A COST-BENEFIT ANALYSIS

by **FAMILY PLANNING NEW ZEALAND**

Investment in Family Planning in Kiribati

Authorship

Jacob Daubé conducted this analysis and prepared the report. Elissa Kennedy of the Burnet Institute provided technical support and review. This analysis builds upon the methodology of two previous reports: *The case for investing in family planning in Solomon Islands: a cost benefit analysis* and *The case for investing in family planning in Vanuatu: a cost-benefit analysis* authored by Elissa Kennedy and Sean Mackesy-Buckley and Sumi Subramaniam, formerly of Family Planning New Zealand.

Acknowledgements

This study was carried out by Family Planning New Zealand with funding from the New Zealand Aid Programme. Family Planning would like to express its sincere thanks to the following individuals and organisations that made this study possible by contributing their time, knowledge and expertise:

- The Kiribati Family Health Association (KFHA), for support with data collection, logistics, translation and advice. In particular, Family Planning would like to thank Norma Yeeting and Tamoa Moannata for their advice and support organising meetings with key informants and Amota Tebao for his assistance with clinical data collection.
- The Government of Kiribati, for their time and support with data collection. In particular, Family Planning thanks the Ministry of Health and Medical Services (MOHMS), the Ministry of Education and the National Statistics Office for their generous support with data collection.
- The members of the Kiribati Cost-Benefit Analysis Reference Group for their advice on the methodology of this analysis and for providing feedback on the manuscript: Andreas Demmke; Ikam Moaniba, Office of the President; Dr. Adriu Naduva, United Nations Population Fund (UNFPA); Dr. Annette Sachs Robertson, UNFPA; Beia Tabwaia, MOHMS; Hon. Maere Tekanene, Ministry for Education; Dr. Kabwea Tiban, International Planned Parenthood Federation (IPPF); Dr. Teatao Tira, MOHMS; Tekena Tiroa, National Statistics Office; and Norma Yeeting, KFHA. Family Planning would also like to thank Dr. Gerald Haberkorn from the Secretariat of the Pacific Community (SPC) for his assistance securing key data for this analysis, and Anna Percy for her guidance.

- Dr. Elissa Kennedy from the Burnet Institute for her continuous support throughout the project, providing technical assistance and support to Family Planning, reviewing this document and providing valuable feedback at each stage.
- Finally, Family Planning would like to thank Christine Uljée of Bright Communications for overseeing the design and printing of *Investment in Family Planning in Kiribati: A cost-benefit analysis.*

This project was funded by the New Zealand Aid Programme. The views represented here are not necessarily those of the New Zealand Aid Programme or the New Zealand Government.

Suggested citation

Family Planning New Zealand, 2014. *Investment in Family Planning in Kiribati: A cost-benefit analysis.* Family Planning New Zealand. Wellington, New Zealand

Acronyms

DHS	Demographic and Health Survey
GDP	Gross domestic product
ICPD	International Conference on Population and Development
IMR	Infant mortality rate
IPPF	International Planned Parenthood Federation
KFHA	Kiribati Family Health Association
MDG	Millennium Development Goals
MMR	Maternal mortality rate
MOHMS	Ministry of Health and Medical Services
OECD	Organisation for Economic Co-operation and Development
SPC	Secretariat of the Pacific Community
UNFPA	United Nations Population Fund
WHO	World Health Organization

Contents

Acknowledgements 1

Suggested citation 2

Executive summary 4

Introduction 6

Context 9

Methods 13

Results 15

Contraceptive prevalence, users and unmet need 15

Costs and commodities 16

Health benefits for women and infants 18

- Unintended pregnancies 18
- Maternal and infant mortality 19

Population and demographic consequences 20

- Adolescent fertility 20

Economic Benefits 22

- Economic growth and poverty reduction 22
- Health and education savings 23

Discussion 26

Recommendations 29

Appendix 30

Models 30

Inputs and data sources 31

Key Assumptions 34

Outputs and Analysis 35

Sensitivity Analysis 36

Reference Group 38

Bibliography 39

Executive summary

Access to family planning is a fundamental human right and is crucial to empowering women and girls. It is also one of the most cost-effective investments a country can make towards sustainable development.

In Kiribati, 28% of married women of reproductive age wish to avoid pregnancy but are not using any form of contraception. This analysis explores the costs and benefits of addressing this need.

Ensuring all women with a need for family planning have access to contraception by 2020 would have significant benefits for the health of women and children. Compared with no change in unmet need, meeting all needs by 2020 would mean that by 2025:

- The contraceptive prevalence rate for modern methods would increase from 18.8% to 42.4%
- 5,714 more women would be using an effective method of contraception
- There would be an average of 65% fewer unintended pregnancies per year
- There would be an average of 45% fewer high risk births each year
- 18% of maternal deaths could be averted
- 860 infant deaths could be averted
- There would be 32% fewer births to adolescent girls, reducing the adolescent fertility rate from 27 births per 1000 girls aged 15-19, to below 19.

The reduction in unintended pregnancies would also mean that compared with no progress:

- The total fertility rate would decrease from 3.8 to 2.6
- Population growth would be 1.5% versus 2.2%
- The dependency ratio would decline from 68 dependents per 100 people of working age to 51, contributing to increased household wealth.

Achieving these goals would require substantial investment. Between 2010 and 2025, AUD$807,000 would be required to meet all family planning needs, $446,000 more than if unmet

need remained unchanged. However, reducing unintended pregnancies would significantly decrease required government expenditure in the health and education sectors, resulting in savings of $18.8 million over the same period. At an average cost of just over $50,000 per year, meeting the need for family planning would make Kiribati's health and development goals more achievable, more affordable, and more sustainable.

Introduction: The need for family planning in the Pacific

The ability to decide freely the number, spacing and timing of children is a fundamental human right. Family planning also has proven benefits for the health of women and children. Reducing global unmet need for contraception could prevent around 30% of all maternal deaths, reduce child mortality by up to 20%, and avert 36 million years of healthy life lost each year.[1, 2, 3, 4] In addition, meeting all needs for family planning globally would save at least US$5.7 billion in maternal and newborn healthcare costs each year.[5] Ensuring universal voluntary access to family planning would also have much broader health and socio-economic benefits, contributing to universal education, women's empowerment, prevention of HIV, poverty reduction and environmental sustainability, making it one of the most cost-effective global health and development interventions. [6, 7, 8, 9, 10]

Despite these imperatives, progress to ensure universal access to family planning in the Pacific has been inadequate and inequitable. While use of family planning has increased in the region, in most countries the prevalence of modern methods of contraception is still well below the average of 56% for less developed regions (Figure 1). Furthermore, unmet need for contraception in the Pacific is among the highest in the world (Figure 2).

Consequently, throughout the Pacific a significant proportion of pregnancies are unintended, with unplanned or mistimed pregnancies in some countries accounting for over half of all births.[11] The proportion of women aged 15-19 that have already commenced childbearing ranges from 7.3% to 26.8% and adolescent fertility rates in the Marshall Islands and Papua New Guinea are comparable to those in sub-Saharan Africa.[12, 13] While the region has experienced a gradual decline in fertility, total fertility rates remain high, with seven Pacific countries (Papua New Guinea, Solomon Islands, Vanuatu, Samoa, Tokelau and the Marshall Islands) having rates between 4 and 5.[14] High fertility and rapid population growth, coupled with a large and expanding youth population, increasing urbanisation and overcrowding, present considerable challenges for small island states.[15]

Figure 1: Current use of contraception (modern methods) among currently married women aged 15-49

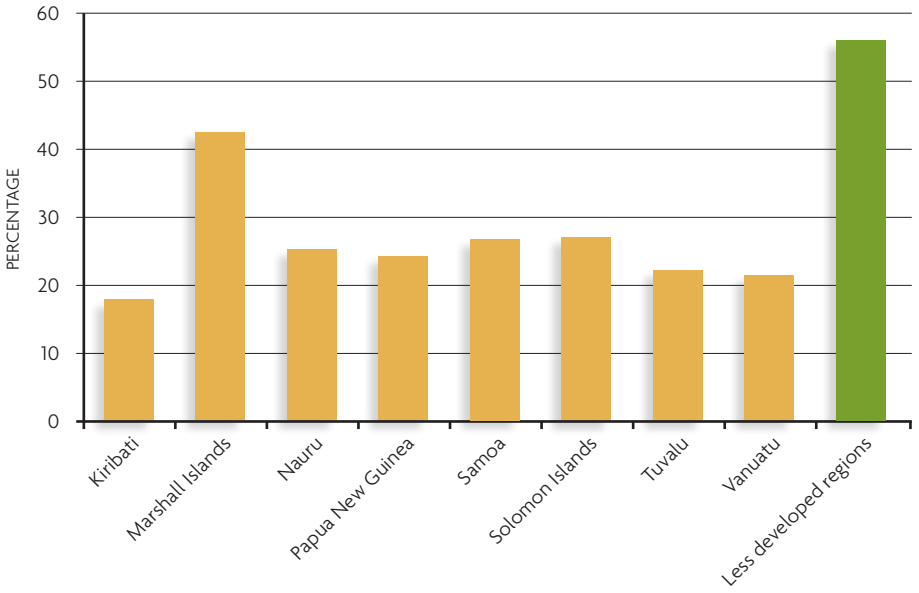
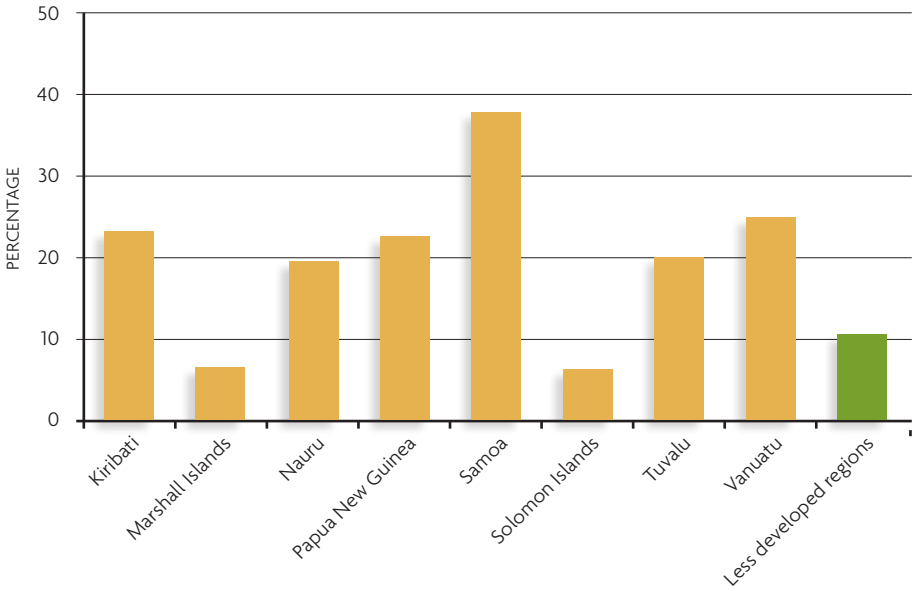


Figure 2: Unmet need for family planning among currently married women aged 15-49



Data from DHS survey reports[16, 17, 18, 11, 19, 20, 21] and UNFPA.[22, 23]

A lack of prioritisation and insufficient investment has contributed to slow progress in ensuring universal access to family planning.[24] Between 1995 and 2009, funding for family planning fell globally from 55% to around 7% of all sexual and reproductive health funding – and totalled less than one quarter of the estimated US$3.2 billion needed per year.[25] While reliable data on family planning expenditure in the Pacific are scarce, the Organisation for Economic Co-operation and Development estimates that less than 0.03% of all overseas development assistance for the region in the past decade has been directed to family planning.[26] The International Conference on Population and Development (ICPD) Programme of Action and the Millennium Development Goals (MDGs) have committed governments to ensuring universal access to family planning by 2015. With this deadline fast approaching, much still needs to be done if universal access is to be realised in the Pacific.

With a recent emphasis on repositioning family planning on the development agenda in the Pacific, there is a critical need for region-specific, reliable and accessible data to assist policy and planning[24]. In recognition of this need, this analysis aims to identify the health, economic and social impacts of reducing unmet need for family planning in Kiribati and calculate an estimate of the resources required to achieve these goals. This project follows a previous cost benefit analysis study undertaken in Vanuatu and the Solomon Islands.[27, 28, 29]

Context

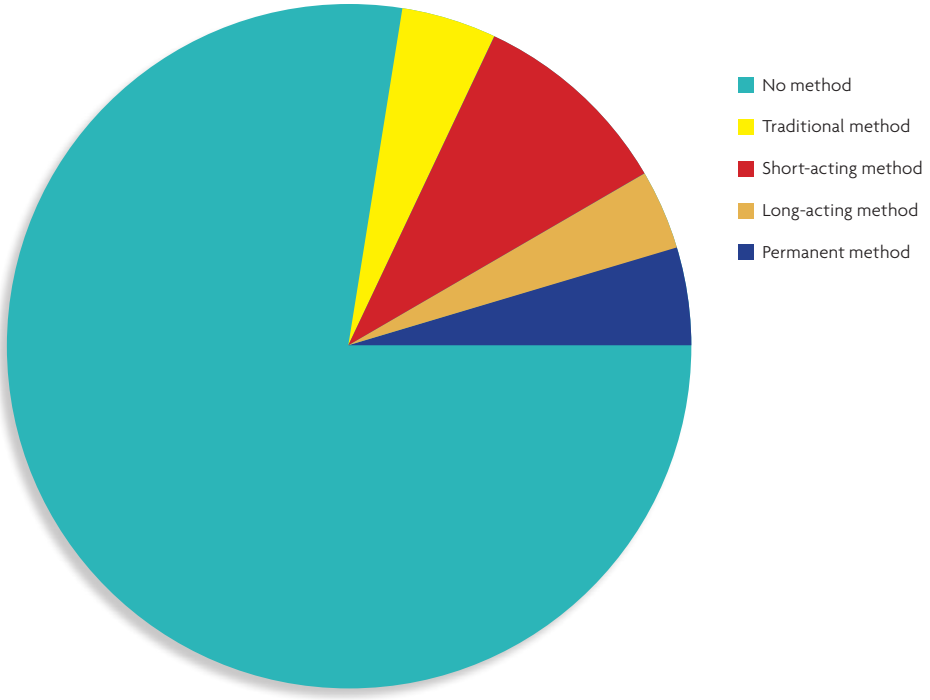
The Republic of Kiribati is a remote island nation in the equatorial Pacific Ocean, consisting of 32 coral atolls and two raised coral islands spread over an area of 3.5 million square kilometres. The 2010 census recorded the total population at 103,058, with around 54% of the population living in the two urban centres of South Tarawa (49%) and Kirimati (5%).[30] Current annual population growth is high at around 2.2% for the whole country, and especially high at 4.4% for the main urban centre of South Tarawa. Current fertility trends suggest that the population of Kiribati will exceed 200,000 between 2040-2050.[30, 31] Like many nations in the region, Kiribati has a young population, with 57% of the population aged less than 25 years. In 2010, there were 24,278 women of reproductive age, or just over 24% of the population. By 2030, that number is expected to rise by 57% to approximately 38,000.[30]

As with other developing countries and countries with low populations, mortality data are limited and should be interpreted with caution. However, based on data from the 2010 census and the Government of Kiribati, Kiribati appears to be making steady progress on the Millennium Development Goal (MDG) 4A - reduce the under-five mortality rate by two-thirds. From 88 deaths per 1,000 live births in 1990,[32] the under-5 mortality rate has fallen to 59 in 2010,[30] a reduction of approximately a third yet short of the targeted two-thirds reduction by 2015. Progress on MDG 5A – reduce maternal mortality ratio (MMR) by three-quarters – has been less evident. A MDG progress report using Kiribati government data found that MMR increased over the period 1991-2004, from around 110 in 1991 to around 210 in 2004.[32] Due to suspected underreporting of births and maternal deaths in official sources, the 2010 census estimates the MMR in 2010 at 169.[30] It is reasonable to assume that similar reporting issues will have affected reported MMR for previous years.

Despite these improvements, Kiribati is significantly behind schedule on the achievement of MDG 5B – universal access to reproductive health. Just 22.3% of married women of reproductive age report using contraception, and only 18.0% use modern methods (Figure 3). Unmet need for contraception is high at 28.0%, with 14.4% of married women expressing that they wanted to space their next birth and 13.6% not wishing to have more children.[20] Contraceptive prevalence varies by rural and urban areas, wealth quintile and educational attainment (Figure 4). Modern contraceptive use is slightly higher in rural areas than urban areas, higher in the lowest two wealth

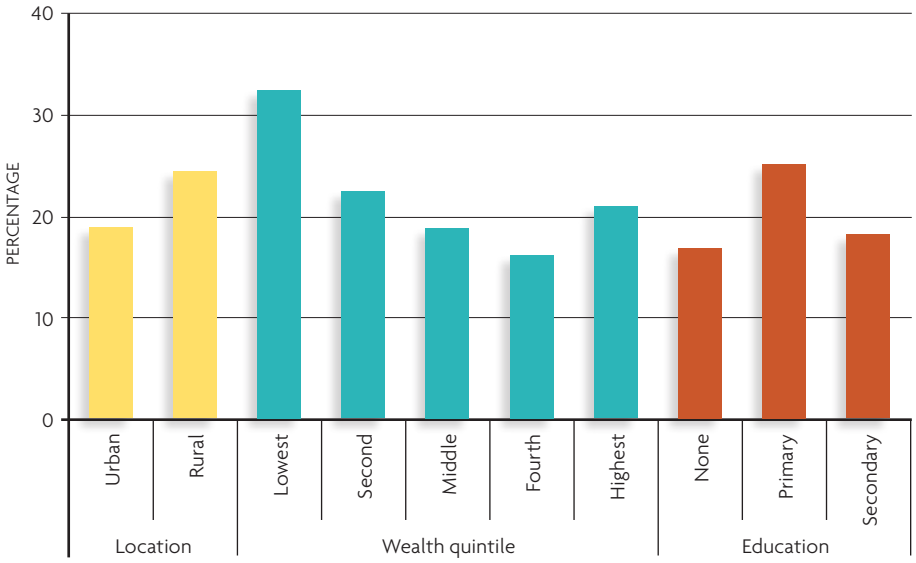
quintiles, and higher in those with primary and some secondary education than those with higher education or no education. Use of traditional methods was highest among married women in rural areas, those with no education or some primary and those in the lowest wealth quintile.[20] Recent data reports at least 17% of births are unplanned, but low wanted fertility rates suggest that number could be considerably higher.[20] Consequently, fertility rates are also high: in 2010, the total fertility rate was 3.8, up from 3.5 in 2005, but well down on the 4.7 in 1990.[30] The adolescent fertility rate was 49 births per 1,000 teenage women, or one birth for every 20 teenage women.

Figure 3: Contraceptive prevalence by method (2009)



Source: Kiribati Demographic and Health Survey 2009.[20]

Figure 4: Contraceptive prevalence rate by location, wealth quintile and education level (2009)



Source: Kiribati Demographic and Health Survey 2009.[20]

The Government of Kiribati have recognised this need for family planning. In 2004, Kiribati's population policy set the ambitious goal of achieving five family planning related targets over the following two decades, specifically: no unmet need for family planning after 2010; no unplanned pregnancies and community acceptance of a family size norm of 2-3 children by 2015; and replacement fertility (TFR 2.1) by 2025. While signed off by Cabinet, budget funds were never allocated to support implementation, and these targets have either been missed or are largely unachievable.[31] More recently however, the Kiribati Development Plan 2012-2015 identified 'strengthened family planning services' and 'increased uptake of modern family planning services' as key outputs for reducing population growth.[33] Specific goals include increasing modern method prevalence to 22.3% and increasing the proportion of service delivery points that offer at least three family planning methods from 85% to 100%.

At present the majority of family planning services are provided by the Ministry of Health and Medical Services through government health centres and public hospitals. Family planning services are also provided by the Kiribati Family Health Association (KFHA) (an International Planned Parenthood

Federation member association). From both sources, services are generally available free of charge. Nonetheless, there are considerable challenges to improving access to family planning. Existing provision has been hindered by many factors, including: a remote rural population with limited transportation infrastructure and poor physical access to health services; socio-cultural and religious objections to family planning; misconceptions around the safety or efficacy of family planning methods; commodity shortages caused in part by limited data to assist with forecasting and ordering; a lack of training in family planning provision for health workers in government health centres; and a shortage of clinicians and clinical space to administer permanent methods.

Furthermore, government revenue is not expected to grow significantly, and it is unlikely that the family planning services would be expanded substantially without foreign investment. Since the mid-2000s, Kiribati's revenue streams have not kept pace with expenditure, leading to large fiscal deficits.[34]
The government relies heavily on foreign aid to support key services, including health. In particular, Kiribati is dependent upon the United Nations Population Fund (UNFPA) for the funding and supply of family planning contraceptives and supplies, under an agreement that extends to 2017. Kiribati is therefore in need of assistance from international and regional donors to make real progress in the achievement of MDG 5B.

Methods

To identify the costs and health, social and economic impacts of reducing unmet need for family planning, three population models were generated using the demographic modelling program Spectrum 4.55 (Futures Institute, Glastonbury, Connecticut, USA). Models were created for the period 2010-2050 based on three hypothetical family planning scenarios:

1. Constant unmet need for family planning
2. All family planning needs met by 2050
3. All family planning needs met by 2020.

Each model required data for over 50 inputs, which were sought from a range of sources (Table 1).

Table 1: Primary inputs and data sources

Input categories	Data sources
Population and demography	Kiribati 2010 Census Volume 1: Basic Information and Tables
	Kiribati 2010 Census Volume 2: Analytical Report
Family planning use, unmet need and costs	Kiribati Demographic and Health Survey 2009
	Ministry of Health and Medical Services
	Kiribati Family Health Association
	United Nations Population Fund (UNFPA)
	International Planned Parenthood Federation (IPPF)
Proximate determinates of fertility	Kiribati 2010 Census Volume 2: Analytical Report
	Kiribati Demographic and Health Survey 2009
	Guttmacher Institute
Maternal, infant and child survival	Kiribati 2010 Census Volume 2: Analytical Report
Economy	Kiribati Ministry of Finance
	International Monetary Fund, Kiribati 2013 Article IV Consultation
	World Bank
Education	Ministry of Education, Digest of Education Statistics 2011
	Kiribati Ministry of Education
	World Bank
Health	Western Pacific Country Health Information Profiles: 2011 Revision
	Kiribati Ministry of Health and Medical Services
	World Health Organization

The direct costs of providing family planning per contraceptive method (per couple-year of protection for short-acting methods and per acceptor for long acting methods) were calculated from estimates of: commodities, supplies and equipment procurement; shipping and distribution; and staff costs for counselling, contraceptive provision and follow-up. Commodity, equipment, freight, and handling costs were obtained from UNFPA (the major supplier of family planning commodities in Kiribati) and the International Planned Parenthood Federation (IPPF) (the minor supplier to the Kiribati Family Health Association). In-country handling and distribution costs were obtained from the Ministry of Health and Medical Services. Staff costs were based on staff salary data from the Ministry of Health and the Kiribati Family Health Association, and estimates of average staff time per client per method were obtained from interviews and questionnaires of key informants within the Ministry of Health and Medical Services and the Kiribati Family Health Association.

For each family planning scenario, Spectrum was used to project:

- Contraceptive prevalence, the number of users and unmet need
- Family planning costs and commodities required
- Health outcomes for women and children (unintended pregnancies, planned and unplanned births, induced and spontaneous abortions, births with any risk and maternal and infant deaths)
- Total and adolescent fertility rates and population growth
- Health and education expenditure and required resources (infrastructure and human capital)
- Dependency ratio and gross domestic product (GDP) per capita.

The resulting data for the period 2010-2025, by year and family planning scenario, were exported into Microsoft Excel (Microsoft Corp, Redmond, WA, USA) for analysis. The impacts of reducing unmet need by 2020 and by 2050 were compared to the baseline scenario (constant unmet need) for each output of interest. As per World Health Organization (WHO) recommendations, future costs and health outcomes were discounted at 3% per year.[35] All costs are reported in Australian dollars – the currency of Kiribati.

A detailed description of the methodology and data sources is provided in Appendix 1.

Results

Contraceptive prevalence, users and unmet need

In 2009, 28% of women of reproductive age who were married or in union had an unmet need for family planning.[20] If all this need was met by 2020, the total contraceptive prevalence rate would rise from 22.3% to 50.3% and the contraceptive prevalence rate for modern methods would increase from 18.0% to 42.40%, leading to an additional 6,946 users by 2025, or 5,714 more users than if unmet need remained constant (Table 2).

Table 2: Projected total number of contraceptive users and contraceptive prevalence rate, per unmet need scenario

Contraceptive use	Base year (2010)	Estimated projections for 2025		
		Constant unmet need	All needs met by 2050	All needs met by 2020
Total users (modern methods)	3,318	4,550	9,046	10,264
Contraceptive prevalence rate (all methods) %	22.30%	22.29%	44.32%	50.28%
Contraceptive prevalence rate (modern methods) %	18.00%	18.80%	37.37%	42.40%
Contraceptive prevalence rate (long-acting or permanent methods) %	8.30%	10.05%	19.99%	22.67%
Contraceptive prevalence rate (traditional methods) %	4.30%	3.49%	6.95%	7.88%

Table 3: Projected total number of contraceptive users by method of contraception, per unmet need scenario

Contraceptive method	Base year (2010)	Estimated projections for 2025		
		Constant unmet need	All needs met by 2050	All needs met by 2020
Female sterilisation	737	1224	2434	2762
Male sterilisation	92	136	271	308
Pill	240	315	625	710
Injectable	1400	1609	3200	3630
Implant	590	927	1843	2091
IUD	111	145	289	327
Condom (male or female)	148	194	384	436

This increase in contraceptive prevalence would mean that, compared with the baseline scenario, by 2025 there would be:

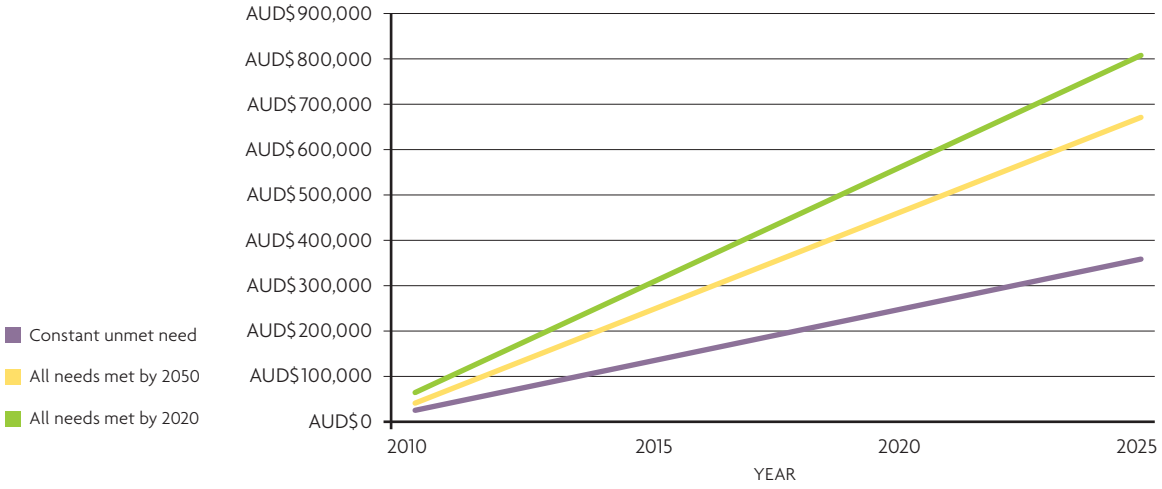
- An additional 1,710 couples using sterilisation (172 more couples using male sterilisation, 1,538 more using female sterilisation)
- 1,346 more women using a long-acting method (1,164 more women using implants, 182 more using an intrauterine device)
- 2,416 more women using short-acting hormonal methods (395 more women using the oral contraceptive pill, 2,021 more using injectables).

Costs and commodities

Based on the estimates generated by this analysis, the direct cost (contraceptive commodity costs, associated medical supplies and staff wages) of providing family planning services to the estimated 3,318 users was just over AUD$24,750 in 2010. The majority of contraceptive commodities and equipment are currently procured and supplied by UNFPA, with IPPF providing a minority proportion of the commodities used by the Kiribati Family Health Association. The government bears most of the financial cost of service delivery and staff time, providing close to 90% of family planning services.

Approximately AUD$361,000 would be required over the 15 year period for family planning if unmet need remained constant (Figure 6). Eliminating unmet need by 2020 would require an additional investment of $446,000, a 124% increase in funding. Reducing unmet need by 2050 would require an additional $312,000 between 2010 and 2025 compared with constant unmet need.

Figure 6: Projected cumulative family planning costs 2010-2025



The commodities required to meet all needs would double for most reversible methods over the 15 year period (Table 4).

Table 4: Projected contraceptive commodities (reversible methods) required to meet all family planning needs by 2020

Commodities required at five year intervals to meet all needs by 2020	Male condoms	Pill cycles	Injectable vials	Implants	Intrauterine devices
2010-2014	77,733	31,647	48,381	2,257	353
2015-2019	107,836	43,903	64,414	2,405	328
2020-2025	148,696	60,538	84,497	3,424	443
Total	334,265	136,088	197,292	8,086	1,124

Health benefits for women and infants

Unintended pregnancies

Meeting the need for family planning by 2020 would reduce unintended pregnancies by 65%, averting an average of 810 unintended pregnancies and 542 unplanned births and miscarriages each year between 2010 and 2025 (Table 5).

Such investment would also reduce the demand for services for maternal health care, management of obstetric complications, and post-abortion care associated with unintended pregnancies.

Table 5: Summary of projected health outcomes for women and infants per unmet need scenario

Projected average per year (2010-2025)	Constant unmet need	All needs met by 2050	All needs met by 2020
Total pregnancies	3780	2984	2611
Unintended pregnancies	1245	699	435
Induced abortions	411	231	144
Unplanned births and miscarriages	834	468	292
Births with any avoidable risk	40	33	30
Maternal deaths	4	3	3
Infant deaths	130	89	72

There are very little data about induced abortion in Kiribati and the Pacific in general. The estimated proportion of unintended pregnancy resulting in abortion is taken from a WHO and Guttmacher Institute regional estimate for Oceania (excluding Australia and New Zealand) and so should be interpreted with caution. The absolute numbers of induced abortions are unlikely to be accurate; however, reducing unmet need by 2020 could be expected to reduce induced abortions by 65% between 2010 and 2025. Furthermore, abortion is permitted in Kiribati only to save a women's life, meaning a significant proportion of induced abortions are likely to be unsafe. Reducing the number of unintended pregnancies, the leading cause of abortion, could therefore have significant benefits in terms of reducing maternal mortality and morbidity associated with unsafe abortion.

Maternal and infant mortality

High-risk births are those that occur at extremes of maternal age (less than 18 and more than 34 years), are spaced less than 24 months apart, or are birth order 4 and higher.[36] Allowing healthy timing and spacing of pregnancies by meeting all the need for family planning by 2020 would reduce the number of avoidable high-risk births in Kiribati by nearly 45%, decreasing the incidence of poor maternal and perinatal outcomes.

There is some uncertainty around the actual maternal mortality ratio (MMR) in Kiribati due to the small total numbers of births and maternal deaths and the likely underreporting of both. Issues with reporting have meant recorded MMR over the last decade has been erratic. The 2010 Census estimates the MMR to be 169 deaths per 100,000 live births. Based on this estimate, meeting all unmet need for family planning by 2020 would result in one fewer maternal death per year, a 26% reduction in total maternal deaths over the period compared with if unmet need remained constant (Table 5). Approximately 18% of maternal deaths would be averted if unmet need were met by 2050. The small net numbers of births and maternal deaths in Kiribati mean these numbers should be treated with caution.

Due to underreporting of births and deaths, the Census also estimates the combined male and female infant mortality rate (IMR) at 45 deaths per 1000 live births.[30] Meeting all family planning needs by 2020 would reduce the IMR from 45 to 31, contributing to progress towards MDG 4. Between 2010 and 2025 over 860 deaths of children under the age of 12 months could be averted, reducing infant deaths by approximately 45%. Reducing unmet need by 2050 would result in approximately 32% fewer infant deaths compared with constant unmet need.

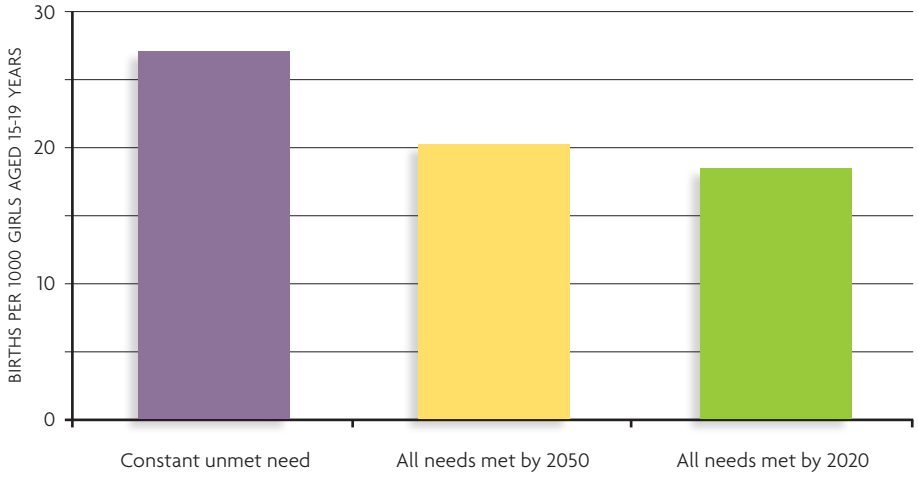
Population and demographic consequences

Adolescent fertility

Adolescent pregnancy, intended or unintended, carries an increased risk of poor health outcomes for girls and their infants.[37] Early pregnancy also has socio-economic implications: adolescent pregnancy often leads to lower education attainment, contributing to a cycle of poor health, poverty, gender inequality and disadvantage that affects girls, their families and communities.

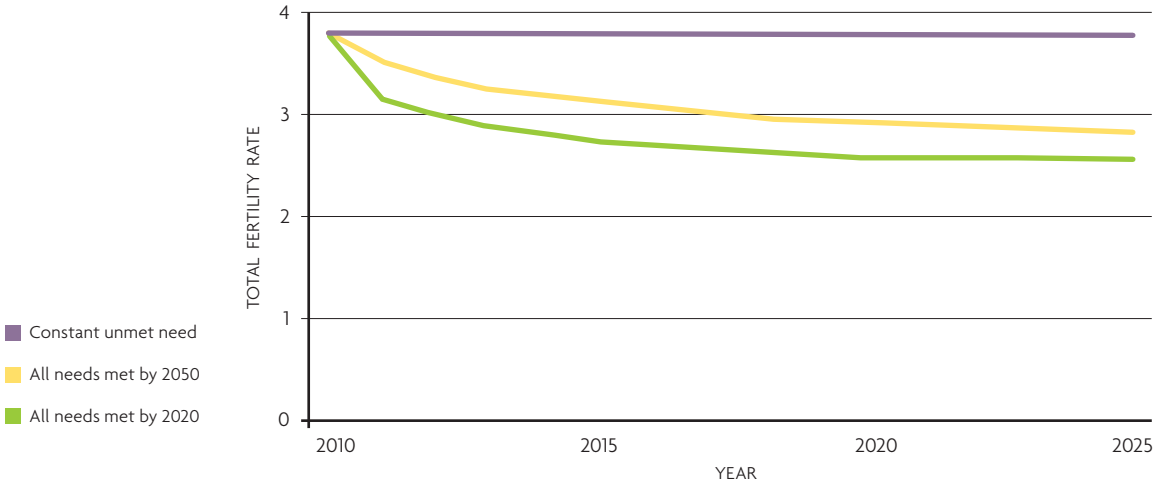
Meeting the need for family planning by 2020 is estimated to reduce the number of births to adolescent girls aged 15-19 by 32%, dropping the adolescent fertility rate from 27 births per 1000 girls aged 15-19 if unmet need remained constant, to below 19 births per 1000 girls in 2025 (Figure 7).

Figure 7: Projected adolescent fertility rate in 2025 (births per 1000 girls aged 15-19 years)



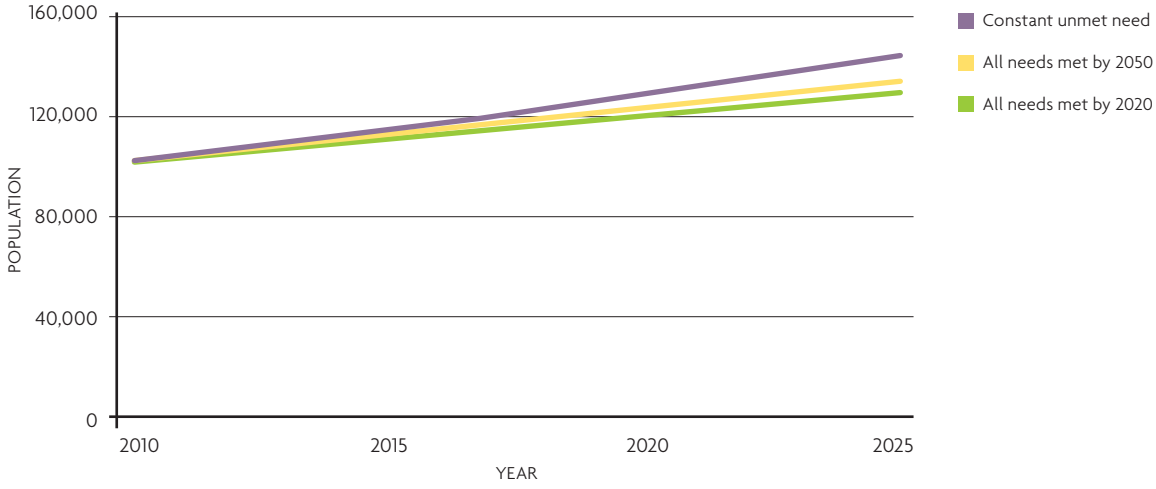
The total fertility rate in Kiribati would fall from 3.8 to 2.6 in 2025 if unmet need was met by 2020 (Figure 8). In contrast, the total fertility rate would remain around 3.8 if unmet need and contraceptive prevalence remained unchanged. Meeting unmet need by 2050 would reduce the total fertility rate to just over 2.8.

Figure 8: Projected total fertility rate per unmet need scenario



By meeting all needs by 2020, annual population growth would decline to 1.5% in 2025, versus 2.2% if unmet need remained constant. Meeting all needs by 2050 would reduce population growth to 1.6%. The difference in total population in 2025 would be 14,789 (128,730 if all needs were met by 2020 versus 143,519 if unmet need remained constant [Figure 9]). By 2050, Kiribati's population would have increased to almost 245,000, a near 28% higher than if unmet need was met by 2020 (177,164), and 23% higher than if unmet need was met by 2050 (188,257).

Figure 9: Projected population 2010-2025 per unmet need scenario

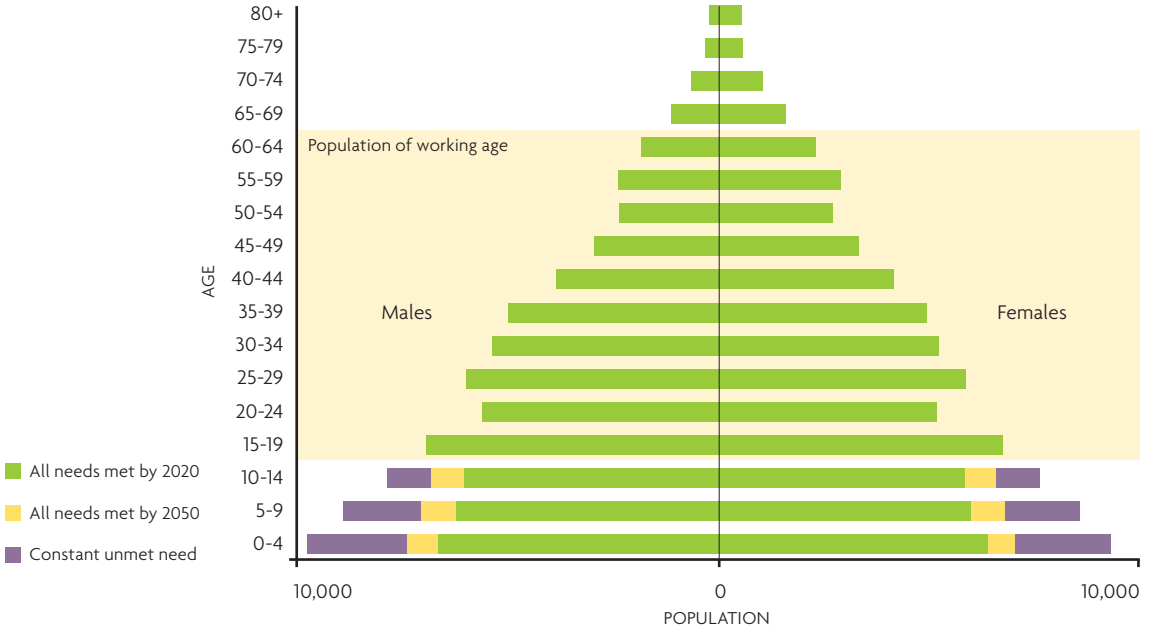


Economic Benefits

Economic growth and poverty reduction

In addition to reducing annual population growth, reducing unmet need for family planning by 2020 would also reduce the proportion of the population who are dependent compared to people of working age (15-64 years). By 2025, if unmet need remained constant only 60% of the population would be aged 15-64, meaning the dependency ratio would be 68 dependents (those outside of ages 15-64) per 100 people of working age. If all family planning needs were met by 2020, 66% of the population would be aged 15-64, reducing the dependency ratio to 51 (Figure 10). With appropriate investment, this 'demographic dividend' could lead to accelerated economic growth and contribute to poverty reduction.[10] Assuming that GDP growth is the same across all three scenarios, by 2025 GDP per capita could increase to AUD$1,651 if all needs were met by 2020, 7% more than if unmet need remained constant.

Figure 10: Projected population pyramid 2025 per unmet need scenario



Health and education savings

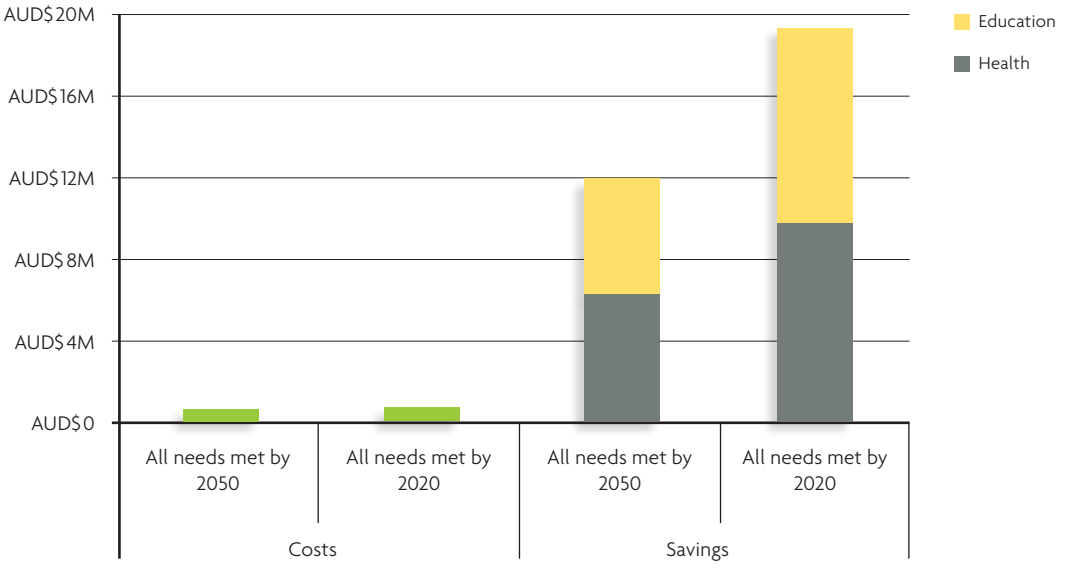
Reducing unmet need for family planning would result in substantial savings to the health and education sectors. Meeting all needs by 2050 would result in an additional AUD$312,000 in direct family planning costs but would save $11.7 million on health and education between 2010 and 2025 compared with constant unmet need (Table 6).

Table 6 : Projected expenditure on family planning, health and education sectors 2010-2025 per unmet need scenario

Total costs (AUD) 2010-2025	Family planning (direct costs)	Health sector	Education sector	Total costs	Net savings
Constant unmet need	$360,949	$204,136,680	$172,450,105	$376,947,734	na
All needs met by 2050	$672,907	$197,735,601	$166,856,924	$365,265,432	$11,682,302
All needs met by 2020	$806,859	$194,202,578	$163,093,626	$358,103,063	$18,844,670

Eliminating unmet need by 2020 would require an additional $446,000 but would save over $18.8 million in health and education sector expenditure (Figure 11).

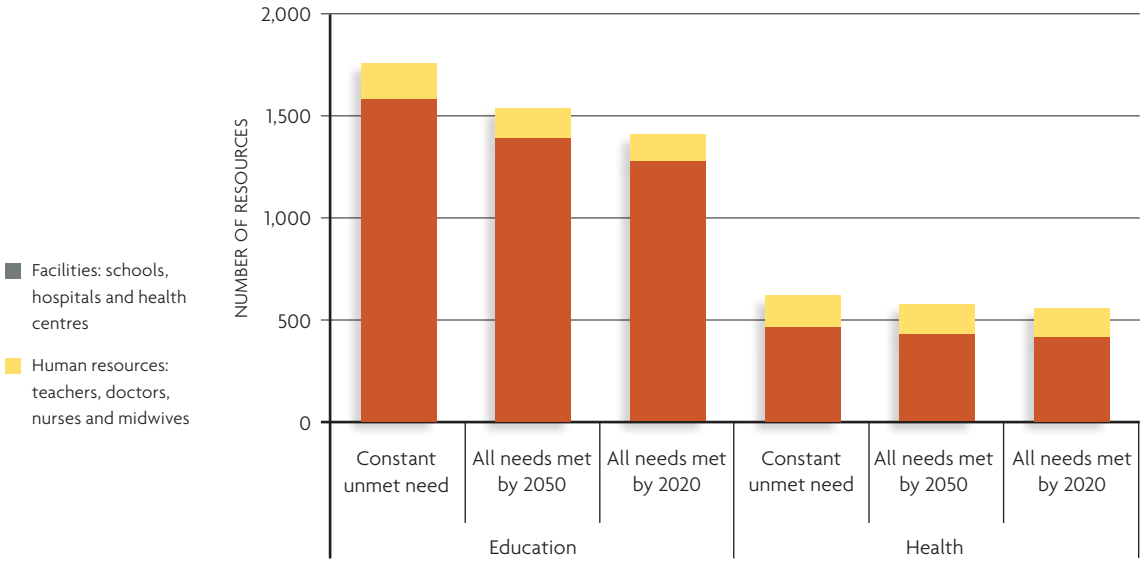
Figure 11: Projected costs and savings from 2010-2025 of meeting all family planning needs by 2020 and 2050



Between 2010 and 2025, for every $1 spent on family planning to reduce unmet need by 2020, AUD$23 would be saved in health and education costs.

In addition, reducing unmet need for family planning would reduce the demand on other public resources. By 2025, 23% fewer schools, 19% fewer teachers and 10% fewer health facilities and health workers (doctors, nurses and midwives) would be required to meet the needs of the population than if unmet need remained constant (Figure 12). These savings would make development goals in education and health both easier to achieve and more affordable.

Figure 12: Projected health and education resources required by 2025 per unmet need scenario



Discussion

Ensuring that all women in Kiribati who would like to delay, space or limit their pregnancies have access to family planning would have substantial health and socio-economic benefits. Reducing unmet need by 2020 would result in 65% fewer unintended pregnancies, averting morbidity and mortality associated with births that are unwanted or from potential unsafe abortion. Enabling women to plan their pregnancies would reduce maternal deaths by 27% and infant deaths by around 44% - saving some 934 lives between 2010 and 2025. In addition, addressing the unmet need would reduce the demand for services for maternal health care, management of obstetric complications, and post-abortion care associated with unintended pregnancies. Preventing unintended pregnancies would also result in substantial savings to the health and education sectors, saving $18.8 million over the next 15 years and reduce demand on infrastructure and scarce human resources. Such savings would more than offset the additional family planning expenditure required.

Currently 57% of Kiribati's population are aged 25 years or under, and over 36% are under 15 years of age. Reducing unwanted fertility and decreasing the proportion of dependants could provide a unique window of opportunity for Kiribati to capitalise on this large population of young people.[10] This 'demographic dividend' has been credited with contributing to rapid economic development in many East Asian countries and, with adequate investment, has the potential to increase household wealth and stimulate economic growth. Data from the Pacific demonstrate that households with a lower dependency ratio have a higher proportion of children attending school and greater resources to invest in quality education.[38] In addition, meeting the need for family planning will help address rapid population growth which will in turn place less demand on Kiribati's finite natural resources, including the vulnerable and overstretched freshwater lenses and arable land.

Achieving these goals in Kiribati will require a significant increase in financial investment. Even if unmet need were to remain unchanged, AUD$361,000 would be required over the next 15 years to deliver modern contraceptives to a growing population of women of reproductive age. Providing services to meet all needs by 2020 would require an investment of $807,000, an additional $446,000 over the no change scenario and a 124% increase in current expenditure between 2010 and 2025. The average annual cost for the period 2010-2015 would rise from $22,600 to just over $50,000. Meeting all the family planning needs by 2050 would cost

$134,000 less than achieving this goal by 2020, but would also result in fewer lives saved, fewer unintended pregnancies averted, and substantially smaller savings to the health and education sectors. Inadequate funding for family planning has hindered progress to date, so there is an urgent need for increased political and financial commitment from both government and donors to meet international obligations and the needs of women and couples. However, as demonstrated by this analysis, such an investment would have significant returns and help to make Kiribati's health and development goals more achievable, more affordable and more sustainable.

These estimates have two key limitations. The first is that this study is likely to underestimate the true size of the unmet need in Kiribati. Unmet need for family planning is difficult to accurately measure, with most estimates (including those used for this analysis) excluding unmarried sexually active women. Furthermore, women using a traditional method are not considered to have an unmet need despite these methods being less effective than modern methods.[39] Finally, the estimates generated in this report do not account for the potential rise in unmet need in the future as fertility preferences change, which is likely with improved education and community awareness resulting in increasing demand.

The second is that the family planning costing estimates do not take into account all the costs associated with reducing unmet need for family planning. Indirect costs related to increasing community awareness and demand, improving quality of services (infrastructure, information systems, improved commodity supply systems, staff training, supervision), or reaching populations with poor access due to geographical or socio-cultural barriers were not included. These indirect costs are difficult to measure, yet may exceed the direct costs of expanding family planning services.[3] In the context of Kiribati, where significant geographic and socio-cultural barriers exist, the indirect costs may be especially pronounced. Furthermore, the direct costs remain constant throughout the projection period, so do not reflect potential changes in commodity costs, procurement or transport and distribution.

While the abovementioned limitations are likely to increase the estimated costs of investing in family planning, there are a number of wider benefits to investing that are also not captured by this analysis. Enabling women to plan their pregnancies contributes to higher educational attainment and economic

participation for girls and women, with substantial economic benefits for households and countries, and is critical for women's empowerment and progress towards gender equality.[6]

In summary, investment in family planning in Kiribati will have significant health, population and economic benefits. Despite the substantial increase in financial investment required to procure and provide commodities to additional users, reducing unmet need will result in significant savings in health and education expenditure.

Recommendations

- Increased and long term financial commitment to family planning from government and donors is required to meet the needs of women and couples in Kiribati. Based on this analysis, AUD$ 807,000 is required over the fifteen year period to meet all needs by 2020.
- Recognising the human rights, health and development imperatives, reducing unmet need for family planning should be prioritised in reproductive health, maternal and child health and population policies and programmes.
- Clear and realistic targets for reducing unmet need for family planning should be developed based on current and projected needs and adequate budget provided to enable these to be achieved.
- Health information systems should be strengthened to better capture data about family planning needs, contraceptive users, acceptors, discontinuation and costs related to public, non-government and private providers to facilitate planning and to monitor progress.

In July 2012 the international community pledged to reach an additional 120 million women and girls with essential family planning services by 2020.[40] Of the 69 least developed countries prioritised for investment, only two (Papua New Guinea and the Solomon Islands) are in the Pacific. However, this analysis demonstrates that there are considerable health, development and human rights imperatives to ensure that no women or girls in the Pacific are overlooked.

Appendix

To identify the costs and health, social and economic impacts of reducing unmet need for family planning, three population models were created based on three hypothetical family planning scenarios:

1. Constant unmet need for family planning (28.0%)
2. All family planning needs met by 2050
3. All family planning needs met by 2020.

Acknowledging that Kiribati is unlikely to meet the MDG 5B target to reduce unmet need for family planning by 2015, a target of 2020 was considered to be a best-case scenario, with a target of 2050 also included to examine the impact of slower progress.

Models

Estimates of the costs and health, economic and demographic outcomes of reducing unmet need for family planning were calculated using population models generated by Spectrum Version 4.55, a specialised demographic modelling software program developed by the Futures Institute through the USAID Health Policy Initiative. A full description of the program methodology can be found at http://www.futuresinstitute.org/spectrum.aspx. Three Spectrum modules were used to generate these models:

1. DemProj projects population and demography based on assumptions about fertility and mortality
2. RAPID projects social and economic outcomes resulting from changes in fertility rate and population growth generated by DemProj
3. FamPlan projects family planning requirements, costs, health outcomes, and population impacts based on goals for addressing unmet need for family planning. DemProj population projections are automatically adjusted for changes in fertility based on selected FamPlan family planning goals.

A baseline model using these three modules was developed for the period 2010-2050 assuming constant unmet need for family planning of 28.0%. Using this baseline model, two additional

models were created based on two different FamPlan goals: all family planning needs met by 2020 and all needs met by 2050. While outcomes were projected to 2050, analysis was restricted to a 16-year projection period 2010-2025.

Inputs and data sources

Baseline data were required for over 50 inputs covering demography, economy, health and education systems, maternal and child health and family planning usage and costs.

Demographic data required for DemProj (base year population by sex and five-year age group, age-specific fertility rate, sex ratio at birth and base year life expectancy) were sourced from the 2010 Census.[30] The model life table used was UN East Asian as per the 2010 Census projections.[30]

RAPID required economic, health and education inputs. Base year data for labour force participation rate were taken from the Kiribati 2010 Census.[30] Base year gross domestic product (GDP) was sourced from the Ministry of Finance and Economic Planning and the International Monetary Fund.[41] Education data were sourced from the Kiribati Ministry of Education's Digest of Education Statistics 2011,[42] and consultation with the Ministry of Education. Health systems data (workforce, facilities, expenditure) were obtained directly from the National Statistics Office, Ministry of Health and Medical Services and the 2011 WHO Western Pacific Country Health Information Profile for Kiribati.[43]

FamPlan inputs included: contraceptive prevalence and method mix; source mix, costs per method; proximate determinants of fertility; maternal mortality; and infant and child survival. Data on contraceptive prevalence, method mix and unmet need were sourced from Kiribati Demographic Health Survey 2009.[20] Data on the source mix per contraceptive method was taken from the medical service records (MS1) supplied by the Ministry of Health and Medical Services. Where data were not available (male condoms and other), the source mix was assumed to be 90% public, 10% non-government with the exception of female sterilisation (100% public) and male sterilisation (100% non-government). These assumptions were based on consultation with Ministry of Health and Medical Services and the Kiribati Family Health Association.

The direct costs of providing family planning per contraceptive method (per couple-year of protection for short-acting methods and per acceptor for long acting methods) were calculated from estimates of: commodities, equipment and supplies, insurance, shipping, handling and distribution and staff costs for counselling, provision and follow-up. Commodity, equipment, transport, insurance, handling and distribution costs were obtained directly from UNFPA (the principal supplier of family planning commodities in Kiribati), IPPF and the Kiribati Ministry of Health and Medical Services. Staff costs were based on estimates of staff salaries and time spent per client per method of contraception obtained from the Ministry of Health and Medical Services and the Kiribati Family Health Association. Costs per method are detailed below for Kiribati Family Health Association services (Table 7) and government services (Table 8).

Table 7: Costs per method per couple-year of protection (short-acting methods) or per new acceptor (long-acting and permanent methods) – Kiribati Family Health Association (KFHA)

	Commodities, equipment and supplies (AUD$)	Shipping, handling & insurance (AUD$)	Staff costs (AUD$)	Total (AUD$)
Male Condom	$3.97	$1.99	$4.02	$9.98
Female Condom/Other	$0.59	$0.28	$4.02	$4.90
Pill	$0.36	$0.18	$12.60	$13.15
Injectable	$2.44	$1.13	$12.33	$15.90
Implant	$17.62	$11.48	$8.99	$38.09
IUD	$1.88	$0.49	$4.92	$7.30
Female sterilisation	-	-	-	-
Male sterilisation	$5.16	$1.57	$34.55	$41.28

Table 8: Costs per method per couple-year of protection (short-acting methods) or per new acceptor (long-acting and permanent methods) - Ministry of Health and Medical Services

	Commodities, equipment and supplies (AUD$)	Shipping, handling & insurance (AUD$)	Staff costs (AUD$)	Total (AUD$)
Male Condom	$3.86	$1.84	$1.05	$6.75
Female Condom/Other	$0.59	$0.28	$1.05	$1.93
Pill	$0.37	$0.18	$6.88	$7.43
Injectable	$2.40	$1.15	$5.12	$8.67
Implant	$8.71	$4.15	$9.14	$22.00
IUD	$1.69	$0.81	$14.57	$17.07
Female sterilisation	$4.21	$2.01	$47.43	$53.65
Male sterilisation	$5.16	$1.57	$34.55	$41.28

The base year data on the method mix, the percentage of women aged 15-49 married or in union, postpartum insusceptibility, and the percentage of births with any risk (births to women less than 18 or over 34 years, births spaced less than 24 months or birth order 4 or higher) were taken from the DHS.[20] The maternal mortality ratio and infant and child mortality rates were taken from the 2010 Census, as was data on sterility.[30] Data on abortion in Kiribati, and the Pacific in general, are scarce. The proportion of unwanted pregnancies ending in induced abortion was determined from a regional estimate for Oceania (excluding Australia and New Zealand) provided by Guttmacher Institute.[44] Data on method effectiveness were taken from the WHO family planning handbook,[45] with the exception of traditional methods, which used Spectrum 4.55 default value.

Key Assumptions

Thirty of the 50 data inputs required yearly estimates for the entire projection period. Inputs either remained constant throughout the projection period, or were obtained by projecting to an estimate for 2050.

Unmet need remained constant for the baseline model. In the other two models the reduction in unmet need was 'front loaded'; commencing in 2010, it was assumed that the contraceptive prevalence rate would initially increase rapidly before stabilising,[46] with all needs met by 2050 in scenario 1 and by 2020 in scenario 2. Due to the lack of age-disaggregated data, the reduction in unmet need was assumed to be evenly distributed across all age groups 15-49. All other assumptions were consistent across the baseline model and two scenarios.

All estimates for proximate determinants of fertility remained constant from 2010-2025. Projected contraceptive method mix was adjusted to reflect a more balanced method mix (adjusting for the under-reliance on permanent methods). The 2050 method mix was calculated based on global trend data,[46, 47, 48] the average method mix for the Pacific region,[16, 17, 18, 11, 19, 20, 21, 23, 48] and following consultation with regional and international family planning experts. In brief, the prevalence of traditional methods was halved by 2050, injectables were adjusted down to the Pacific average, male and female sterilisation rates were increased to Futures Group trend data and implants were increased slightly to reflect unmet demand. The prevalence of intrauterine devices, condoms and oral contraceptive pills remained constant. Source mix and direct costs per method remained constant.

Age-specific fertility rates were projected to reach the average of Australia, New Zealand, France and the United States by 2050 as per the methodology used by the Statistics and Demography Programme of the Secretariat of the Pacific Community (SPC). Future life expectancy was calculated using the UN models for mortality improvement assuming medium gains.[49] Labour force participation rates, and health and education expenditure, population-to-facility and population-to-workforce ratios were assumed to reach the average for East Asia and the Pacific by 2050, based on the most recent data from the World Bank[50] and the World Health Organization.[43] International Monetary Fund estimates were used in projecting annual GDP growth.[41]

Outputs and Analysis

For each model, the program was used to project:

- contraceptive prevalence and number of users
- family planning costs and commodities required
- health outcomes for women and children (unintended pregnancies, births, induced abortions, births with any risk and maternal and infant deaths)
- total fertility rate and population growth
- health and education expenditure and required resources (infrastructure and human resources)
- dependency ratio and GDP per capita.

A full description of the program methodology can be found at www.FuturesInstitute.org. Projected data for 2010-2025 for each model were extracted and analysed using Microsoft Excel 2010. The impact of reducing unmet need by 2020 and 2050 was compared to the baseline model (constant unmet need) for each output of interest. All costs are reported in Australian (2010) dollars.

The number of infant deaths was estimated from an adjusted infant mortality rate calculated for each year using: IMR(t) = IMR(0) – (% births with any risk(t))/% births with any risk(0)*IMR(0). The adolescent fertility rate (births per 1000 women aged 15-19) was estimated as follows: the age-specific birth rate was calculated by multiplying the projected total fertility rate by the percentage distribution of births per five-year age group; the total number of births per age group was estimated by dividing the age-specific birth rate by five and multiplying by the projected total number of women per age group; age-specific fertility rate was calculated by dividing the total number of births per age group by the number of women of that age group.

Sensitivity Analysis

One-way sensitivity analyses were conducted to test the robustness of estimates of averted unintended pregnancies and deaths, family planning costs and public sector savings to changes in key assumptions (Table 9 and Table 10).

Under alternative assumptions of unmet need (based on the 95% confidence interval), constant contraceptive method mix (based on current mix), constant age-specific fertility rates and family planning costs (+/-25%) the total number of averted events (from 2010-2025) varied between 10,149 to 16,777 unintended pregnancies and 741 to 1,205 deaths with costs per averted event ranging from AUD$47 to $78 (unintended pregnancy) and $647 to $1,079 (deaths). The highest numbers of averted adverse events were where there was no discounting of health effects or costs. The lowest numbers of adverse events averted (most unfavourable) were associated with the alternative assumption regarding the rate of reduction in unmet need. A constant (linear) reduction in unmet need substantially reduced the number of averted events and increased costs per averted event. This effect is largely explained by the slower increase in contraceptive prevalence which causes i-Kiribati women to have higher unmet need throughout the projection period, and therefore have higher likelihoods of adverse events. Both the highest and lowest costs per adverse event averted were found where direct family planning costs were increased or decreased by 25%.

All estimates under alternative assumptions demonstrated health and economic benefits associated with reducing unmet need (compared to the baseline projection) and meeting this need by 2020 would result in larger benefits than slower progress.

Table 9: One-way sensitivity analysis: All needs met by 2050

	Total number of unintended pregnancies averted 2010-2025	Cost per unintended pregnancy averted (AUD$)	Total number of maternal and infant deaths averted 2010-2025	Cost per death averted (AUD$)	Direct family planning costs 2010-2025 (AUD$)	Total public sector savings 2010-2025 (AUD$)
Base case	8,741	$77	666	$1,011	$672,907	$11,994,260
Unmet need for contraception (low-high)	8,307 - 9,177	$75 - $79	635 - 696	$989 - $1,035	$657,317 - $688,496	$11,359,733 - $12,632,862
Constant rate of reduction of unmet need	2,861	$166	234	$2,025	$473,829	$2,975,858
Constant contraceptive method mix	8,489	$76	664	$971	$644,871	$11,917,171
Constant age-specific fertility rate	8,735	$77	666	$1,011	$672,908	$11,996,745
Direct family planning costs +/- 25%	8,741	$58 - $96	666	$758 - $1,263	$504,680 - $841,133	$11,994,260
Recurrent public sector expenditure +/-25%	8,741	$77	666	$1,011	$672,907	$8,995,695 - $14,992,825
Discounting (0-5%)	7,378 - 11,473	$74 - $79	564 - 870	$976 - $1,036	$584,294 - $848,865	$9,627,688 - $16,926,792

Table 10: One-way sensitivity analysis: All needs met by 2025

	Total number of unintended pregnancies averted 2010-2025	Cost per unintended pregnancy averted (AUD$)	Total number of maternal and infant deaths averted 2010-2025	Cost per death averted (AUD$)	Direct family planning costs 2010-2025 (AUD$)	Total public sector savings 2010-2025 (AUD$)
Base case	12,954	$62	935	$863	$806,859	$19,290,581
Unmet need for contraception (low-high)	12,310 - 13,600	$61 - $64	894 - 975	$851 - $877	$784,589 - $829,127	$18,275,787 - $20,311,225
Constant rate of reduction of unmet need	10,149	$72	741	$980	$725,928	$11,414,962
Constant contraceptive method mix	12,593	$62	933	$831	$775,276	$19,175,826
Constant age-specific fertility rate	12,947	$62	934	$864	$806,861	$19,295,225
Direct family planning costs +/- 25%	12,954	$47 - $78	935	$647 - $1,079	$605,145 - $1,008,574	$19,290,581
Recurrent public sector expenditure +/-25%	12,954	$62	935	$863	$806,859	$14,467,936 - $24,113,226
Discounting (0-5%)	11,035 - 16,777	$60 - $64	799 - 1,205	$838 - $882	$704,494 - $1,009,487	$15,538,013 - $27,089,886

Reference Group

Technical oversight and advice concerning quality of data, missing data and key assumptions was provided by a reference group of Pacific experts including representatives from the Kiribati Ministry of Health and Medical Services, Ministry of Finance, Ministry of Education, Office of the President, Kiribati Family Health Association, United Nations Population Fund Pacific Sub-Regional Office and International Planned Parenthood Federation East and Southeast Asia and Oceania Region.

Bibliography

1 J. Cleland, A. Conde-Agudelo, H. Peterson, J. Ross and A. Tsui, "Contraception and health," *The Lancet*, vol. 380, no. 9837, pp. 149-56, 2012.

2 S. Ahmed, Q. Li, L. Liu and A. Tsui, "Maternal deaths averted by contraceptive use: an analysis of 172 countries," *The Lancet*, vol. 380, no. 9837, pp. 111-125, 2012.

3 S. Singh, J. Darroch, L. Ashford and M. Vlassoff, "Adding it up: the costs and benefits of investing in family planning and maternal and newborn health," Guttmacher Institute and UNFPA, New York, 2009.

4 J. Stover and J. Ross, "How contraceptive use has reduced maternal mortality," *Maternal and Child Health Journal*, vol. 14, no. 5, pp. 687-695, 2009.

5 S. Singh and J. Darroch, "Adding it up: costs and benefits of contraceptive services estimates for 2012," Guttmacher Institute and United Nations Population Fund (UNFPA), New York, 2012.

6 J. W. Cates, "Family Planning: the essential link to all eight Millennium Development Goals," *Contraception*, vol. 81, no. 6, pp. 460-461, 2010.

7 B. Neill, B. Liddle, L. Jiang, K. Smith, S. Pachauri, M. Dalton and R. Fuchs, "Demographic change and carbon dioxide emissions," *The Lancet*, vol. 380, no. 9837, pp. 157-164, 2012.

8 D. Canning and T. Schultz, "The economic consequences of reproductive health and family planning," *The Lancet*, vol. 380, no. 9837, pp. 165-171, 2012.

9 T. Wire, "Fewer emitters, lower emissions, less cost," London School of Economics, London, 2009.

10 World Bank, "World development report 2007: development and the next generation," International Bank for Reconstruction and Development, Washington DC, 2007.

11 Economic Policy, Planning and Statistics Office (EPPSO), SPC, and Macro International Inc., "Republic of the Marshall Islands Demographic and Health Survey 2007," EPPSO, SPC and Macro International Inc, Noumea, 2007.

12 E. Kennedy, N. Gray, P. Azzopardi and M. Creati, "Adolescent fertility and family planning in East Asia and the Pacific: a review of DHS reports," *Reproductive Health*, vol. 8, no. 11, 2011.

13 The World Bank, "Adolescent fertility rate (births per 1,000 women ages 15-19)," 2014. [Online]. Available: http://data.worldbank.org/indicator/SP.ADO.TFRT. [Accessed 28 January 2014].

14 G. Haberkorn, "Pacific Islands' population and development: facts, fictions and follies," *New Zealand Population Review*, vol. 33/34, pp. 95-127, 2008.

15 E. B. W. Narsey, A. S. Robertson, B. Prasad, E. Jongstra and K. Seniloli, "Population and development in the Pacific Islands: accelerating the ICPD Programme of Action at 15," in *Proceedings of the Regional Symposium*, Suva, 2009.

16 Ministry of Health (Samoa), Bureau of Statistics (Samoa), and ICF Macro, "Samoa Demographic and Health Survey 2009," Ministry of Health, Apia, 2010.

17 Central Statistics Division (TCSD), SPC, and Macro International Inc., "Tuvalu Demographic and Health Survey," TCSD, SPC and Macro International Inc, Noumea, 2007.

18 Nauru Bureau of Statistics, SPC, and Macro International Inc., "Nauru 2007 Demographic and Health Survey," NBS, SPC and Macro International Inc., Noumea, 2007.

19 National Statistical Office Papua New Guinea, "Papua New Guinea Demographic and Health Survey 2006: National Report," National Statistical Office Papua New Guinea, Port Moresby, 2009.

20 Kiribati National Statistics Office, Secretariat of the Pacific Community and Amcro International Inc., "Kiribati Demographic and Health Survey 2009," Secretariat of the Pacific Community (SPC), Noumea, 2010.

21 National Statistics Office (SISO), SPC, Macro International, "Solomon Islands 2006-2007 Demographic and Health Survey," SPC, Noumea, 2009.

22 UNFPA, "By choice, not by chance: family planning, human rights and development," UNFPA, New York, 2012.

23 W. House, "Prospects for demographic behavioural change in Vanuatu: the results of a KAP study," UNFPA Country Support Team, Office for the South Pacific, Suva, 1998.

24 "Achieving MDGs 4 and 5: scaling-up programmes for women's and children's health. Paper for the Ninth Meeting of Ministers of Health for the Pacific Island Countries," WHO Western Pacific Region Office, Manila, 2011.

25 UNFPA, "Financial resource flows For population activities in 2009," UNFPA, New York, 2011.

26 OECD Statistics, "Query Wizard for International Development," Organisation for Economic Co-operation and Development, 2012. [Online]. Available: http://stats.oecd.org/. [Accessed 16 April 2012].

27 S. Mackesy-Buckley, E. Kennedy and S. Subramaniam, "The case for investing in family planning in Solomon Islands; a cost benefit analysis," Burnet Institute and Family Planning International on behalf of Compass:

the Women's and Children's Health Knowledge Hub, Melbourne, Australia, 2012.

28 E. Kennedy, S. Mackesy-Buckley and S. Subramaniam, "The case for investing in family planning in Vanuatu: a cost-benefit analysis," Burnet Institute and Family Planning International on behalf of Compass: the Women's and Children's Health Knowledge Hub, Melbourne, Australia, 2012.

29 E. Kennedy, S. Mackesy-Buckley, S. Subramaniam, A. Demmke, R. Latu, A. Sachs Robertson, K. Tiban, A. Tokon and S. Luchters, "The case for investing in family planning in the Pacific: costs and benefits of reducing unmet need for contraception in Vanuatu and the Solomon Islands," *Reproductive Health*, vol. 10, no. 30, 2013.

30 Kiribati National Statistics Office and Secretariat of the Pacific Community, "Kiribati 2010 Census Volume 2: Analytical report," Secretariat of the Pacific Community, Noumea, New Caledonia, 2013.

31 G. Mola, "Kiribati Family Planning Needs Assessment," UNFPA and Ministry of Health and Medical Services, 2013.

32 Government of Kiribati and United Nations Development Programme, "Republic of Kiribati Millennium Development Goals," 2007.

33 Ministry of Finance and Economic Development, "Kiribati Development Plan 2012-2015," Ministry of Finance and Economic Development, Tarawa, 2012.

34 International Monetary Fund, "Kiribati 2013 Article IV Consultation," International Monetary fund, Washington, D.C., 2013.

35 E. Tessa Tan-Torres, R. Baltussen, T. Adam, R. Hutbessy, A. Acharya, D. B. Evans and C. J. L. Murray, Eds., Making choices in health: WHO guide to cost effectiveness analysis, Geneva: World Health Organization, 2003.

36 R. G. Rutstein SO, "Guide to DHS Statistics," Demographic and Health Surveys, Calverton, MD., 2006.

37 WHO, "Adolescent pregnancy: unmet needs and undone deeds. A review of the literature and programmes," World Health Organization, Geneva, 2007.

38 W. L. Narsey, "Changing age structures, education financing and poverty: how to put family planning back on the agenda," in *Population and Development in the Pacific Islands: Accelerating the ICPD Programme of Action at 15*, Suva, Fiji, UNFPA, 2009.

39 J. Casterline and S. Sinding, "Unmet need for family planning in developing countries and implications for population policy," *Population and Development Review*, vol. 26, no. 4, pp. 691-723, 2010.

40 Bill & Melinda Gates Foundation, DFID, "Landmark summit puts women at heart of global health agenda: global leaders unite to provide 120 million women in the world's poorest countries with access to contraceptives by 2020. Press release," 2012. [Online]. Available: http://www.familyplanning2020.org/1530%20FINAL%20press%20release.pdf. [Accessed 11 July 2012].

41 National Statistics Office, "Report on the Kiribati 2010 Census on Population and Housing. Volume 1: Basic information and tables," Ministry of Finance and Economic Planning, Bairiki, Tarawa, 2012.

42 Ministry of Education, "Digest of Education Statistics 2011," MOE Statistics Unit, Ministry of Education, Bikenibeu, Tarawa, 2011.

43 WHO, "Western Pacific Country Health Information Profiles: 2011 Revision," World Health Organization, Geneva, 2011.

44 J. Darroch and S. Singh, "Adding it up: the costs and benefits of investing in family planning and maternal and newborn health – estimation methodology," Guttmacher Institute, New York, 2011.

45 World Health Organization Department of Reproductive Health and Research (WHO/RHR) and Johns Hopkins Bloomberg School of Public Health/Centerfor Communication Programs (CCP), Knowledge for Health Project, "Family Planning: A Global Handbook for Providers (2011 update)," CCP and WHO, Baltimore and Geneva, 2012.

46 J. Bongaarts and E. Johansson, "Future trends in contraceptive prevalence and method mix in the developing world," *Studies in Family Planning*, vol. 33, no. 1, pp. 24-36, 2002.

47 J. Ross, J. Stover and D. Adelaja, "Profiles for family planning and reproductive health programs: 116 countries. Second edition," Futures Group, Glastonbury, CT, 2005.

48 United Nations, "World Contraceptive Use 2011," United Nations, New York, 2011.

49 United Nations, "Models for mortality improvement: quinquennial gains in life expectancy at birth according to initial level of life expectancy table Vi.6. World Population Prospects," United Nations, New York, 1995.

50 World Bank, "Data," 2013. [Online]. Available: http://data.worldbank.org/. [Accessed 01 July 2013].

NEW ZEALAND
FOREIGN AFFAIRS & TRADE
Aid Programme

POSITIVE SEXUAL HEALTH
Family Planning