

# **The role of agriculture in a national economy dominated by gas, petroleum and mineral exports**

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# Basic demography

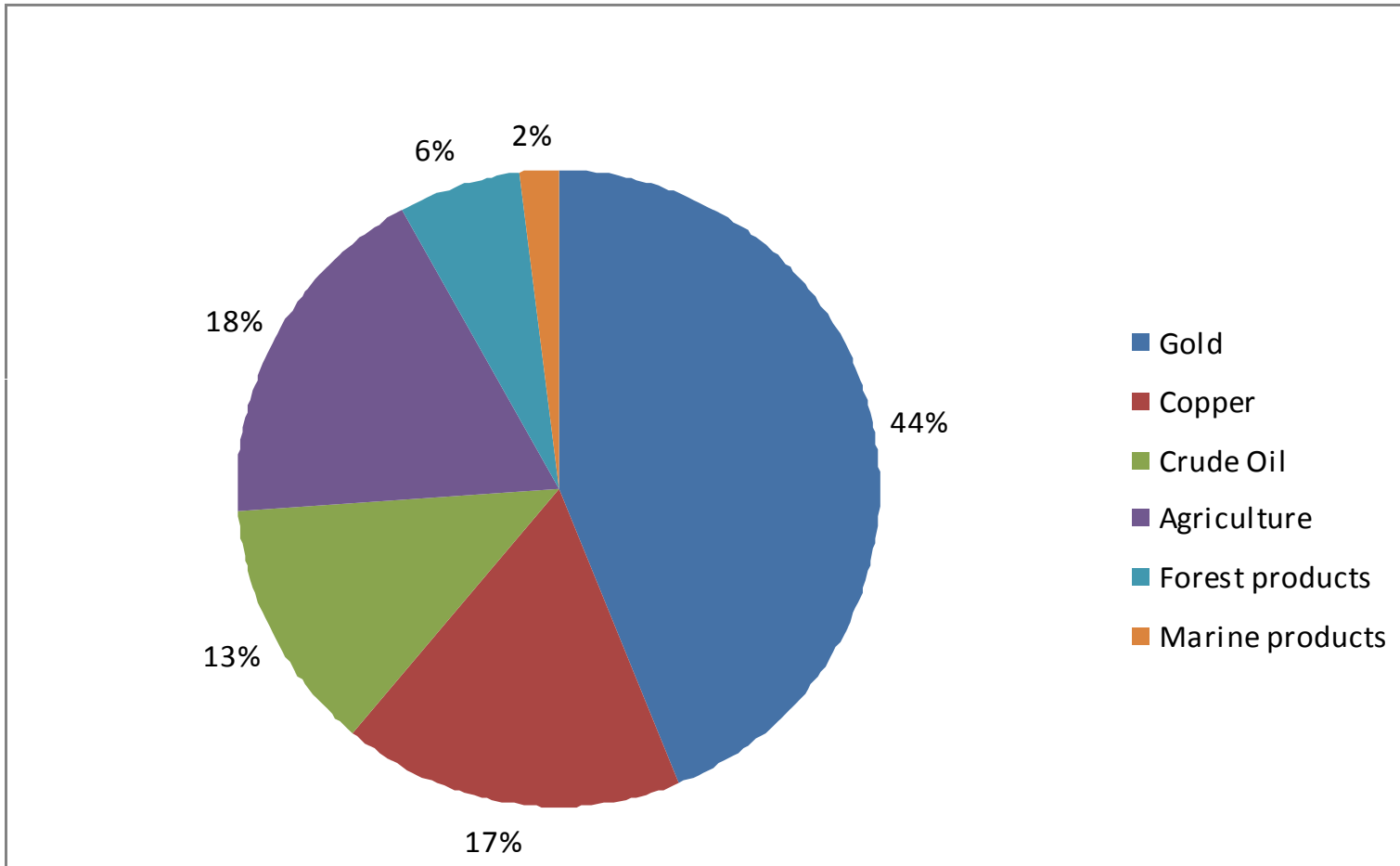
- PNG population is 7.2 million (mid-2012)
- Growing rapidly (ca 2.7% per year since 1980)
- Most people are rural villagers (81%)
- 5.8 million rural villagers in mid-2012
- PNG has one of the highest proportion of rural people globally



# Agriculture and the economy

- Agriculture currently contributes 18% by value of PNG's exports
- This will fall to less than 10% by 2016 as LNG exports commence
- The annual value of LNG exports will be ca 10 times that of oil palm
- The annual value of LNG exports will be ca 20 times that of coffee
- So what is the role of agriculture in the PNG economy?
- Here I argue that agriculture has a critical role in improving the welfare of the bulk of the population and reducing poverty

# Value of major exports from PNG, 2009



Source: Bank of Papua New Guinea

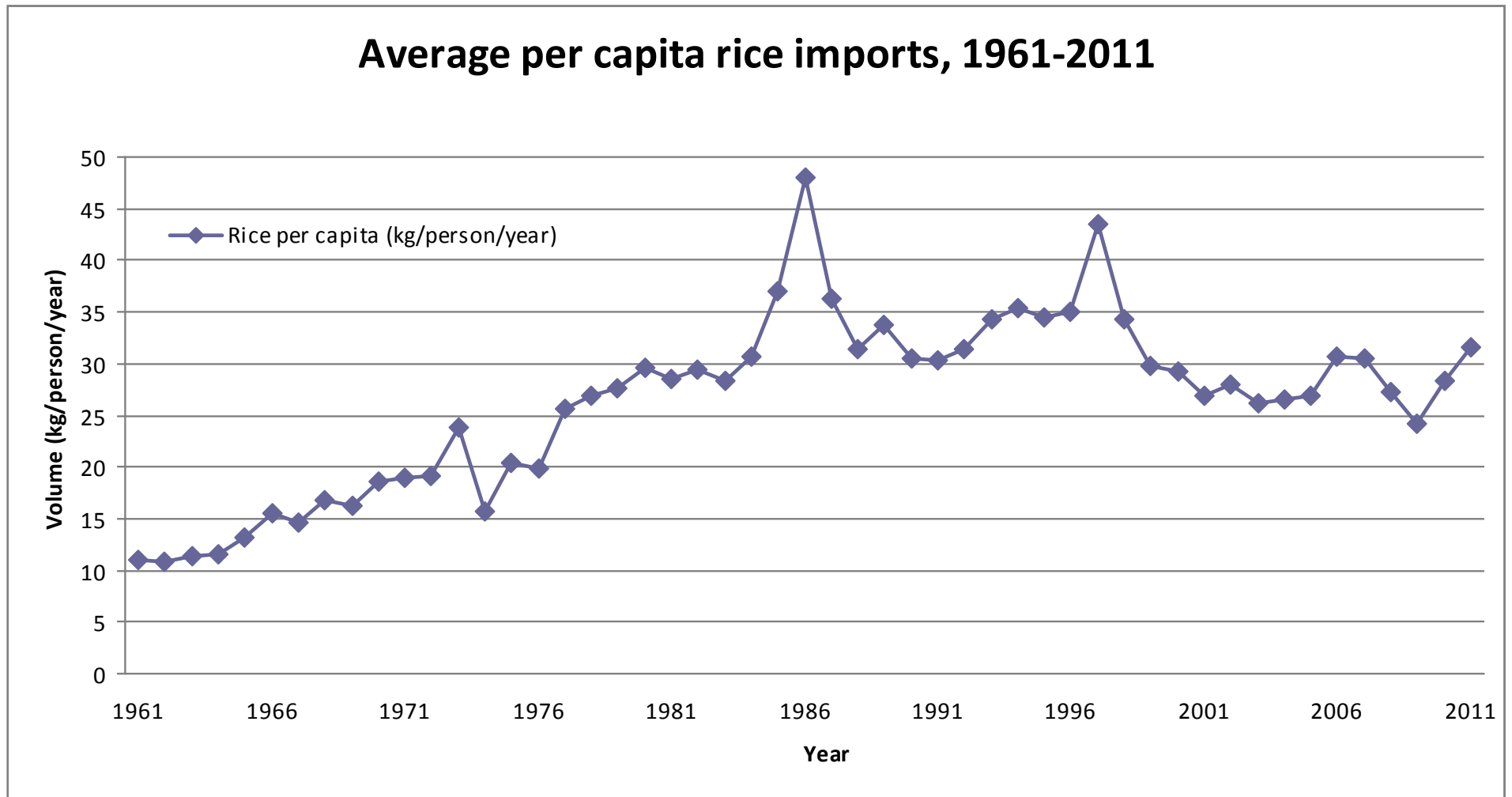
# Food production in PNG

- Agriculture provides most of the food consumed in PNG
- 83% of food energy; 76% of protein (2006)
- Food imports are steady or decreasing



Maintaining sweet potato yield with composted mounds – continuous sweet potato production in volcanic ash soils, Lai Valley, Enga

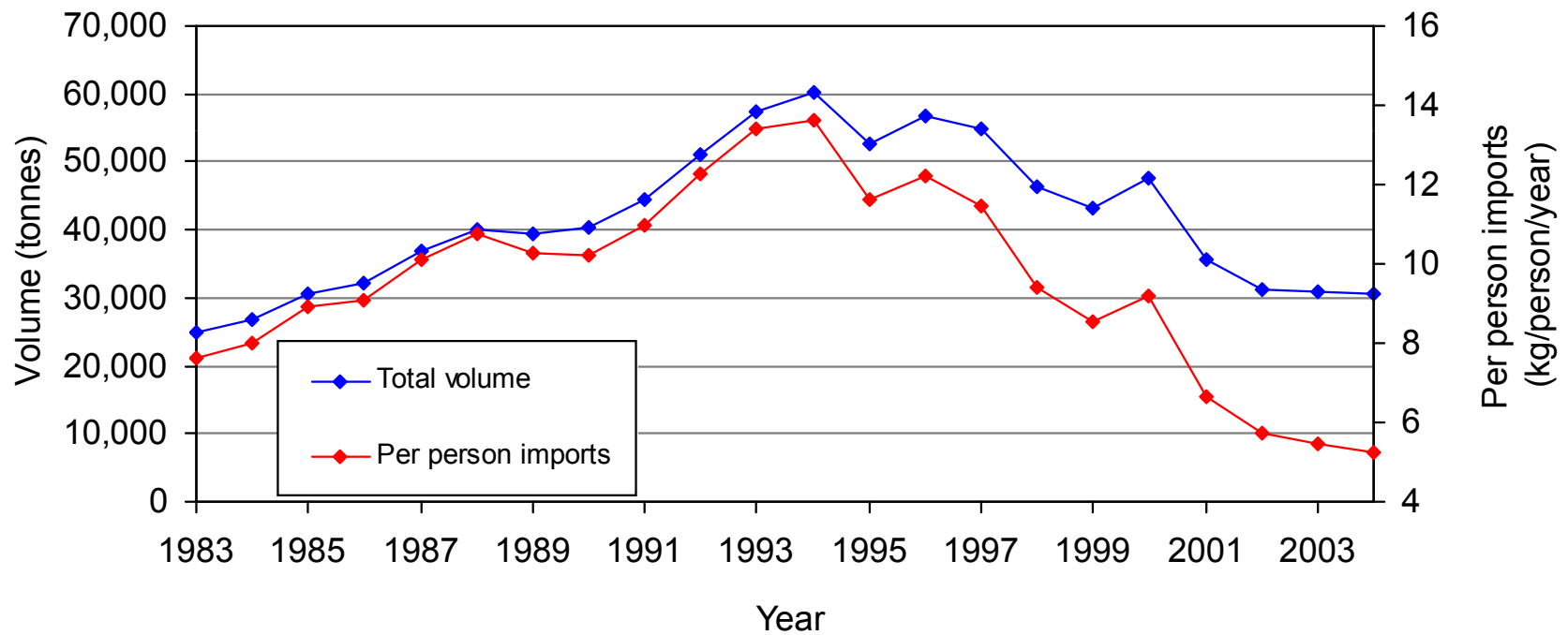
# Rice imports into PNG, 1961-2011



Source: Bourke et al., 2009; Trukai Industries, Lae



# Volume of meat imports into PNG from Australia and New Zealand, 1983–2004



# Cash income from agriculture

- The most important source of cash income for most rural people is agriculture
- Income from agriculture is generally low to medium (K1,000-K12,000/household/year)
- A small minority of rural villagers earn much higher income from trading, transport, retail and services
- Cash income from agriculture and other sources pays school fees; transport to medical facilities and markets; and many other items

## Number of rural households with various main sources of cash income, six districts, Eastern Highlands Province

Off-farm employment	1
Non-farm project	3
Gifts, customary payments	0
<b>Total</b>	<b>75</b>

Source: Table 4, FPDA, 2010

## Income levels (kina) from seven dominant informal sector activities, Mt Hagen Central District and North Wahgi District, Western Highlands Province

Income Source	Mt Hagen Central District	North Wahgi District
English potato	1007	0
Sweet potato / other food crops	477	36
-----	615	186
Vegetables / fruit	224	83
Pigs	185	0
Betel nut / cigarettes	362	0
Sewing	95	0

Source: Table 21. Soweï, Vatnabar and Lahari, 2010

# Sources of cash income from agriculture

- Both the formal and informal sectors are important
- The most important sources of cash to villagers are: coffee, fresh food, cocoa, betel nut, copra, oil palm, firewood and fish
- At a national level, the formal and informal sectors each contribute about half of the cash income from agriculture

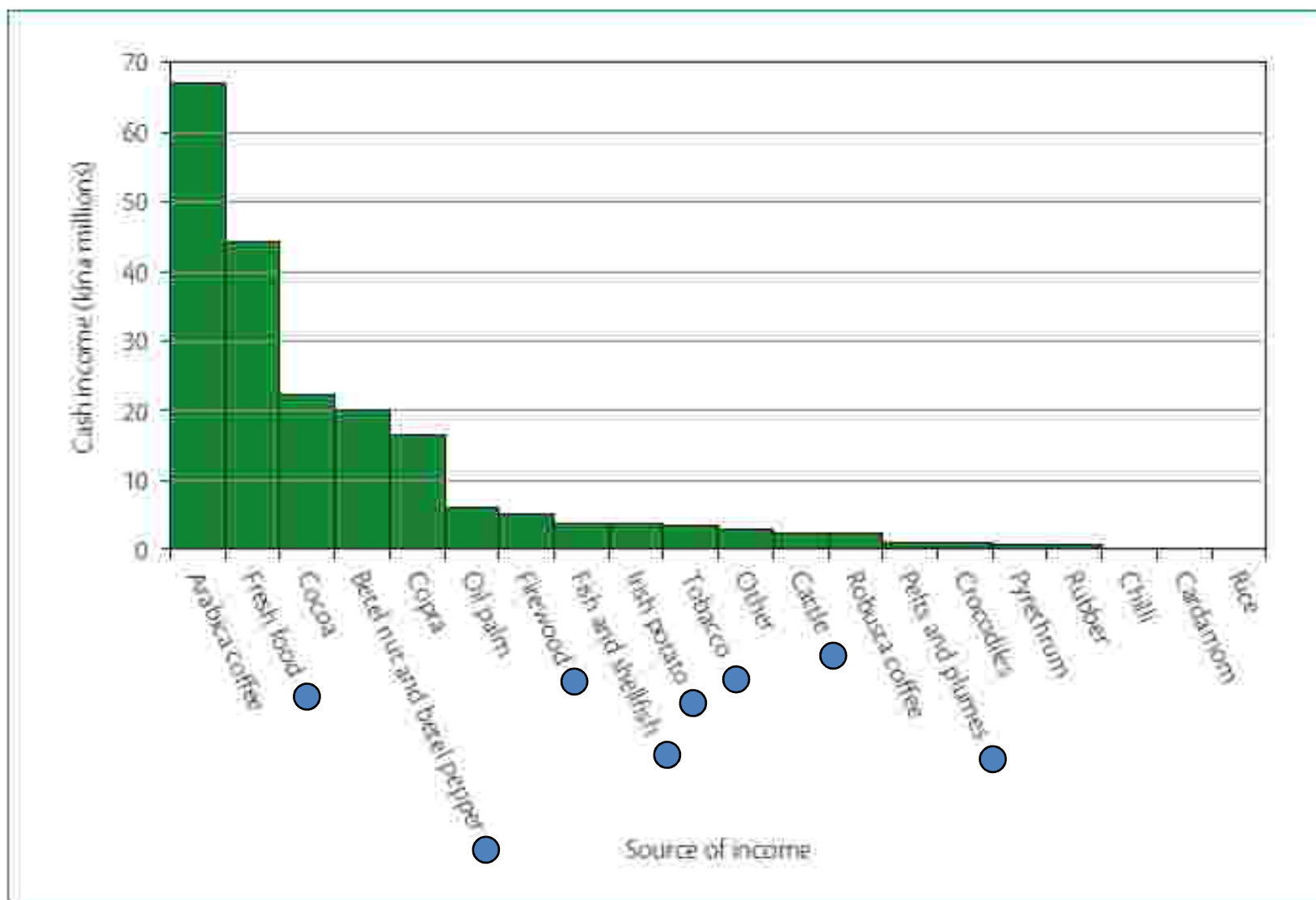
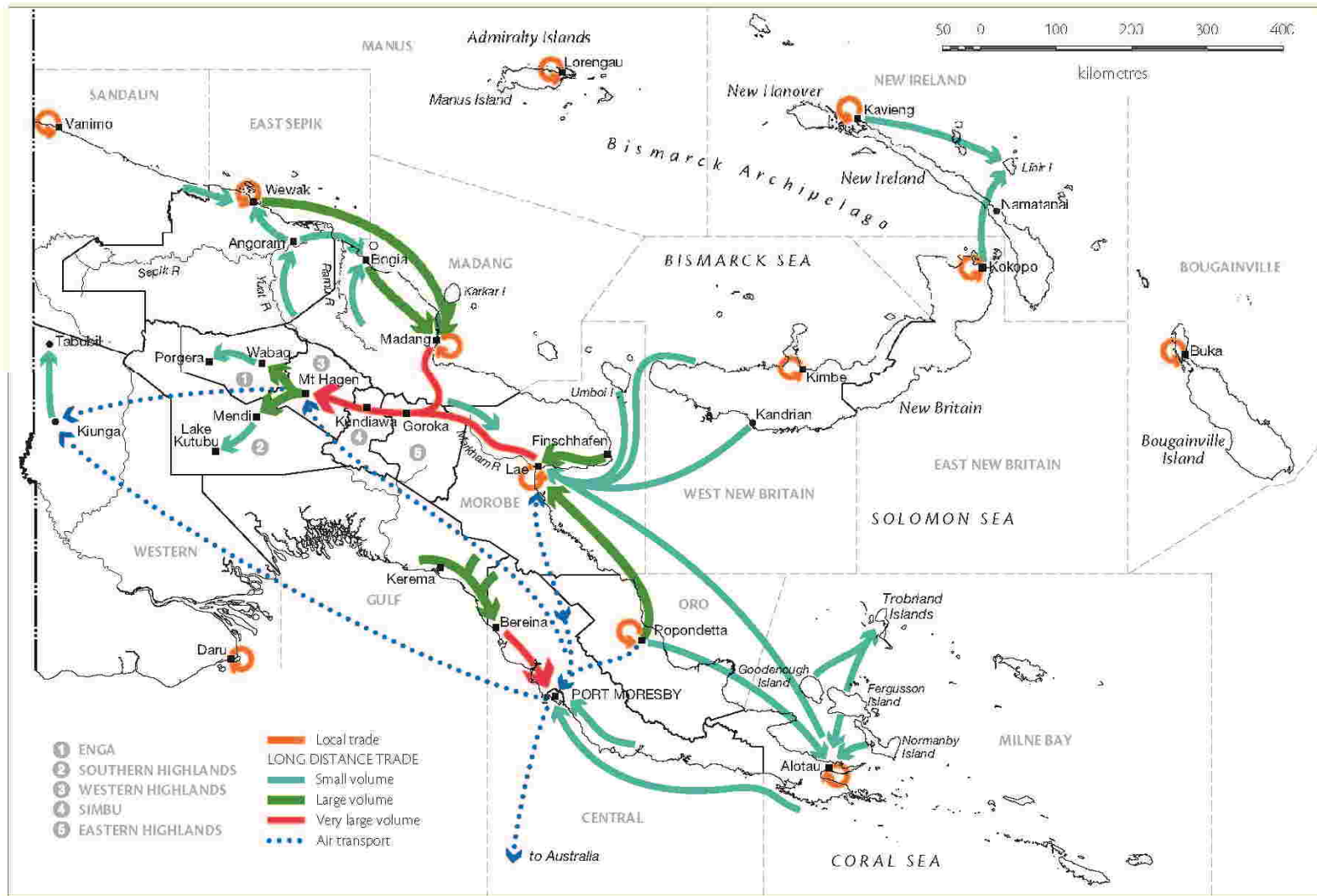


Figure 5.1.1 Estimated annual cash income of the rural population from agricultural activities, 1990–1995. Source: MWSP.

# Betel nut trade routes in PNG, 2007

Figure 5.17.2 Betel nut trade routes, 2007. Source: Author's observations and Tim Sharp (pers.com).







# Child mortality in PNG

The rate of under-5 child mortality is a surrogate for poverty

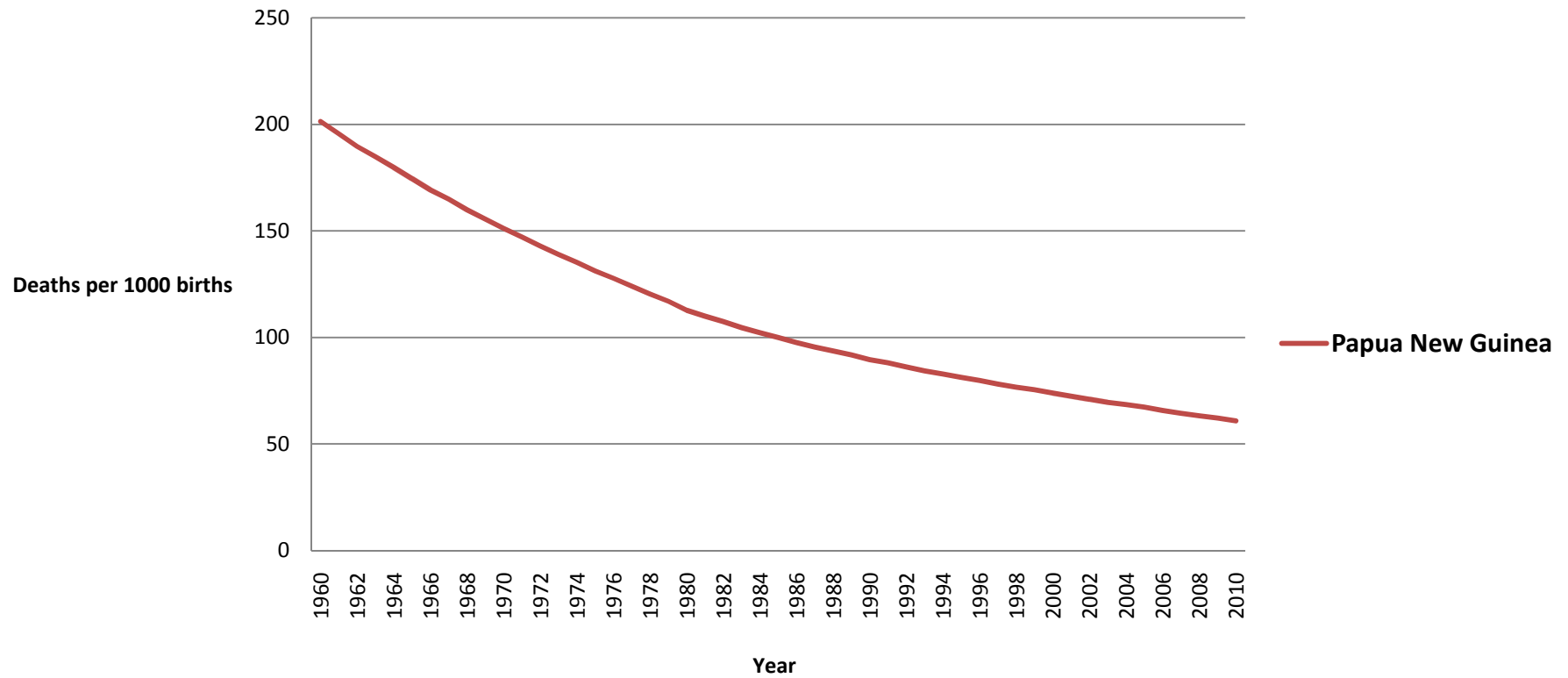
The rate of under-5 child mortality in PNG has dropped over the past 50 years

Rate of decline was greater until mid-1980s

Rate appears to be dropping slowly still

# Mortality rate under 5 Papua New Guinea 1960-2010

Source: World Bank 2012



# Under-five Mortality Rates in Urban and Rural Papua New Guinea



- Note: Under-five Mortality Rate is the number of children who die before reaching 5 years of age. It is expressed per 1000 live births. So a figure of 87 per 1000 means that 8.7% of children are dead before they are 5 years old.
- Source: 2000 census

# Relationship between economic activity and child mortality rate

- Locations with *lower* Child Mortality Rate are urban OR rural where agricultural income is higher and have a good physical environment
- Locations with the *highest* Child Mortality Rate are remote, with a poor environment and with no significant economic activity
- Locations where a major extractive industry is the only significant source of cash income have a *high* Child Mortality Rate

## Ranking of districts with the *lowest* under-five mortality rates, 1985 to 1999

District / Province	Under-5 Mortality Rate, 1999	Major industry
Kundiawa, Simbu	23	Coffee, fresh food
Port Moresby, National Capital District	27	Government, commerce, trade, light manufacturing, hospitality
North Wahgi, Western Highlands	29	Fresh food, coffee
Rabaul, East New Britain	31	Cocoa, copra, fresh food, betel nut
Goroka, Eastern Highlands	33	Coffee, fresh food
Kerowagi, Simbu	33	Coffee, fresh food
Gumine, Simbu	34	Coffee
Lae urban, Morobe	36	Commerce, trade, light manufacturing, hospitality
Daulo, Eastern Highlands	37	Coffee, fresh food
Sinasina-Yonggamugl, Simbu	39	Coffee, fresh food
Kokopo, East New Britain	41	Cocoa, copra, fresh food, betel nut
South Bougainville, AR Bougainville	43	Cocoa (some)
Chuave, Simbu	47	Coffee

Source: Tran *et al.* 2011; Bourke *et al.*, 2008

# Ranking of district with the *highest* Child Mortality Rates, 1985 to 1999

District, Province	Under-5 Mortality Rate, 1999	Major Industry
Rai Coast, Madang	116	None
Nuku, West Sepik	143	None
Middle Ramu, Madang	144	None
Vanimo-Green River, West Sepik	148	None
Telefomin, West Sepik	153	None
Obura-Wonenara, Eastern Highlands	153	None
Kerema, Gulf	160	None
Ambunti-Drekiker, East Sepik	164	None
Kandep, Enga	167	None
Karimui-Nomane, Simbu	178	None
Menyamya, Morobe	228	None

Source: Tran *et al.* 2011; Bourke *et al.*, 2008

# Ranking of districts with cash from major extractive industry only for Child Mortality Rate

District, Province	Under-5 Mortality Rate, 1999	Major Industry
Komo-Margarima, Hela	74	Gas
Kandrian-Gloucester, West New Britain	75	Logging
Lagaip-Porgera, Enga	77	Gold mining
North Fly, Western	81	Copper and gold mining
Nipa-Kukuku, Southern Highlands	85	Oil
Samarai-Murua, Milne Bay	96	Gold mining
Pomio, East New Britain	128	Logging

Source: Tran *et al.* 2011

# Under-5 Mortality Rates, oil fields, Southern Highlands and Gulf Provinces

Sub region	Child Mortality Rate
Gobe	184
Hides	246
Kikori	251
Angore	299
Moran	384
Kutubu	416
<b>Mean</b>	<b>311</b>

Source: OSL, 2009. Social and Economic Report 2009. Oil Search Limited, Port Moresby



# Future for agriculture

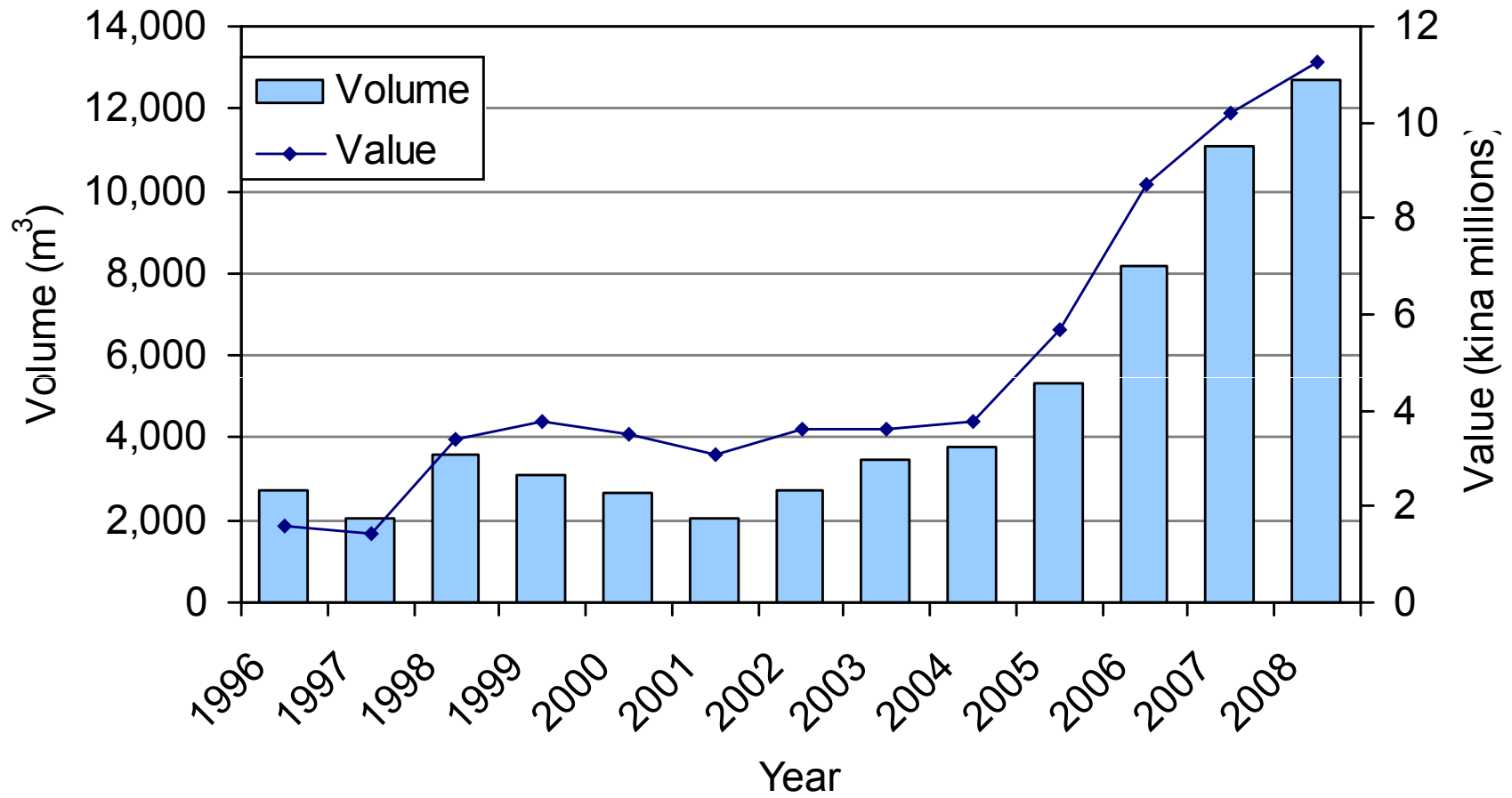
The best prospects for continuing agricultural development in PNG are:

- Food production for domestic markets
- Cash crops that give a high return on labour inputs
- These include kava; *galip* nut; balsa; and fresh foods for the PNG domestic market

# Gross returns on labour inputs for selected cash crops in PNG, 2009

Crop <sup>1</sup>	Mean yield (kg/ha)	Price (kina/kg)	Gross return (kina/ha)	Labour inputs (person-days/ha)	Return (kina per person-day)
Irish potato (tubers)	20,000	2.00	40,000	450	89
Oil palm (fresh fruit bunch)	15,000	0.25	3,750	70	54
<b>Sweet potato (tubers)</b>	<b>14,000</b>	<b>0.80</b>	<b>11,200</b>	<b>450</b>	<b>25</b>
Cocoa (wet bean)	800	1.00	800	40	20
Arabica coffee (parchment)	900	4.50	4,050	275	18
Rubber (cup lump)	650	1.60	1,040	100	10
Coconut (copra)	500	1.30	650	65	10
Robusta coffee (parchment)	900	1.60	1,440	275	5
<b>Rice (paddy)</b>	<b>1,300</b>	<b>0.80</b>	<b>1,040</b>	<b>215</b>	<b>5</b>
Pyrethrum (dried flowers)	650	1.50	975	430	2

Volume and value of balsa exports, 1996–2008



# Some concluding comments

- Most PNGeans are rural villagers
- Agriculture continues to provide most food and cash income for most rural villagers
- Production of food for sale and export crops is associated with lower rates of child mortality and other indices of disadvantage
- Rapid population growth and declining soil fertility is putting pressure on agricultural production
- Locations under the greatest stress are small islands and many locations in the Central Highlands
- Prospects of large income from gas, oil and minerals is diverting attention from agriculture
- The kina has appreciated 30% cf US\$ in past two years – a negative for domestic and export agricultural production
- A prosperous future for most PNGeans will only be achieved with a strong agricultural sector

# Food and Agriculture in Papua New Guinea



edited by R. Michael Bourke and Tracy Harwood

# Food and Agriculture in Papua New Guinea

- Much information in 'Food and Agriculture in Papua New Guinea'. Available free from
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