves). Some houses have rooms or partitions, and all have a central open fireplace. People have gardens around their houses, but often also cultivate plots of sweet potato in gardens some distance from their dwellings. Some people have more than one house on separate clan territories, or 'parishes'.

Formerly, men minimized their contact with women, planted their own sweet potato and cooked their own food. Nowadays women do most of the planting and cultivation, while men clear land and dig drains. They share dwellings, although they may sleep in separate rooms.

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A single language, Huli, is spoken throughout the district. Many people also speak tok pisin (Melanesian Pidgin). Increasing numbers of men and women have adopted western dress, though many older men still wear their wigs and aprons, particularly on public occasions.

Nearly everyone belongs to a Christian mission. However, the underlying belief system remains heavily influenced by traditional culture. The important land fertility rituals and the bachelor cults have vanished, but systems of land tenure, compensation and brideprice exchange remain intrinsic to everyday life.

Tari District in 1984

Tari town was the hub of government services and economic activity in 1984. In town were located a district office, district hospital, community school, police station and branches of the Departments of Primary Industry and Education, and an Office of Business Development. There was a bank sub-branch, a motor vehicle workshop, two fuel outlets, several retail and wholesale stores and a large periodic fresh food market.

In 1984 there were a total of 16 aid posts, 5 health subcentres and 12 community schools within the TRU surveillance area, excluding those on Tari station. Of these, 8 aid posts, 4 health subcentres and 4 community schools were more than two hours walk from the town. There was an agricultural station east of Tari at Piwa, and a smaller agricultural extension site at Haeapugua. There were several sawmills, mainly in the west of the basin. The Evangelical Church of Papua (ECP), formerly Asia Pacific Christian Mission (APCM), ran a printery and a motor vehicle workshop. Apart from the jobs offered by these enterprises, some casual employment was also provided through annual government contracts to each census unit, which were usually directed to the maintenance and repair of roads and bridges.

A survey carried out in 1984 revealed that there were 220 trade stores (of various sizes) operating in the TRU surveillance area. While there were stores even in the remotest areas, they tended to be small, poorly stocked, and

open only intermittently. In contrast, near to the town a number of stores were large and well-stocked. A total of 37 vehicles were owned locally and in running order, including utilities, small trucks and tractors. Almost 60% of the vehicles were owned by people living in clans surrounding Tari town. Similarly, of the 44 projects raising chickens for meat by intensive methods, 60% were situated close to the town.

The completion of an all-weather road to Mendi in late 1980 quickened the pace of social change and economic development. More people, including women, were able to travel out of Tari. The sale of pigs became an important source of income for the district, and lower transport costs made imported food and other goods cheaper. In 1982 the Gulf Oil Company began conducting oil exploration from a base in Tari town, providing a substantial amount of casual employment. Telephones were installed in the town and adjacent missions during 1983. Four major new stores opened in Tari town between 1980 and 1984, and wholesale outlets, which serve the trade stores in remoter areas, expanded and became more competitive. Beer sales also increased rapidly, much of it consumed in taverns and clubs, or sold illicitly by unlicensed vendors.

Despite the growing wealth of Tari District, in 1984 change was slight beyond the fringes of the town and most people relied on subsistence gardening for their livelihood. Many young men left Tari in search of work or adventure, and their prolonged absence increased the burden on women in farming and child raising.

Methods

Several hundred families were selected at random from the population of approximately 27,000 people under demographic surveillance by the staff of the Tari Research Unit at that time. All persons aged 17 years and over in these families were listed for interview.

A pilot questionnaire was tested on 70 persons during October and November 1983. After minor modifications, the main rounds of interviewing took place between January and

April 1984. In May 1984, a further 30 people were interviewed at Mt Hagen, where more than 100 of the sample were said by other informants to be living. Following re-visits to interview people who could not be located during earlier rounds, interviewing was completed by September 1984. An abbreviated form of the main questionnaire was used to collect some details of those persons said to be absent from the area for the whole of the survey period. A total of 1604 questionnaires were completed. Of these 1389 were from interviews and 215 (13%) were abbreviated forms, of which 176 were for people who were said to be absent, 14 for people said to be present but never located, and 15 for people said to be too young; there were 6 refusals and 4 rejected for other reasons.

Eight persons (seven men and one woman) carried out most of the interviewing, with some assistance from six others. There were a number of factors influencing the quality of the information collected.

1. Persons were interviewed wherever they could be located. Many interviews took place in public places, markets and other meeting places, where conditions were often crowded and noisy. It took up to 30 minutes to satisfactorily complete an interview, but many interviews were completed in a shorter time.
2. Compliance was good, with only a few interviewees refusing to answer questions or becoming impatient. Younger people treated the survey less seriously than older people. Some men showed a keen interest in the purposes of the survey. Young, particularly unmarried, women often responded poorly when interviewed by a male.
3. The recall of dates in relation to personal movements within the area or to centres outside, and to the buying or selling of products was poor. Often general rather than period-specific responses were made to questions involving elapsed time.
4. Not all respondents gave careful or considered answers and a number made rhetorical statements in response to

questions to which they felt the answer was self-evident.

5. Interviewers were reluctant to use their local knowledge to query clearly questionable responses, or to indicate on the form their opinion of the veracity of the respondent's reply. They also failed to pick up inconsistencies between responses to different questions. After becoming experienced with the questionnaire, interviewers were prone to anticipating responses and so did not always ask questions as fully as they should have.

Despite these shortcomings, questionnaires were for the most part done reasonably well under the often difficult field conditions. Every questionnaire was checked immediately following an interview and obvious errors and inconsistencies were discussed with the interviewer.

Responses from the questionnaire were coded on to marked cards and entered into a file on a PDP 11/34 computer at Mendi. Printouts were checked and corrected and preliminary analysis begun in October 1985. A condensed version of the main data file was produced which summarizes the characteristics of the sample population under a series of broad headings.

Biases in the sample

The sample was selected by family by choosing individuals aged 17 years or more and then including the other members of the family. The reason for this was operational – it was easier to locate, or obtain information on, family members than individuals. However, this sampling method has resulted in a higher proportion of large families being selected than existed in the population under surveillance. Although there is no reason to believe that larger families will display markedly different economic characteristics from smaller ones, especially as adults in large families often lead quite separate lives, some variables may be affected by the bias in the sample (eg number of wives).

This over-selection of larger families may be one reason for the imbalance in the

distribution of the sample by age and sex. There was over-representation of young people (17 to 25 years) and old people (over 40 years). Half of the males selected were less than 30 years compared to just under two-fifths of the females.

These biases will influence the results of parts of the survey. The age bias will tend to make the sample appear less economically well off because most of the wealth at Tari is in the possession of younger and middle-aged men, but the latter were under-represented in the sample. The sex biases will tend to make women appear more traditional than they are because younger women were under-represented. However, by avoiding unwarranted generalization based on the entire sample, and comparing age and sex groups in the analysis, much of the potential bias can be allowed for.

Analysis by age and sex

Nine aspects of life at Tari (marital status, education, occupation, economic status, diet, housing, water supply, movement beyond Tari and religious affiliations) are analyzed by age

and sex. An analysis by geographical location is carried out in a following section. Missing data result in minor variations in the total numbers for the different analyses.

Marital status

Two-thirds of all persons interviewed were married and most of the remainder had not been married (Table 1). Males marry considerably later than females, but nearly all people marry eventually. By 25 years half the women in the sample were married, but only one-twelfth of the men. All the women had married by the time they were 40 and nearly all the men by 50 years.

Almost a third of men married at the time of the survey had more than one wife and 10% of men had three or more wives. This may be an overestimate for the population as a whole due to over-representation of large families in the sample. Men begin to marry their second wives in their thirties. Between 40 and 49, 40% of men have more than one wife and 10% have four or more. Wives and children of polygamous marriages sometimes live together with the husband, or may live quite separately,

TABLE 1

MARITAL STATUS AT TIME OF SURVEY BY AGE AMONG MALES AND FEMALES, EXPRESSED AS A PERCENTAGE

	Age in years						Total
	≥50	40-49	30-39	25-29	20-24	17-19	
Males							
Never married	0.6	1.0	16.2	56.3	92.9	100.0	45.0
Married	93.4	95.1	81.1	40.6	7.1	0.0	52.3
Divorced	2.4	1.9	2.7	2.1	0.0	0.0	1.5
Widowed	3.6	1.9	0.0	1.0	0.0	0.0	1.2
N	167	103	111	96	156	120	753
Females							
Never married	0.0	0.0	0.7	10.6	49.0	86.7	19.5
Married	72.4	90.7	92.2	83.5	49.0	11.5	69.8
Divorced	0.6	2.3	3.9	5.9	2.0	1.8	2.5
Widowed	27.1	7.0	3.3	0.0	0.0	0.0	8.2
N	181	172	153	85	98	113	802

often on the land of the wife’s father’s or mother’s clan.

These figures do not say anything about how many times in the past people have married and remarried because of divorce or the death of a spouse. Divorce and remarriage, especially following first marriages, appears to be common. In addition, some older married women who are past childbearing age see little of their husbands and live almost independent lives, often with their daughters or sons.

Education

Almost three-quarters of the sample had no formal education and very few had gone beyond primary school (Table 2). Men in general had received more formal schooling than women, and the proportion of the population which had received some education fell steadily as age increased. Three-quarters of males aged 17 to 24 had been to school compared to less than half the females in this age group. A much higher proportion of men than women had been to secondary or tertiary

institutions, especially among those 25 years and older. The numbers of people who said they had been to vocational training was very low, but it is possible this question was poorly understood.

Occupation

Four-fifths of the sample stated they had no occupation other than farming their own land (Table 3). This does not mean that they had no source of cash income, but that they had no regular wage. Of the 15% who were employed off their farms the great majority were male and were less than 40 years old. Some form of off-farm employment occurred for 22% of all males compared to 1.6% of all females. Males in their thirties were the most active in earning income, and held the highest proportion of semi-skilled, skilled, clerical and professional jobs. Unskilled labouring was the occupation for two-thirds of the employed males, the lowest paid form of wage employment. This form of employment dominates in all age groups, despite increasing levels of education among younger people.

TABLE 2

SCHOOLING BY AGE AND SEX OF STUDY PARTICIPANTS, EXPRESSED AS A PERCENTAGE

	Age in years					Total
	≥40	30-39	25-29	20-24	17-19	
Males						
Nil	97.4	67.2	49.1	24.5	25.0	60.0
Grade 1 to 3	1.5	8.4	13.6	17.0	22.5	10.6
Grade 4 to 6	1.1	13.4	23.6	40.9	38.3	20.0
Grade 7 to 12	0.0	5.9	10.0	13.8	14.2	7.3
Tertiary training	0.0	5.0	3.6	3.8	0.0	2.1
N	272	119	110	159	120	780
Females						
Nil	100.0	88.9	76.5	60.6	48.7	83.3
Grade 1 to 3	0.0	6.5	9.4	6.1	15.0	5.1
Grade 4 to 6	0.0	3.9	11.8	25.3	27.4	9.0
Grade 7 to 12	0.0	0.0	1.2	6.1	8.0	2.0
Tertiary training	0.0	0.7	1.2	2.0	0.9	0.6
N	353	153	85	99	113	803

TABLE 3

OCCUPATION OF MEN AND WOMEN, EXPRESSED AS PERCENTAGES

	≥40	Males		Total	Females Total
		Age in years			
		30-39	17-29		
Farmer	88.8	51.3	62.8	70.3	94.9
Student	0.0	0.0	15.3	7.6	3.5
Self-employed	4.8	5.3	2.1	3.5	0.0
Labourer	5.6	26.5	13.7	12.7	1.0
Semi-skilled	0.0	8.8	3.4	3.0	0.4
Skilled	0.7	3.5	1.3	1.4	0.1
Professional	0.0	4.4	1.3	1.3	0.1
N	269	113	379	761	802

The local economy

Most people work mainly in the subsistence sector. All families, with the exception of a small number of Seventh Day Adventists (SDAs), raise pigs and the sale of these animals, alive and dead, was probably the largest single source of income in the Tari area at the time of the survey. Only one-quarter said they grew coffee. At least a fifth of respondents had sold something, in most cases vegetables, in a local market in the preceding fortnight (Table 4). More than twice as many women as men said they had sold items in

local markets, an expected outcome, as women sellers usually outnumber men in markets. However, receipts by females from local market sales are likely to be smaller than for males. Sales of produce in local markets increase with age, especially for women.

Most wage and salary earners who were interviewed, including part-time employees, stated their incomes were between K100 to K1000 per year. Highest incomes were received by males in the 30 to 39 year age group, with more than half of this group said to be receiving more than K1000 per year.

TABLE 4

SOURCES OF CASH INCOME IN PREVIOUS FORTNIGHT, EXPRESSED AS PERCENTAGES

	Males				Females			
	Age in years			Total	Age in years			Total
	≥40	30-39	17-29		≥40	30-39	17-29	
No income	51.0	49.4	55.4	52.8	41.1	39.1	51.9	44.6
Market sales	21.2	5.2	3.8	11.1	33.0	30.4	19.1	27.6
Wages/Self-employed*	7.1	15.6	8.0	8.6	0.3	0.7	1.9	1.0
Relations/Friends	14.5	19.5	29.3	22.0	19.6	21.7	23.3	21.3
More than one	6.3	10.4	3.5	5.5	6.0	8.0	3.8	5.6
N	255	77	287	619	336	138	262	736

*Self-employed refers mainly to the owners of small stores

TABLE 5

POSSESSIONS OWNED BY MEN AND WOMEN

	Male		Female		Total	
	N	%	N	%	N	%
Blanket	432	68.8	514	68.3	946	68.5
Spade	473	74.8	694	91.7	1167	84.0
Axe	534	84.5	376	49.7	910	65.5
Bushknife	435	68.8	348	46.0	783	56.4
Toothbrush	142	22.5	66	8.7	208	15.0
Footwear	116	18.4	33	4.4	149	10.7
Umbrella	135	21.5	65	8.6	200	14.5
Mattress	92	14.6	76	10.1	168	12.2
Watch	33	5.2	2	0.3	35	2.5
Reading books	28	4.4	6	0.8	34	2.4

Despite the small numbers of people receiving wages and salaries, this source of income was extremely important to the local economy at the time of the survey. It was almost the only source of income derived from outside the Tari area other than from the sale of pigs and coffee. Much of it was spent inside the area in local markets and was distributed among relatives and friends. Local market sales and other small local transactions serve mainly to circulate money within the local economy.

More than 20% of people interviewed claimed to have received cash from relatives or friends, or from people outside of the Tari area who had visited home, and it is likely that the number of people who actually received some cash in this way was understated (Table 4). Many people wanted to emphasize their poverty and stressed they never received any cash from anyone, which is almost certainly untrue. Day-to-day observations and the fact that more than half of the people interviewed said they had made a cash purchase of two or more items in a store in the preceding fortnight suggest that much more money is circulating in Tari than is indicated by responses to this question. The importance of cash received from friends or relatives is greatest among young males.

About two-thirds of the sample owned a blanket, most men owned an axe and

bushknife, and most women a spade (Table 5). Few owned other significant possessions – slightly more than 10%, mainly men, had footwear, an umbrella and a mattress. Only 5% owned a working radio.

Of those interviewed 10% possessed a savings bank account, but two-thirds of those claimed to have less than K100 in the account. Almost twice as many men as women said they possessed a bank account.

Diet

Garden food predominates in the diet. Nearly everyone ate sweet potato, 90% ate greens and 75% other vegetables at least once in the past week (Table 6). 98% said they ate sweet potato every day, but less than one-fifth greens or other vegetables, indicating the reliance on a single staple crop for most of people’s nutrient intake (though ‘snacking’ on gifts or market food is probably underestimated in this survey). Over a half said they ate at least one meal of locally raised pork or chicken. Store foods were eaten, but not regularly – over a half ate tinned fish or tinned meat, nearly a half ate rice, and a third ate flour in the past week, but only 5% or less ate these foods daily.

Over a half of men and a quarter of women

TABLE 6

FOODS/SUBSTANCE INTAKE OVER THE PAST WEEK

	Male		Female		Total		1-2 days only		Every day	
	N	%	N	%	N	%	N	%	N	%
Sweet potato	633	100	756	99.9	1389	99.9	12	0.9	1365	98.2
Greens	558	88.2	680	89.8	1238	89.1	549	39.5	245	17.6
Other vegetables	506	79.9	564	74.5	1070	77.0	662	47.6	103	7.4
Chicken/pork	339	53.6	411	54.3	750	54.0	626	45.0	19	1.4
Rice	338	53.4	301	39.8	639	46.0	429	30.9	67	4.8
Flour	234	37.0	247	32.6	481	34.6	339	24.4	38	2.7
Tinned fish/meat	369	58.3	400	52.8	769	55.3	538	38.7	75	5.4
Coffee	105	16.6	40	5.3	145	10.4	42	3.0	87	6.3
Tobacco	366	57.8	201	26.6	567	40.8	7	0.5	549	39.5
Beer	33	5.2	0	0	33	2.4	24	1.7	3	0.2

smoked regularly. Only 5% of men, and no women, said that they had consumed alcohol in the past week.

In terms of combined intake of the foods, 22% of respondents said they had eaten only sweet potato with or without other vegetables during the week prior to the interview (Table 7). Slightly fewer than half stated they had eaten sweet potato, other vegetables and a small amount of animal protein. The remaining one-third had eaten tinned fish or meat in the previous week, and of those, 40% regularly consumed rice, tinned fish, biscuits and instant coffee, as well as sweet potato and other vegetables.

Younger people are more likely to be eating a mix of 'traditional' and 'modern' foods than older people. More than 75% of people aged over 40 years said they had eaten only sweet potato and vegetables in the previous week. In contrast, over 40% of the males aged 17 to 39 years had eaten some protein in the preceding week. Women in general had less access to protein than men, and the consumption of protein declined more rapidly with age for women than for men. The exception is the 17 to 19 year old females who appear to consume almost as much tinned fish, meat and rice per week as males of the same age. This may be associated with high school menus or with their marriage to wage-earning husbands.

TABLE 7

MIX OF FOOD EATEN IN PAST WEEK BY MALES AND FEMALES BY AGE, EXPRESSED AS A PERCENTAGE

	Males			Total	Females			Total
	Age in years				Age in years			
	≥40	30-39	17-29		≥40	30-39	17-29	
Sweet potato only	28.6	15.2	16.4	21.2	31.0	22.0	15.0	23.6
Sweet potato and vegetables	48.6	43.0	39.9	43.9	49.4	53.2	46.8	49.2
Some meat/fish	15.1	17.7	19.8	17.6	16.1	17.0	21.3	18.1
Meat/fish on >2 days	7.7	24.1	23.9	17.3	3.5	7.8	16.9	9.1
N	259	79	293	631	342	141	267	750

Housing and water supply

Houses made of locally available materials were lived in by 98% of the people sampled. Half of those lived in houses which can be described as ‘traditional’ in design: walls of timber slabs, low thatched roofs, dirt floor, a single entrance and a single room inside. Three-quarters of men aged 50 years and over lived in ‘traditional’ houses.

The balance of people lived in houses which can be described as ‘coastal’ style houses: these are sometimes built on low posts with a floor, sometimes with only a dirt floor, walls of woven bamboo or pitpit (*Miscanthus*), higher thatched roofs, and an interior commonly divided into small rooms. Neither of these house types have windows, which are considered a security risk. Both house types have fireplaces inside, but neither have flues, the smoke escaping through the thatch. The only people who lived in houses partly or completely built from imported ‘permanent’ materials were males aged 30 to 39 years, most of whom were salaried and lived in government or employer-owned housing.

The majority of people (91%) had no access to a protected water supply and obtained their drinking and cooking water from small watercourses or streams. The balance had access to tank water some or all of the time, often from tanks at aid posts or missions. Men

aged less than 40 years and women aged less than 30 years said they used tank water sources more than other age groups. In some densely populated areas, such as the Haeapugua swamp, there are few sources of water which are regarded as ‘clean’ and many people use them. In periods of low rainfall local sources run dry, larger streams become brackish and tanks are quickly emptied.

Most households had very few basic possessions such as pots for cooking and plates to eat off, and very few had sufficient for every person living in the household (Table 8). Around 15% of people had access to a lamp and a bucket. Such items are shared.

Religion

Christian church services were attended by 60% of people and a further 32% said they went occasionally. Only 8% said they never went to church. More women of all ages attended regularly than men (73% compared to 45%) and only 2% of women said they never went to church compared to 15% of men. The ECP (formerly the APCM) had the greatest number of adherents, followed by the United, Roman Catholic, SDA and Apostolic churches.

Movement beyond Tari

Young Huli men move about and travel out of the local area much more frequently than

TABLE 8

HOUSEHOLD POSSESSIONS

	Male		Female		Total	
	N	%	N	%	N	%
Pots	467	74.1	583	77.1	1050	75.8
Plates	421	66.8	502	66.4	923	66.6
Bucket	106	16.8	83	11.0	189	13.6
Table	27	4.3	18	2.4	45	3.2
Primus	18	2.9	7	0.9	25	1.8
Hurricane lamp	125	19.8	97	12.8	222	16.0
Coleman lamp	25	4.0	8	1.1	33	2.4
Tools	85	13.5	10	1.3	95	6.9
Coffee pulper	1	0.2	0	0.0	1	0.1

older men or women. Nearly all men in the sample had travelled out of the Tari area by the time they had reached their late 20s, while most women had never left the district.

One-third of all males interviewed, and half of all males aged 20 to 39 years, had travelled out of the Tari area during the previous twelve months. Most said they were seeking paid employment. However, only 10% of them had stayed away for more than a month. Almost a quarter of males had been away for more than nine months in the previous twelve and many of these were long-term absentees.

Although movement patterns are dominated by young men seeking work, a significant number of younger adults and men over 40 travel to visit friends and relatives, or simply to see other places. Many of the females aged 25-29 years who went out of the district may have been accompanying their husbands.

Analysis by geographical location

The provision of government services and government, mission and private employment is centred on Tari town and this concentration can reasonably be expected to influence the way in which social and economic change is occurring in the surrounding area. General observation suggests that prior to colonial contact the area was largely culturally homogeneous and that by the time of the survey major customary ritual practices had been discontinued even in the most remote areas. However, the penetration of economic change has been less complete than religious change. In 1984 people further away from Tari town had seen little in the way of cash and opportunities to earn it, while those living close to the town had benefited from the early provision of health and education services and wage-earning opportunities.

However, the geographical pattern of social and economic influences is complicated by ecological differences (2) and by historical differences in the provision of services. In an attempt to take account of distance, ecology and history, the sample was divided into groups depending on their residence in four areas: 'Centre', 'Intermediate', 'Swamp' and 'Periphery'.

Description of the areas in 1984

The 'Centre' is an area within one hour's walk of Tari town. It is a densely populated area of low rolling hills, ridges and flood plains, with volcanic ash and alluvial soils, with little or no forest land left uncleared. Access to health and education services as well as agricultural and business extension services was very good. The area also had access to large retail stores, banking facilities, the Tari market, the airstrip and associated employment opportunities.

The 'Intermediate' area is between one and two hours walk from Tari. It is an area of more dispersed settlement, lower population density and less fertile soils. At the time of the survey six aid posts and four primary schools served the area.

The 'Swamp' covers the area surrounding the Haepugua swamp which is 2 hours on foot and 15 minutes by motor vehicle from Tari town. It is an area of high population density on flat, fertile, drained organic soils. Forests on limestone and volcanic ridges surrounding the swamp provide timber and firewood. Pig numbers are high and many families have small coffee plots. At the time of the survey the area was served by a health subcentre, an aid post and two community schools. A large market operates on several days each week.

The 'Periphery' includes areas to the north, east and southwest. All are more than two hours walk from Tari. In the north and east altitudes of occupied land go over 1800 m, and in the southwest below 1400 m. At the time of the survey only one health subcentre existed (located in the northern area), with five aid posts and three schools. The quality of the services was variable because staff preferred postings nearer to Tari town and were not as well supervised as staff nearer to Tari.

Education

Marked differences occurred in the educational status of people in the four areas. In the 'Centre' more males of all ages had received some formal education, while in the 'Periphery', with the exception of 17 to 21 year olds, fewer males than elsewhere had received

some formal education. A similar pattern exists for secondary and tertiary education. Among males aged 30 to 44 years, ten times more had better than primary education at the 'Centre' than elsewhere. There is an indication that a catch-up was occurring since among males under 30 the distribution of educational status was more even, with the exception of the 'Periphery', where fewer men had received more than primary education. The same regional differences were seen among females. Only in the 'Centre' had more than 5% of women over 30 received any formal education.

Occupation

Substantial variations occurred in the occupational status of men between the four areas. In the 'Centre' less than half of all men aged 30 to 44 years were working on the land. Only in the 'Centre' did more than half of employed men work in clerical and skilled employment. Elsewhere most employed men were labourers. Female employment was negligible in all four areas.

The local economy

Coffee ownership was concentrated in the 'Swamp' where more than half of all men over 30 said they owned coffee gardens. Coffee ownership was lowest in the 'Periphery'. Access to extension services and the Tari market is thought to be the reason for a quarter of all males in the 'Centre' being involved in other cash-raising activities like chickens and cattle. The proportion of people selling small items, mostly vegetables, in local markets was evenly distributed in all areas.

The receipt of cash (other than from wages or salaries) varied significantly between the four areas, and was highest in the 'Centre' and lowest in the 'Periphery'. Half of the people in the 'Centre' had received some cash income in the previous fortnight, compared to 30% in the 'Periphery'.

People in the 'Centre' and the 'Swamp' made more cash purchases in the two weeks prior to the survey than people elsewhere. Almost 90% of people aged between 22 and 44 years in the 'Centre' made such purchases compared to 50% of the same age group in the

'Periphery'. The difference in purchasing power between the four areas is illustrated by the fact that approximately 30% of adults in the 'Centre' purchased more than six items in the period, compared to less than 10% in the 'Periphery' and less than 20% elsewhere.

In the 'Centre' a quarter of all men aged 22 to 44 years owned a working radio and a watch and more than 80% owned more than the basic items of a blanket and hand tools. In all other areas half of all men in the same age group owned only the basic items. The dichotomy between the 'Centre' and other areas was even sharper among women. More than half of the total women in the 'Centre' said they possessed the basic items, compared to only 10% in the 'Periphery' and a quarter in the other areas.

Almost twice as many males in the 'Centre' as elsewhere possessed bank accounts, and more than half of these accounts contained over K100. In other areas very few men had more than K100 in a bank account. For women almost a quarter of those living in the 'Centre' had a bank account, whereas elsewhere this reduced to less than 10%.

Diet

In general, the nearer people lived to Tari town, the more protein they had in their diet. The highest proportion of people who consumed rice, tinned fish and meat regularly lived in the 'Centre' – one in three males aged between 22 and 44 years and females aged between 17 and 19 years. Very few people under 45 years living in the 'Centre' said they ate only sweet potato and vegetables in the week before the survey; more than half regularly consumed tinned fish or meat. In contrast, for those living elsewhere more than half ate mainly sweet potato and vegetables most of the time, and in the 'Periphery' a quarter of men and 33% of women ate sweet potato almost exclusively.

Housing and water supply

'Traditional' houses predominated in the 'Periphery' and 'coastal' houses in the 'Centre'. The tendency is clearly for younger men and women to improve the standard of

their housing, but so far only those living near to Tari town have had the opportunity to do so.

The highest rate of access to tank water occurred in the 'Centre', yet this was still only 12% and varied little elsewhere. This reflects more the greater number of buildings which collect water in and around the town than the individual possession of water tanks there.

Religion

Religious affiliation varied considerably from area to area, a result mainly of the history of mission activities in the Tari District. ECP adherents were mostly found in the 'Swamp' (half of the population) and the 'Periphery' (20%). The United Church had no adherents in the 'Swamp', which is distant from its main centre at Hoiebia, but about a quarter of the population of the 'Centre' and 20% in the 'Periphery' claimed allegiance to that church. Roman Catholics comprised about 20% of all areas. Seventh Day Adventists were concentrated in the 'Centre' (the location of the main SDA headquarters and school), where a quarter of the population claimed SDA allegiance.

Movement beyond Tari

The general pattern of male and female absenteeism is similar for all four areas, except that the 'Centre' and 'Swamp' have higher levels among middle-aged men than elsewhere. More men from the 'Centre' travel outside of the Tari District than men from other areas, perhaps a reflection of their greater affluence. Most of those absent are resident elsewhere in the Papua New Guinea highlands, although a significant number of absentees from the 'Periphery' are resident in a traditional area of migration. People from the north and west traditionally moved backwards and forwards between the Porgera area and the Margarima area, respectively, and continue to do so.

Summary of the 1984 results

The data from the survey reflect a traditional society undergoing rapid but uneven change. The rate at which change has benefited people is clearly influenced by their sex and age and the geographical location of their residence.

Huli males, aged 30 to 44 years and living in

the area surrounding Tari town, are significantly advantaged. A greater proportion of these men than any other part of the Tari population have more than one wife, are better educated, are employed off-farm, receive higher incomes from all sources, eat a more balanced diet with greater amounts of protein, live in an improved house, have access to tank water and have travelled beyond the immediate Tari area.

In general males were better off than females, and people between the ages of 30 and 50 were better off than younger or older people. People who lived in the central area of the district around Tari town were clearly better off than people who dwelt around the edges of the district. As services spread and the road network improved in the years prior to the survey, more people gained access to higher cash incomes and better education, allowing some groups and locations to start catching up with the central Tari area.

Change since 1984

Since the 1984 social and economic questionnaire was conducted there have been many changes affecting Tari District. Several major resource developments commenced in the areas adjacent to Tari. Between late 1987 and 1990 there was a goldrush at Mt Kare, a day's walk from Tari on the Southern Highlands/Enga border, during which an estimated K100 million worth of gold was extracted by small-scale miners (3). On the other hand, government services have been in general decline throughout the past decade, and clan fighting and crime have become more frequent and destructive. Population has grown steadily, at around 2.2% per annum (4), increasing the pressure on environmentally stressed parts of the Tari Basin.

The most visible signs of change in Tari town since 1984 are a number of large metal barns built as wholesale and retail outlets. There are several new government buildings, built either to house new offices such as the College of Distance Education, or to replace older offices which had been damaged or destroyed. A hydroelectricity scheme provides power for the town, but is frequently out of service. In mid-2000, neither the bank sub-

branch, the post office or the telecommunications systems were operating. Many government services, including the Departments of Works, Plant and Transport, and Agriculture and Livestock, were either closed or not functioning. The hospital, which used to function well (5), was short of medicine, had almost no working equipment, and depended on an unreliable power and water supply).

The situation in rural areas around Tari was worse. Most roads were in disrepair, some impassable. Many aid posts were closed due to lack of medicine, and health centres provided minimal services. Maternal and child health clinics were erratic and had ceased in remote areas. Few vaccine fridges remained in working order. Schools were under-equipped and functioned poorly, with many teachers absent due to disorder and difficulty obtaining their pay. While PMV (passenger motor vehicle) services were frequent on the main roads, the risk of robberies was high. At least two community schools and a health centre were destroyed in clan fighting in the past decade.

The movement of persons and goods along the Highlands Highway to and from Tari was hampered by criminal activity along its entire length. Risks were further exacerbated by political tensions between Nipa and Tari districts which began after the national elections in 1997, and culminated in a pitched battle along the highway in August 1999 involving hundreds of men. Since then most supplies have reached Tari in police-escorted convoys, and many Hulis travel from the district using minor roads through Enga province, on which criminal activity is slightly less frequent, or by air transport.

Without another study, it is difficult to estimate the net effect of this change on socioeconomic status. Some information is, however, available from a survey of twelve census units carried out as part of a fertility preferences and family planning questionnaire in 1998 (1). The data presented here represent responses which were obtained from informants, rather than through interviews with individuals, and may understate educational attainment. Among women for whom interview data were available, roughly 10%

who were known to have some education were stated to have had none. Allowing for this understatement, and assuming it is similar in men and women, the data suggest there has been very little change in overall rates of education for males since 1984, but notable improvements among females (Table 9). Education rates among younger men appear to have stagnated. The 'Periphery' still lags well behind the 'Centre'. About three-quarters of males and two-thirds of females at the 'Centre' aged under 25 years had some education, compared to half of males and a third of females at the 'Periphery'. These trends may be due both to the contraction of government services in recent years and the increasing instability of village life due to fighting and crime.

Rather surprisingly, the data on occupation suggest that men aged under 40 years are less likely to be in cash employment in 1998 than they were in 1984 (Table 10). However, the data presented were collected from informants and are likely to omit details of informal income provided through interviews in the 1984 questionnaire. The proportion of older men with cash incomes has increased, suggesting that the first generation of employed men, who were in their thirties in 1984, have retained their privileged position. Women probably have more paid jobs than they did in 1984, but since many women who may have been employed were absent from Tari at the time of the survey, this cannot be confirmed by the data.

Perhaps the underlying theme of the change in Tari since 1984 is a failure in district management. Government services have declined in the past decade, both in terms of coverage and quality. Most disadvantaged have been those at the periphery, as functioning schools and health services have contracted towards the centre. This trend has been in part the result of, and in part contributed to, a decline in law and order that has, in effect, rendered large parts of the district administratively 'uncontrolled'. Increasing police presence has not counteracted the tendency for groups to settle disputes by fighting, or the growing use of firearms, or the destruction of government property located on the territory of opponents.

TABLE 9

SCHOOLING BY AGE AND SEX FROM 1998 PFP STUDY DATA, EXPRESSED AS A PERCENTAGE

	Age in years					Total
	≥40	30-39	25-29	20-24	17-19	
Males						
None	68.7	38.5	39.4	38.9	40.8	49.2
1-3 years	2.1	3.6	5.9	8.6	14.6	5.4
4-6 years	5.2	26.3	23.7	19.7	20.1	17.0
>6 years	4.2	13.1	10.0	18.1	11.7	10.3
Unknown	19.7	18.4	20.9	14.7	12.9	18.0
N	1372	960	611	674	412	4029
Females						
None	81.5	63.2	62.8	53.1	44.5	66.1
1-3 years	1.1	1.9	3.2	6.0	9.7	3.2
4-6 years	2.1	11.6	15.8	19.0	20.4	10.9
>6 years	0.9	5.1	6.5	12.1	14.0	5.8
Unknown	14.4	18.2	11.7	9.8	11.5	14.0
N	1392	983	631	601	393	4000

PFP study = Fertility preferences and family planning study

TABLE 10

OCCUPATION BY AGE AND SEX FROM 1998 PFP STUDY DATA EXPRESSED AS A PERCENTAGE

	Age in years			Total
	≥40	30-39	17-29	
Males				
Farmer	75.7	68.1	70.3	71.6
Student	0.4	1.6	10.3	4.8
Cash employment	7.6	12.2	3.1	6.8
Unknown	16.3	18.1	16.3	16.7
N	1372	960	1697	4029
Females				
Farmer	90.3	81.7	82.0	84.8
Student	0.2	0.4	6.6	2.9
Cash employment	1.3	2.3	1.1	1.5
Unknown	8.2	15.6	10.3	10.9
N	1392	983	1625	4000

PFP study = Fertility preferences and family planning study

The wealth of Tari District has increased many-fold over the period, mainly due to large-scale remittances from people working at resource projects including Hides gas field, Kutubu oil fields, Porgera gold mine and Ok Tedi copper and gold mine, or working in towns outside of Tari. Where resource development impinges on Tari District its effects have either been ephemeral, in the case of the Mt Kare gold rush, or diluted, in the case of the Hides gas field, as the employment and improved services provided by the operators attract a large influx of outsiders into the region. Direct payments, such as rental to landowners for the power line between Hides gas field and the Porgera gold mine, have bred resentment among those who feel they have been wrongly excluded, leading to trouble and crime.

The resource wealth has not been invested in the local economy. Coffee and other cash crop production has not increased in recent years, being hampered by fluctuating prices, a lack of extension services, and law and order problems. Markets probably have less fresh produce than was available in 1984; many are dominated by items such as instant noodles, soap, second-hand clothing, tobacco and betelnut, and are used as venues for gambling. Housing standards have not improved. The fall in the kina to a third of its value in 1993 has sharply increased prices of imported goods for those close to Tari town who have become increasingly accustomed to a diet of rice, flour and tinned fish.

While there has not been a discernible decrease in sweet potato production in the more fertile parts of Tari, there are warning signs in poorer areas (6). Increasing population also results in the loss of forest and common land which provide resources for housing and farming. The 1984 social and economic questionnaire pointed to a society experiencing change mostly for the better, and there has been considerable economic growth

since then. However, without better governance, a restoration of government services and a more community-based approach to development, the erosion in the quality of life experienced over the past decade by many people in Tari is likely to continue.

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