Department of Education

A SITUATIONAL ANALYSIS OF EDUCATION IN PAPUA NEW GUINEA





DEPARTMENT OF EDUCATION

Prepared for the Department of Education

By

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This education situational analysis report was commissioned to provide research-based evidence to inform the development of the new National Education Plan (2015-2019). The views expressed in the report are those of the author and do not necessarily represent the views of the Department of Education or of any other organization, or person.

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Acronyms

ASPABAE	Asia South Pacific Association for Basic and Adult Education
BEICAMP	Basic Education Infrastructure, Curriculum, and Materials Project
CC	Community Colleges
CDAD	Curriculum Development and Assessment Division
CGFR	Country Gender Profile Report
CODE	College of Distance Education
CR	Completion Rate
CRC	UN Convention on the Rights of Children
CRIP	Curriculum Reform Implementation Project
CSC	Correspondence Study Centre
CSPF	Church State Partnership Framework
DASDFRPLLG	Determination Assigning Service Delivery Functions Roles and Responsibilities for Provincial and Local Level Governments
DoE	Department of Education
EAEP	Education Access and Equity Program
ECBP	Education Capacity Building Program
EES	Elementary Education System
EFAG	Education For All Goals
EMIS	Education Management Information System
EQTVP	Education Quality Television Program
ESR	Education Sector Review
FBO	Faith-Based Organization
FLR	Functional Literacy Rate
FODE	Flexible, Open, and Distance Education
GAR	Gross Admission Rate
GEEP	Gender Equity in Education Policy
GER	Gross Enrolment Rate
GoPNG	Government of Papua New Guinea
GPI	Gender Parity Index
HDI	Human Development Index
HIED	PNG Household Income and Expenditure Data
ICT	Information Communication Technology
IHD	Integral Human Development
JICA	Japan International Corporation Agency
LC	UN Literacy Decade
LLG	Local Level Government
LNG	Liquefied Natural Gas
LPA	Lukautim Pikinini (Child) Act
LR	Literacy Rate
MDG	Millennium Development Goals
MR	Matane Report
MTDS	Mid-Term Development Strategy
NAR	Net Admission Rate
NASCD	National Annual School Census Data
NC	National Constitution
NCD	National Capital District

NEA	National Education Act
NEP	National Education Plan
NER	Net Enrolment Rate
NES	National Education System
NFE	Non-Formal Education
NGO	Non-Government Organization
NLAC	National Literacy Awareness Council
NLAS	National Literacy Awareness Secretariat
NSO	National Statistics Office
NSP	National Strategic Plan
OBC	Outcomes-Based Curriculum
OBE	Outcomes-Based Education
OBETFRR	Outcomes-Based Education Task Force Review Report
OL	Organic Law
OSYE	Out-of-School Youth Education
PE	Primary Education
PEA	Provincial Education Acts
PEAN	Papua New Guinea Education Advocacy Network
PETT	Pre-Employment Technical Training
PM	Pass Mark
PNG	Papua New Guinea
PTEP	Primary Teacher Education Project
PTR	Pupil to Teacher Ratio
REFAP	Relevant Education for all Program
RR	Retention Rate
RSC	Registered Study Centre
SE	Secondary Education
SIR	Student to Instructor Ratio
SLR	Student to Lecturer Ratio
TET	Technical Education and Training
TFFE	Tuition Fee Free Education
TSC	Teaching Service Commission
TTC	Technical Training Certificate
TVET	Technical Vocational Education and Training
UBE	Universal Basic Education
USE	Upper Secondary Education
V2050	Vision 2050
VET	Vocational Education and Training

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EXECUTIVE SUMMARY

This report provides a situational analysis of the state of education in Papua New Guinea (PNG) and uses the analysis to outline strategies that could be implemented to make further progress towards the national goals of education. Written as a critical analytic review it provides important evidence about the state of education in PNG, particularly its performance against global and national education goals and targets. The report starts by providing an overview of the national education system and a chronology of the major policies that have had an impact on the provision of education. This is followed by a sector by sector analysis of performance in the areas of access, retention, quality, equity, and management. Cross cutting issues and the management of the education system are discussed next. The report concludes with a way forward.

Methodology and the Purpose of the Analysis

This report analyses the delivery of education in PNG and the performance of the National Education System (NES) in relation to a core set of education goals and targets embedded in the NEP 2005 – 2014. The purpose of the analysis is to ascertain the state of progress of the PNG NES towards the full attainment of intended education outcomes, identify gaps, and propose a way forward for closing the gaps so that meaningful and positive progress is made towards the desired education goals and targets. It is also the purpose of this analysis to provide a stock of knowledge for evidence-based planning, policy formulation, and programming going forward. These purposes were addressed through:

- An assessment of elementary, primary, secondary, flexible, open and distance education, technical vocational education and training, and adult and out-of-school youth education trends between 2007 and 2012.
- An analysis of the performance of these levels of education against a core set of access, retention, quality, equity, and management indicators.
- An analysis of education policies, plans, programs, and practices for insight into the effect they have had on access, participation, and the quality of learning at different levels of education.

- An examination of the factors that contribute to or hinder the achievement of access, retention, quality, equity, and management outcomes.
- A review of recent empirical and secondary sources, particularly recent research in PNG, on access, retention, quality, equity, and management, and map out what the key challenges are to expanding and providing equitable access to quality education, particularly for the less privileged and marginalized groups in society.

This analysis benefited from interviews and dialogue with education officials at various levels of the PNG NES.

Influence of education policies and plans on access, retention, quality, and equity

The current education philosophy, structure, and curriculum have their roots in the National Goals and Directive Principles found in the preamble of the PNG Constitution, the Matane Report (1986) and the Education Sector Review (ESR) Report (DoE, 1991). The National Goals and Directive Principles provide a core set of guiding principles for social, cultural, economic, and political development of PNG and all its citizens. Matane Report attempts to instill a new philosophy of education for PNG underpinned by the goal of '*Integral Human Development'*. This is the first principle of the five National Goals and Directive Principles. The philosophy was pursued with vigor and passion since it was embraced in 1986. It provides the basis for education discourse and practice in PNG. The ESR (1991) was a major review of the NES spurred by concerns about poor access, retention, quality, equity, and management indicators. This review recommended both structural and curriculum reforms to boost access, retention, and the quality of learning, as well as improve the governance and the management of the PNG NES.

Education policy development, planning, and programming have been underpinned by these reforms to make education more widely available, inclusive, equitable, and relevant to the needs of all PNG citizens. The expansion of the education system and the provision of a relevant education have and continue to benefit from substantial investments, mainly from development partners and, generally, have helped to improve access significantly

but have had minimal impact on the achievement of retention, quality, and equity outcomes. The quality of education has experienced a massive decline since the introduction of the Outcomes-Based Education (OBE) and is now at levels never experienced before in PNG's history. This is a major concern for the PNG NES, the government, and the people of PNG.

Evidence from this analysis suggests the need for a good mix of policies targeted at increasing the demand for education, especially in rural areas. The introduction of Tuition Fee Free Education (TFFE) is one such initiative that is clearly making an impact, but further research is required to understand its potential to sustain the surge in enrolments and to improve retention and completion rates. However, one of the key lessons learnt from the current wave of reforms is that rapid expansion must go in tandem with measures to provide a quality education. Ensuring the education and training of quality teachers, effective deployment of teachers, provision of adequate and appropriate infrastructure facilities, procurement and availability of essential teaching and learning resources, and the provision of sustainable professional learning are important to this endeavour.

Trends and patterns of access to education and training

Analysis of student enrolment core indicators provided some valuable insights into student enrolment patterns, particularly elementary, primary, and secondary education enrolment patterns. These patterns varied between 2007 and 2012. Student enrolment fluctuated quite a bit from 2007 and 2012. This may have been due to the inflation of student enrolment data, errors in the calculation of the indicators, or both.

Elementary Education

Education Coverage

Elementary education coverage and absorptive capacity have been boosted as a result of the education structural reforms that began in the early 1990s. The number of schools has increased and surpassed the NEP 2014 target of 172 preparatory classes. The number of schools increased from 5,349 in 2007 to 6,504 schools in 2012. An additional 1,155 schools were established in that period. Additional space and other resources will be

needed to cater for an anticipated increase in the demand for this level of education when school fee and other access and participation barriers are removed through initiatives such as the introduction of TFFE and Free and Compulsory Education Policies.

Student Enrolment

The supply of additional schools increased student enrolment by nearly 100% in the same period. Student enrolment increased from 356,087 in 2007 to 727,115 students in 2012. Student enrolment is likely to increase further with the mitigation of access barriers using current and new strategies.

Number of Teachers

The number of teachers increased from 10,494 in 2007 to 14,786 teachers in 2012. An additional 4,292 teachers were supplied during this period. The NEP 2014 projected target is 18,673. This is unlikely to be achieved in this planning period. A proper teacher supply analysis and projection should be done to determine the number of teachers required to adequately cater for all children who will enroll as a result of the implementation of TFFE and Free and Compulsory Education Policies.

Access and Participation Indicators

Analysis of the key access indicators show that there were more underage and overage children admitted to elementary prep than there were children from the official entrance age (6 year olds). The Net Admission Rate (NAR) expanded from 11.5% in 2007 to 33.5% in 2012. On the other hand, Gross Admission Rate (GAR) grew from 77.5% in 2007 to 121.6% in 2012. Data shows that 63.5% of 6 year olds were not admitted to elementary prep in 2012. This was a result of, amongst other factors, a sizable increase of 44.1% of underage and overage children admitted to the same grade in the same year.

This pattern is the same in the participation of students which show that proportionately less number of students from the school related age population (6-8 year olds) was enrolled than was the number of underage and overage students. The Net Enrolment Rate (NER) increased from 31.4% in 2007 to 67.9% in 2012, an increase of 36.5%. Conversely, the Gross Enrolment Rate (GER) increased from 83.8% in 2007 to 125.6%

in 2012, an increase of 41.8%. This data indicates that while there was an increase in the enrolment of 6-8 year olds, this increase was not only lower than the increase in the enrolment of underage and overage children, it was also increasing at a much slower pace. The participation gap between these two groups is expanding quite rapidly and needs to be immediately bridged.

Primary Education

Education Coverage

Primary education coverage and absorptive capacity have not kept pace with the expansion of elementary education although both sectors were targeted for expansion to universalize basic education. The number of schools increased from 3,490 in 2007 to 3,560 schools in 2012. An additional 70 schools were established in that period, which was much lower than the number of elementary schools established in the same period. This has contributed to poor coverage and capacity to enroll all students transiting from the elementary school level. There is a dire need for space at this level of education to meet current and anticipated demand driven by the removal of access and participation barriers such as school fees.

Student Enrolment

Student enrolment increased substantially from 632,140 in 2007 to 916,065 students in 2012. Student enrolment increased by 31.1% or 284,925 students in real terms. This is a big increase in student enrolment and seemed to validate the decision to expand the education system. This trend is likely to continue with further expansion and the removal of access and participation barriers.

Number of Teachers

The number of teachers grew from 18,810 in 2007 to 24,706 teachers in 2012, an increase of 5,896 (24%) teachers. The current number of teachers needs to be further increased to meet the demand for teachers which will substantially increase as education at this level of education becomes fully funded by the government and is made free and compulsory.

Participation Indicators

Analysis of the participation indicators show that the enrolment of 9-14 year olds increased by 13.1% and underage and overage children increased by 18.7% between 2007 and 2012. This data indicates not only that the enrolment of 9-14 year olds lagged behind the enrolment of children outside of this age cohort but also that the increase in their enrolment was not enough to close the gap between themselves and the underage and overage children. Thereby, they will continue to be denied access because space is taken up by underage and overage children. This has serious implications for the achievement of the goal of UBE.

Moreover, there were more underage and overage children enrolled in primary education than there were children from the school age related population (9-14 year olds). This trend was similar to the trend at the elementary school level. Proportionately there were more underage and overage children enrolled than there were 9-14 year olds. The NER increased from 37.1% in 2007 to 50.2% in 2012, an increase of 13.1%. On the contrary, the GER increased from 61.2% in 2007 to 79.9% in 2012, an increase of 18.7%. The participation gap between the 9-14 year olds and the underage and overage children is expanding quite rapidly and needs to be immediately bridged.

Secondary Education

Education Coverage

There is a serious blockage at the secondary school level that is preventing all children transiting from primary education from accessing and participating at this level of education. The expansion of secondary education was purposely curtailed owing to, amongst other reasons, the expansion of the lower levels of education so that all children acquire, as a minimum, a basic education. Nevertheless, the ongoing high demand for secondary education created at the primary school level is putting pressure on the NES to expand coverage at the secondary school level. This should be done without procrastination to provide more opportunities for children to enroll and complete the secondary school education cycle.

The number of secondary schools declined from 208 in 2008 to 203 schools in 2012. In total, secondary schools declined by 5 schools between 2007 and 2012. This only compounded the problems associated with poor coverage and limited absorptive capacity to enroll all students transiting from the primary education level.

Student Enrolment

Student enrolment increased by 40,115 students or 31% between 2007 and 2012. This was much less than the increase in primary school student enrolment (284,925) in the same period. This data indicates a general decline in the number of students accessing and participating in secondary education due mainly to factors mentioned above. This trend will persist unless secondary school education is expanded to allow more students to progress from grade 8 to grade 9 and grade 10 to grade 11.

Number of Teachers

The number of teachers increased from 3,508 in 2007 to 4,440 teachers in 2012. An additional 935 teachers or 21.1% joined the teaching force in that period. This was much lower than the growth in student enrolment (40,115 or 31%) in the same period. This data seems to indicate a shortage in the supply of teachers. This situation should be addressed to ensure an adequate supply of teachers on an annual basis.

Access and Participation Indicators

Transition of students from grade 8 to grade 9 rose from 53% in 2007 to peak at 62% in 2008 but deteriorated rapidly thereafter to reach a low of 41% in 2012. Overall, grade 8 to grade 9 transition rate declined by 9% between 2007 and 2012. This data reveals that thousands of students dropped out of school at the end of grade 8. Only a few students were able to secure grade 9 places between 2009 and 2012. On the other hand, grade 10 to grade 11 transition rate increased from 46% in 2007 to 47.6% in 2012. On the whole, the transition rate improved by a mere 1.6% in that period.

This data shows that the number of children denied access to education increases as children progress through the NES.

An examination of the participation indicators show that a very small proportion of children from the school age related population (15-18 years old) was enrolled in secondary education between 2007 and 2012. The NER increased by only 2.5% between in that period. The NER of 13.1% achieved in 2012 was much lower than the NEP 2014 target of 25.5%. Conversely, GER increased from 28.5% in 2007 to reach a high of 29.7% in 2012. On the whole, GER increased by 3.1%, which was higher than the growth of NER. This data shows that while there was a small increase in the enrolment of 15 – 18 year olds and in the enrolment of underage and overage students, the enrolment of the latter cohort was more than the former cohort of students. Overall, secondary education access and participation indicators were very poor. This poor performance resulted from years of suppressed expansion of secondary education.

Flexible, Open and Distance Education

Flexible, Open and Distance Education Coverage

Access to, and participation in, Flexible, Open and Distance Education (FODE) is severely restricted due to poor coverage. The number of FODE centers has not increased over the years to meet the growing demand for distance education. Currently, there are 22 provincial centers, 50 registered study centers, and 42 correspondence study centers. These facilities are not only inadequate they are also ill equipped to meet the high demand for this form of education.

Student Enrolment

The total student enrolment in 2014 is about 23,000 students. Females comprise 50% of the total student enrolment. Subject based enrolment is about 55,000 students. Many students are registered for more than one subject. There is a big demand for FODE which is likely to see a big increase in student enrolment in the near future.

Number of Tutors

FODE has very few tutors who are expected to provide tutorial support to thousands of students and, at the same time, assess their assessable tasks. There is a serious shortage of tutors. Recruitment of additional tutors is critical to the delivery of FODE yet it continues to be a major challenge for the management. This situation should be addressed with some urgency to ensure a full complement of staff to consistently deliver a quality FODE to all students.

Technical Vocational Education and Training

Technical Vocational Education and Training Coverage

Technical Vocational Education and Training (TVET) coverage is generally poor. In addition, available colleges and centers have a severe shortage of space to meet the demand for TVET. Many of these facilities are located in places where they are not accessible by the majority of Papua New Guineans, especially those who live in the districts and in very remote locations. Both coverage and absorptive capacity should be targeted for expansion to enable TVET to be more widely available and accessible by all Papua New Guineans who desire this form of education and training.

The number of TVET colleges and centers has hardly increased over the years. Currently there are five technical colleges, two business colleges and one polytechnic. The number of vocational centers declined between 2007 and 2008 and increased to peak at 132 centers in 2009 before experiencing a big decline between 2009 and 2012. There was a decrease of 8 vocational centers between 2009 and 2012. The capacity of TVET to enroll more students is restrained by its lack of expansion. This issue is being considered by the government with a view to establishing at least one TVET college in each district of PNG. Moreover, the private providers have seized the opportunity to fill in the access gap by providing school leavers with much needed education and training. A number of government agencies and members of Parliament are also expending development funds to pay for TVET for their constituents. These efforts are largely uncoordinated and unlinked to the manpower needs of PNG. As such, those who participate in these programs may not secure gainful employment at the end of their studies.

Student Enrolment

Available data shows that student enrolment in Technical Education and Training (TET) expanded from 5,082 in 2011 to peak at 5,396 students in 2012 but declined rapidly between 2012 and 2013 to reach a low of 5,025 students. Overall, student enrolment decreased by 371 students or 6.9% between 2011 and 2013. Proportionately fewer students have access to TET than the number of students leaving grade 12 every year. On the other hand, Vocational Education and Training (VET) student enrolment increased substantially from 15,917 in 2007 to reach a high of 27,874 students in 2012. In total, student enrolment increased by 11,957 students between 2007 and 2012. Comparatively, there were more students enrolled in VET than there were in TET.

Number of Lecturers and Instructors

The approved total number of positions for TET for 2013 was 348. However, only 297 (85.3%) of the positions were filled. This data indicates a shortage of lecturers to fill all positions. It is essential that all colleges are fully staffed with well qualified and experienced lecturers to effectively teach all courses. In contrast, the number of VET instructors increased from 848 in 2007 to 1,174 in 2012. Overall, the number of instructors grew by 326 between in that period. Nonetheless, more instructors are still needed to achieve a Pupil to Teacher Ratio of 18:1.

Adult and Out-Of-School Youth Education

Adult and Out-of-School Youth Education Coverage

Provision of adult and out-of-school youth education is sporadic because it is often targeted at the education needs of a specific group of beneficiaries. Education and training programs provided were often uncoordinated and poorly supported with essential resources, including an adequate level of funding. As such, it is not provided in a systematic and coordinated way resulting in poor coverage. Data from the literature review shows that there were 640 adult and out-of-school youth literacy sites in PNG. Most of these sites were owned and operated by different Faith-Based Organizations. The number of sites varied markedly from province to province and region to region with the highest number recorded in the highlands provinces. This indicates a disparity in the

provision of adult and out-of-school youth education, which is a major contributing factor to poor coverage.

Student Enrolment

Many adults and out-of-school youth have never attended school or received some form of education in their life time. Data indicates that the older the Papua New Guineans the more likely that they have never attended school. The percentage of Papua New Guineans missing out on schooling increases with age. About 49% of Papua New Guineans 45 years of age and above never attended school. This cohort is followed by 35-44 year olds (28.5%), 25-34 year olds (24.2%), 18-24 year olds (15.9%), and 15-17 year olds (11.8%).

Evidence from interviews with relevant personnel and from a written submission by the National Literacy Awareness Secretariat indicates that demand for adult and out-of-school youth education is more likely to increase in the near future. Many more from this population will seek access to literacy programs to boost their own capacity to function on a daily basis and to make an honest living.

Trends and patterns of retention in education and training

Analysis of retention indicators provided some valuable insights into the retention trends and patterns, especially at the elementary, primary, and secondary levels of education, and the overall efficiency of the NES and its sub levels of education.

Elementary Education

While enrolments have increased steadily between 2007 and 2012, student retention had deteriorated during this period. Many children were dropping out of school before the final grade of elementary education. This downward trend is more likely to continue if measures are not taken to reverse it. Conversely, the completion rate increased from 2007 to 2012. These data indicates that while many students were dropping out, surviving students were able to complete the full cycle of basic education.

Primary Education

There was a gradual increase in the retention rate between 2007 and 2012. The retention rate increased from 58% in 2007 to 85.9% in 2012, an increase of 28%. By 2012 there were fewer students dropping out of school than there were students in school. The completion rate increased from 45% in 2007 to 62% in 2012. On the whole, completion rate increased by 17% in that period. The number of students completing the basic education cycle increased as a result of a corresponding decline in the number of students dropping out of school. Yet, it is unlikely that many of these students will secure placements at the secondary school level due mainly to poor coverage and absorptive capacity, poor academic performance.

Secondary Education

The retention rates for both the lower and the upper secondary levels of education were inconsistent between 2007 and 2012. The lower secondary retention rate increased from 89.6% in 2007 to 96.1% in 2012, an increase of 12.8%. In contrast, the upper secondary retention rate increased from 80.8% in 2007 to peak at 100.7% in 2010 before deteriorating rapidly to reach a low of 84.7% in 2012. In sum, the upper secondary education retention rate declined by 16% between 2007 and 2012. This data shows that comparatively, there were more students retained at the lower secondary level than there were students at the upper secondary level.

The completion rates for both the lower and the upper secondary education levels were really poor. Over two thirds of students who enrolled in secondary education never completed grade 10 and grade 12 between 2007 and 2012.

Flexible, Open and Distance Education

Data on student retention is not available for analysis. This data should be collected regularly to measure the extent of student retention and wastage in FODE.

Technical Vocational Education and Training

Data on student retention is not available for analysis. This data should be collected regularly by the Department of Education (DoE) to measure the extent of student retention and wastage.

Adult and Out-of-School Youth Education

Data on student retention is not available for analysis. This data should be collected regularly by NLAS and its key partners to measure the extent of student retention and wastage. Nonetheless, it was deduced from a submission by NLAS that retention of participants continues to be a major challenge. Many participants drop out and fail to complete their programs. This not only underscores the inefficiency of adult and out-of-school youth education but also the persistence of illiteracy and its long term effects.

Trends and patterns of quality in education and training

Analysis of quality of education indicators, especially the Pass Mark, revealed a severe deterioration of quality of education across all education levels of the NES. The quality of student learning in elementary and primary education has reverted to levels never seen in PNG's history of formal schooling. Students leave school at the same or worse level of literacy than they entered each level of education with. Adult and out-of-school youth literacy levels were worse than originally thought.

Elementary Education

There is no pass mark data available to analyze student academic performance. However, anecdotal evidence suggests that the quality of learning has not only deteriorated rapidly over the years, it has regressed to levels unseen in PNG. Students are essentially illiterate when they complete the elementary school cycle. The pupil to teacher ratio increased gradually between 2007 and 2012. It was 33:1 in 2007 increasing rapidly to 49.2:1 in 2012. This was much higher than the NEP 2014 projected pupil to teacher ratio of 34.4:1. The massive increase in student enrolment in the same period put a lot of pressure on schools to adequately accommodate them and, simultaneously, ensure that they received a quality education.

Primary Education

Analysis of quality of education trends show that more than 80% of children attending primary school were illiterate. In terms of literacy and numeracy, 82% of students assessed in literacy and 64% of students assessed in numeracy performed well below satisfactory and expected levels. Moreover, students' performances in the grade 8 Certificate of Basic Education Examination, except for the General Subjects, since 2008 were below the pass mark of 25 and much lower than the national pass mark of 80 points. Consequently, provinces had to reduce the latter pass mark to get the quota of students required to fill in grade 9 places in secondary schools. These results point to a serious deterioration in the quality of education at the primary school level.

Pupil to teacher ratio increased rapidly from 33.7:1 in 2007 to 37.1:1 in 2012. This ratio was on par with the NEP 2014 target of 37:1. This means that the national target has been achieved. However, this has not been translated into quality learning outcomes.

Secondary Education

An analysis of students' performances on the grade 10 national examination since 2007 shows that the majority of students consistently performed below the average pass mark. Furthermore, a literacy assessment of grade 12 students in five provinces show that less than 20% of students were classified as literate. These results are alarming and are consistent with anecdotal evidence from a wide section of PNG citizens.

Pupil to teacher ratio increased from 25.4:1 in 2007 to 29.1:1 in 2012. Overall, pupil to teacher ratio increased by 4.7% in that period. The 2012 pupil to teacher ratio was slightly higher than the NEP 2014 target of 26:1. Nonetheless, this ratio was still conducive for effective teaching and quality learning.

Flexible, Open and Distance Education

Interviews with FODE management and tutors revealed that the majority of students struggled to understand the subject content and, therefore, could not complete their assessable tasks to satisfactory or expected standards.

Moreover, the quality of assessable tasks was often poor due to students' difficulty in reading and understanding English, poor writing skills, and poor research and analytical skills. Additional resources such as tutors, library books, computers, and relevant learning materials were not often available to enhance their learning.

Technical Vocational Education and Training

The student to teacher ratio for TET was 17.1:1 in 2011 and 18.3:1 in 2012 but decreased to 16.9:1 in 2013. Overall, student to teacher ratio increased by 1.4% between 2011 and 2013. This ratio was quite high compared to the NEP 2014 target of 15:1. This could have impact negatively on the quality of teaching and learning.

Adult and Out-of-School Youth Education

The current national literacy rate is 56.06%. The target for PNG is to achieve 70% literacy by 2015. Research has consistently shown that adult and out-of-school youth literacy levels were worse than portrayed by the National Statistics Office. One study found that less than 25% of adults and out-of-school youth were able to read and write. In addition, there were marked differences across the provinces with 15% being the lowest literacy rate.

Trends and patterns in equity in education and training

PNG had committed itself to fully attain the MDG of gender equality by 2015. An analysis of gender parity indicators shows that PNG has a long way to go before it can fully achieve this goal. Gender parity gaps are very visible and widening across nearly all education levels. Efforts to close these gaps have either been ineffective or inconsistent resulting in a big variation in the representation of girls across all levels of education.

Elementary Education

Gender Parity Index (GPI) shows that the ratio of girls increased from 0.95 in 2007 to 0.97 in 2012. This means that gender parity gap is closing and close to an equal number of boys and girls were enrolled in elementary education in 2012. Educational opportunities were increasingly becoming more equitable at this level of education.

Primary Education

GPI shows a visible disparity gap between the girls and the boys. GPI fell from 0.87 in 2007 to 0.85 in 2008 and increased slightly to 0.86 in 2009 and leveled off between 2009 and 2012. The proportion of girls enrolled in primary school remained stagnant between 2009 and 2012. Generally, girls still lagged behind boys in their access to, and participation in, primary education.

Secondary Education

There was a considerable deterioration of the GPI from 0.77 in 2007 to 0.71 in 2009 before recovering to reach 0.74 in 2012. GPI dropped by 3% between 2007 and 2012. This data indicates a significant decline in the representation of girls in secondary education since 2007. However, there was a gradual upward trend in the representation of girls between 2011 and 2012. Hopefully, this trend will continue.

Flexible, Open and Distance Education

There were an equal number of boys and girls undertaking FODE courses. The challenge is to sustain this equilibrium.

Technical Vocational Education and Training

Male and female gender parity trends revealed that the enrolment of females in TET remained very much stagnant while the enrolment of males expanded between 2011 and 2012 but deteriorated in 2013. Proportionately, there were twice as many males than there were females enrolled in TET colleges.

Adult and Out-of-School Youth Education

The pattern of females who never attended school is consistent with the overall national pattern. The older the females were the more likely that they have never attended school. It is more likely that most, if not all, females who did not attend school were illiterate. The pattern of females who were able to read and write was consistent with the pattern of females who never attended school. Proportionately, the functional literacy rate of older

females who never attended school was much lower than that of younger females who never attended school. This means that the older the females the more illiterate they were.

Trends and patterns in education governance and management

An analysis of management trends show that generally the NES is poorly managed resulting in the non attainment of desired education outcomes. While there is some improvement in the access, participation, and equity indicators, there has been a serious decline in the retention and quality of education indicators. What is more, there is a lot of wastage in the NES and the quality of learning has regressed dramatically to levels never seen before. A lot of policies, two education plans, and a plethora of programs have been developed to boost access and participation, and the quality of learning. These efforts have unfortunately not delivered the desired outcomes. Poor understanding and ineffective performance of governance roles and responsibilities, poor coordination and oversight, poor implementation and monitoring of performance and for results, and a declining operational budget are some of the contributing factors to the poor performance of the NES.

Proposed Interventions and Strategies

The following overarching strategies are recommended to further boost access and the participation of especially children from the school age related populations, and improve the quality of learning outcomes. Education level-based strategies are provided in the last part of this report.

Education goals, targets, and strategies

- Recast education goals and targets – Set clear, achievable, and measurable education goals and targets based on evidence.
- Develop cost effective, holistic, multi-outcome, multi-stakeholder, multi-level, and implementable strategies for addressing and mitigating barriers, improving performance, and ensuring meaningful and positive progress towards realizing desired results.

Access and participation

- Expand education coverage across all levels of education, especially post primary levels, using innovative approaches such as the application of ICT education platforms, boarding schools for 6 to 18 year olds, FODE, and television and radio.
- Provide an inclusive, equitable, and barrier-free education and training at all levels and to all children, youth, and adults regardless of their gender, backgrounds, or circumstances.
- Ensure the admission of all 6 year olds and the enrolment of all children from the school age related population (6-18 year olds).
- Ensure the viability and the utilization of existing alternative pathways of education and explore the development of other pathways to provide all school aged children, adults, and out-of-school youth increased opportunities to enroll and complete a full cycle of education, vocational education and training, or both.

Education system efficiency

- Eliminate wastage by improving retention and completion rates across all levels of education.
- An environment conducive for effective teaching and quality learning should be created and fostered by all stakeholders to enable all children to meaningfully participate and remain in school to complete a full cycle of education.

Quality of education

- Develop, implement, and monitor a relevant curriculum to ensure the acquisition of required knowledge, skills, and values.
- Develop and implement a '*Teacher Education and Training Quality Assurance and Accountability Standards Framework'*.
- Develop and implement a '*Performance Monitoring and Accountability Framework'* for teachers, lecturers, tutors, and instructors.
- Provide sustainable school or cluster-based teacher professional learning at all levels of the NES.
- Empower head teachers and principals to manage and monitor education standards at the school level.

Governance and management

- Ensure clarity, understanding, and effective performance of roles and responsibilities of governments at the national and sub-national levels.
- Resolve issues relating to the interface between DoE and the provinces to allow DoE to have oversight of education delivery performance of provinces.
- Improve policy, planning, and program implementation, monitoring, and reporting at all levels.
- Foster and sustain partnerships between all stakeholders involved in the delivery of education.
- Develop, implement, and monitor a '*National Infrastructure Development Plan'*.
- Ensure a sustainable '*Tuition Fee Free Education Policy'* by making it cost-effective, affordable, transparent, accountable, and equitable.
- Legislate for '*Free and Compulsory Basic Education'* up to grade 12.
- Improve data collection, management, and dissemination at the national and decentralized levels.
- Provide adequate levels of funding to especially TVET, FODE, and Adult and Out-of-School Youth Education to develop and implement their programs on a sustainable basis.

OVERVIEW OF THE NATIONAL EDUCATION SYSTEM

Introduction

This section provides the contexts of PNG's NES to present a platform for understanding PNG's education proprieties and goals, the development and the implementation of enabling policies, plans, and programs, the performance of the NES in relation to global and national education goals and targets, and the state of progress towards the achievement of access, retention, quality, equity, and management outcomes. The main achievements and the challenges that lay ahead are also discussed to put into perspective the milestones that have been accomplished and the additional efforts that will be required to build on the gains and make further progress towards the attainment of national education goals and targets.

Department of Education Mandate

DoE is mandated by the government to ensure that all Papua New Guineans have access to and receive a relevant education of good quality regardless of their backgrounds. Its primary role is to lead, coordinate, manage, and monitor the implementation of government policies and plans to ensure that the education outcomes embedded in these frameworks are effectively and efficiently realized. This mandate is expressed in the National Executive Council's fivefold mission for the department.

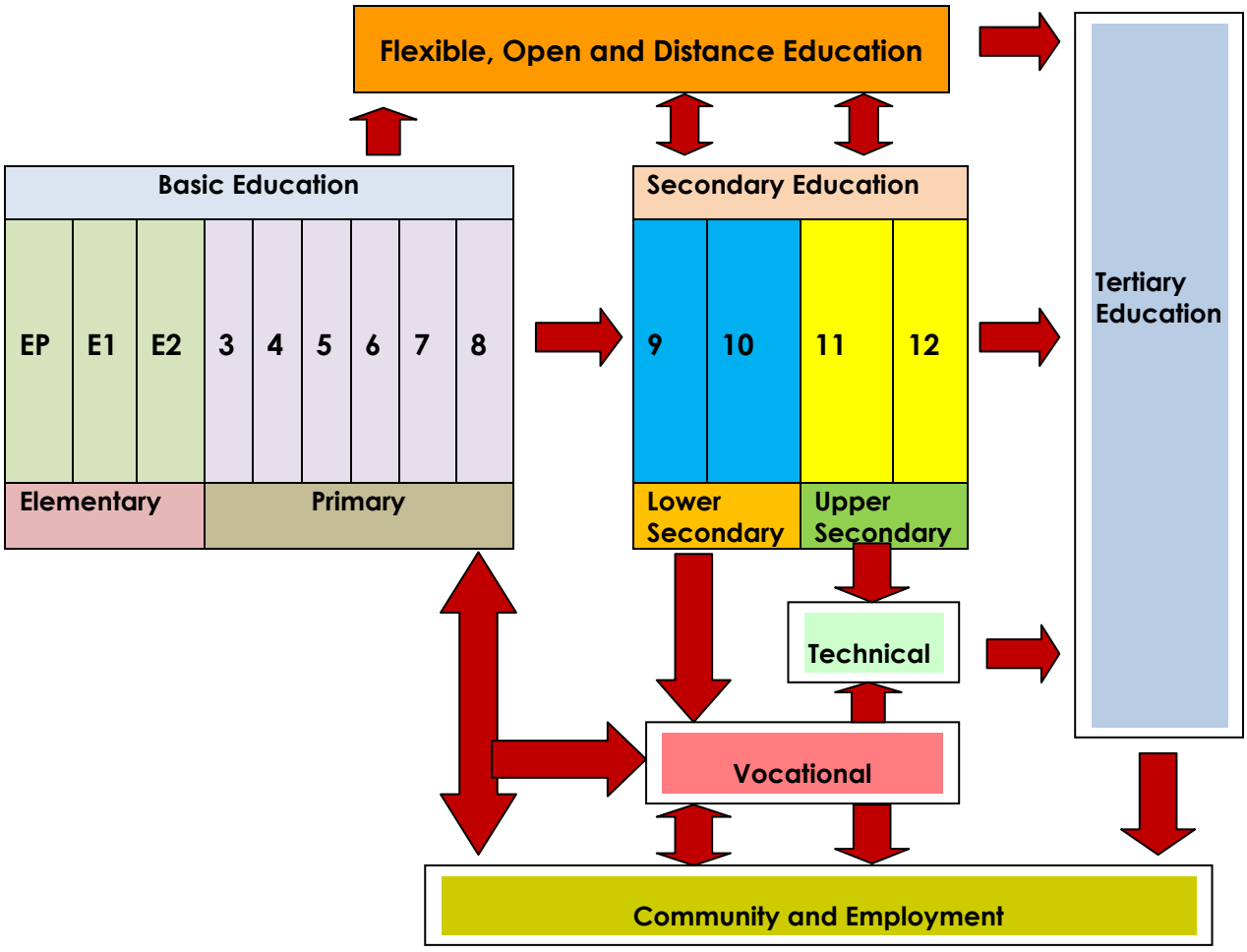
- To facilitate and promote the integral development of every individual.
- To develop and encourage an education system which satisfies the requirements of Papua New Guinea and its people.
- To establish, preserve, and improve standards of education throughout Papua New Guinea.
- To make the benefits of such education available as widely as possible to all of the people.
- To make education accessible to the poor and physically, mentally and socially handicapped as well as to those who are educationally disadvantaged.

Current National Education System (NES) Structure

The current structure emanated from the 1991 review of the NES. It was recommended as a strategy to expand the absorptive capacity of the system to enable more Papua New Guineans to have access to appropriate education and training, and to provide them with clear pathways to pursue and realize their education goals.

The NES current structure comprises of 3 years of elementary education, 6 years of primary education, and two years of lower and two years of upper secondary education. Terminal examinations are held at the end of grades 8, 10, and 12. Students with good grades in grades 8 and 10 transit to grades 9 and 11 while those with good grades in grade 12 progress to post-secondary institutions. Those who do not do well are given an opportunity to enroll in a vocational school or a FODE center.

Figure 1: Current National Education System Structure



Source: A National Plan For Education 2005 - 2014

The NES structure provides extended educational opportunities for all Papua New Guineans and a progressive pathway for attaining a higher education qualification. Yet, apart from basic and secondary education, not much is known about the actual number of Papua New Guineans who access and complete their education using these pathways. The efficiency of the NES would be better understood if clear, measureable indicators are developed for each level of education and data is collected, analyzed, and reported on an annual basis.

Education Priorities, Goals and Targets

The education priorities and goals of PNG remained consistent since the colonial era. These have and continue to be shaped by global education priorities and goals such as the Education for all Goals (EFAG) and the Millennium Development Goals (MDG), PNG's own socio-economic circumstances, and, on a regular basis, from uninformed politically driven policies.

It was the aim of the colonial administration to provide a primary and a vocational education to all indigenous Papua New Guineans however, as noted by Kukari (1992), the administration was not fully committed to these goals and, as a result, did not fully achieve them before independence. These same priorities and goals were adopted and pursued by successive governments since independence. The government's commitment towards this education agenda is very visible in the Five National Goals and Directive Principles contained in the Preamble of the PNG National Constitution. These have featured prominently in many government policies and plans as well. More recently, these education priorities have been included in PNG Vision 2050, PNG Strategic Plan 2030, and the Medium Term Development Strategy 2015. The importance of these education priorities was reaffirmed by the then Prime Minister of PNG, Rt. Hon. Michael Thomas Somare, in his prelude to PNG Vision 2050. He said, 'Our Vision 2050 provides every man, women, boy, and girl in this nation with the opportunity for personal development and positive engagement. As a government we are convinced that we must empower our people with the right education and life-skills, and provide them with the opportunity to earn an honest living. Only then can we guarantee our nation's continued

prosperity and security" (Somare cited in Government of Papua New Guinea, 2009 p.viii).

Nevertheless, priorities for education shifted after independence from a focus on both Universal Primary Education (UPE) and vocational education to a focus on mainly UPE, relegating vocational and technical education to second on the list of education priorities. Flexible, Open and Distance Education and Adult and Out-of-School Youth Education continue to be given less priority. The GoPNG prioritized UPE over other education sectors because it wants all Papua New Guineans to have access to and complete at least a basic education, and acquire the minimum required knowledge and skills to enable them to effectively function in society. Moreover, this was a more viable policy option given PNG's socio-economic constraints. Thus, UPE continues to be the GoPNG's number one education priority and the main focus of its education policy development and planning, and resource allocation.

The first and the current National Education Plans focused mainly on achieving the goal of UPE. Commitment of the government towards the goal of UPE was evidenced in its name change to Universal Basic Education (UBE) in 2009 and the development of the first UBE plan (Universal Basic Education Plan 2010-2019). The name change underpins PNG's approach to UBE and how best it can provide universal access to education to all Papua New Guineans. A number of core indicators for measuring progress and the target dates for their achievements were developed and implemented since independence. However, as noted by Avalos (1993) and Webster (1993) the dates for achieving these have continuously been shifted over the decades resulting in mixed progress being made towards their full attainment. While some positive gains have been made in expanding access and in increasing student enrolments over the last two decades, more effort is still required to get all school aged children to go to school, to retain them in school and enable them to complete a full cycle of basic education, and, more significantly, to provide them with an education of good quality.

Comparatively, PNG still lags behind other countries, particularly countries in the South Pacific and those with similar socio-economic characteristics, in attaining key access, retention, quality, and equity targets, and will not achieve any of the EFAG and MDG by the target date of 2015 (EFAG Global Monitoring Report, 2006).

In pursing the goal of UBE, the GoPNG has and continues to suppress and hinder the full development of TVET and FODE in the country as alternative pathways of education. In so doing, the government has denied many PNG citizens the opportunity to get an education and appropriate training to enable them to contribute meaningfully to community and national development and, at the same time, improve the quality of their lives. The following are the education priorities, goals, and targets that PNG has made a commitment towards achieving.

Table 1: Education priorities, goals, and targets

Priority	Goal	Target	Target Date
Universal Primary Education	Achieve Universal Primary Education	To ensure that by 2015 all boys and girls will be able to complete a full cycle of primary education	2015
	Promote gender equality and empower women	Eliminate gender disparities in education by 2005	2005
Technical, Vocational Education and Training	Learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programs	To ensure that by 2050 at least 20% of all grade 12 leavers will be able to complete a program in Technical, Vocational Education and Training	2050
Flexible, Open and Distance Education	Improve access to Flexible, Open and Distance Education		
Adult and Out-of-School Youth Education	Achieve a 50 percent improvement in levels of adult literacy by 2015	To ensure that adult literacy rates are improved by 50% by 2015	2015

PNG has devised its own education targets that it can work towards attaining by the target dates given in table 1 based on its own socio-economic circumstances. These targets are devised for each of the core education indicators for ease of tracking and measuring progress. Nevertheless, indicators have been developed for UBE only. Indicators have not yet been developed for the rest of the priority areas of education. Monitoring of performance and reporting of progress in these areas have been difficult owing to the non existence of good, measureable indicators.

There are a lot of inconsistencies in the education targets to be achieved. There is no agreement between government departments and agencies on the education targets to be attained. This has contributed towards a lack of a coordinated effort towards the provision of education in PNG. Poor coordination amongst government departments has been and continues to be one of the main contributing factors to poor progress towards the full attainment of education targets in PNG. However, for this situational analysis, the targets given in the national education plans will be used as the basis for analyzing PNG's performance over the last decade. The indicators for UBE and Adult and Out-of-School Youth are presented in table 2.

Table 2: Education Goals, Indicators, and Targets

Education Priority	Goal	Indicator	Target	Target Date
Universal Basic Education	Achieve Universal Basic Education	Net Admission Ratio Gross Admission Ratio Net Enrolment Rate Gross Enrolment Rate Retention Rate Completion Rate Pupil to Teacher Ratio Qualified Teachers Gender Parity	100% 100% 100% 96% 77.5% 100% 35:1 100% 1:1	2019
Adult and Out-of-School Youth	Achieve 70% Adult Literacy	Adult Literacy Rate	70%	2015

*UBE Targets are those projected in the Universal Basic Education Plan, 2010-2019

The above education targets demonstrate the emphasis of the GoPNG in education, which is to make basic education universally available. This is a deliberate policy choice to enable all Papua New Guineans to complete at least a basic education. This is at the expense of Technical Vocational Education and Training (TVET), Flexible, Open and Distance Education (FODE), and Adult and Out-of-School Youth Education. This is one reason why there are no clear and measurable targets for these sectors of education. Whilst there are compelling reasons for this education focus, the problems created by this

monolithic approach are increasingly becoming visible and require a critically rethink of education priorities and the way they are implemented.

Contexts of Education

Efforts to increase access, improve retention, and improve the quality of education have been driven by a number of important policies and programs. These initiatives have been developed by PNG in collaboration with many key stakeholders. The initial but important step towards reforming the PNG education system was the development of a new philosophy of education. This philosophy was formulated and embraced in 1986 as the catalyst for education thinking, dialogue, policy development and planning, and practice. The new philosophy of education, known as the Matane Report, is premised on the notion of 'integral human development'. It has permeated and influenced education planning, policy development, and practice since its acceptance. However, its translation into practice has been and continues to be difficult. Key access, retention, and quality indicators were poor as a result and there was no clear direction on how these were to be improved.

The first major structural and curriculum reforms emanated from the 1991 education sector review. The review was undertaken owing to serious concerns about the lack of access for the majority of school aged children to education, poor student retention rates, and poor student learning outcomes due to an irrelevant curriculum. The aims of the review were (a) to examine the causal factors underlying the poor state of education in PNG and (b) to recommend appropriate strategies to improve the NES. The review recommended both structural and curriculum reforms to the education system to address its underlying problems, particularly poor access and retention of children in school, and poor student learning outcomes. The aim of the structural reform was to increase access and retention by increasing education coverage and the absorptive capacity of the education system by relocating grades 7 and 8 from high schools to community schools and introducing elementary schools. The aim of the curriculum reform was to make curriculum more relevant by providing a curriculum that was more closely linked to children's cultures and that will prepare them to go back to their communities as well as for further education and employment.

A number of enabling education policies and plans have been developed and implemented with the goal of making education universally available to all Papua New Guineans. These included the provincial education plans, School Learning Improvement Plans, Student Behaviour Management Policy, Gender Equity in Education Policy, Special Education Plan, Language Policy, Literacy Policy, and TVET Strategic Plan. These frameworks were meant to help increase access, improve retention, and ensure that a good quality of education is provided to all children.

The most notable are the National Education Plan 1995-2004, National Education Plan 2005-2014, and the Universal Education Plan 2010-2019. Two related programs were developed to provide the vehicle for achieving the NEP aims and targets. The first was '*The Education Access and Expansion Program'*, which was aimed at providing basic education for all children. The second program was '*The Relevant Education for All Program',* which was aimed at developing an education system that will meet the needs of PNG and its people, and provide appropriately for the return of children to their communities, for formal employment, or for further education and training.

Donor funded programs have also been implemented, in collaboration with the GoPNG, to support national education priorities, programs, and outcomes. These included the Primary and Secondary Teacher Education Project, the Curriculum Reform and Implementation Project, PNG School Journal Project, Basic Education Infrastructure and Curriculum Materials Project, Basic Education Capacity Building, Textbook Procurement and Distribution, and the Institutional Strengthening Project.

A more recent but more significant policy introduced and implemented by the government is the TFFE Policy. This policy sees the abolishment of school fees, particularly for the basic level of education, and the subsidization of fees for post basic education institutions, except universities. The aim of this policy is to increase access to the different levels of education. However, it is increasing evident that the quality of education is being compromised. To attain the desired access, retention, and quality of education targets, equal emphasis should be given in addressing the impediments of achieving these outcomes, particularly the outcomes relating to the quality of learning.

Enabling Whole of Government Policy Interventions and Reforms

Reforming the education system and implementing enabling policies and programs are insufficient to enable PNG to make measured and sustained progress towards the attainment of its education goals and targets. It requires corresponding reforms in governance structures, provision of critical resources, including finance and infrastructure, and effective delivery of basic education services. A number of critical reforms have been made in these areas. These reforms have contributed towards the achievement of intended access, retention, equity, quality, and the management of education outcomes.

The introduction of the revised Organic Law on Provincial and Local Level Governments in 1995 saw a number of responsibilities over education devolved to provinces while ensuring that there is clarity and a clear demarcation between national and sub-national governments' education roles and responsibilities. Changes were made in the area of resource allocation, with provincial and local level governments being the principle recipients of funds for the provision of education services. Changes were also made in the education functions of national, provincial, and local level governments, enabling the lower levels of government to play a greater role in the provision and management of education. This was further strengthened through reforms in the mechanisms for delivering basic services such as the *Determination Assigning Service Delivery Functions and Responsibilities to Provincial and Local-Level Governments, 2009* and *the Minimum Priority Areas.*

Reforms were also made to the way basic services, including education, were funded by the GoPNG from block grants, internal revenues, Goods and Services Tax transfers by the national government, Special Support Grants from mineral resources, and functional grants to a more equitable distribution of funds based on the development and fiscal needs of provinces (National Economic and Fiscal Commission, 2010). This shift in the appropriation of funds to provinces allows provinces to be allocated an annual budget based on their development needs rather than based solely on their populations. However, according to the National Economic and Fiscal Commission (2013), cashed up provinces were not spending their funds on basic service priority areas but on administration. This lack of focus and concentration on the delivery of basic services has not only created

ongoing funding gaps but have also denied the people from receiving much needed services. Poor spending choices, misplaced priorities, and poor judgment have resulted in not only poor basic service delivery, but also in systematic failures in the achievement of national development goals and aspirations. This trend in public expenditure is more likely to continue unless those charged with managing and expending public funds are compelled to comply with financial laws, guidelines, and procedures, and held accountable for their decision-making and actions.

A further intervention by the GoPNG to improve the development status of provinces and the districts, and the livelihood of its citizens was the introduction of District Services Improvement Program (DSIP) in 2007. The government allocated K500,000.00 to each of the 89 districts since 2007 to help fund their development priorities, particularly the delivery of basic education, basic health, law and order, and infrastructure. DSIP appropriations were increased to K10 million in 2013. In the same year, the government introduced the Provincial Service Improvement Program (PSIP) and Local Level Government Service Improvement Program (LLGSIP). The provinces were allocated K5 million per district in the province and LLGs were allocated K500,000.00 each for service delivery. These programs are targeted at improving the delivery of basic services, including education, and increasing access to enable all Papua New Guineans to access these services. According to the Department of Implementation and Rural Development (2013), 20% of these funds must be expended on the provision of education in the provinces, districts, and LLGs. This is a fixed expenditure and provinces, districts, and LLGS must comply with this directive.

Chronology of Major Interventions

A number of major interventions were made over the last two decades to improve access, retention, quality, equity and the management of the education system. These interventions have had an impact on the state of progress of education in PNG, particularly in providing increased educational opportunities for school aged children. Nevertheless, the achievement of the desired outcomes of these interventions has been mixed. This could be attributed to, amongst other factors, poor management and monitoring of the NES at the national and sub-national levels, inability of DoE to remain focused on its mandate, poor coordination at all levels of the system, and lack of

compliance of essential government policy and legislative frameworks. Furthermore, corruption is taking root in the system and is having a major consequence on the delivery of education services and the achievement of the intended education outcomes (see Kukari, Paraide, Kelep-Malpo, Mugup & Wilson, 2012). This is affecting progress and hindering the NES from being effectively managed. Unless these critical issues are effectively addressed, the enormous amount of resources allocated to the department and the time spent in developing and implementing interventions will not yield the desired results.

Table 3: Chronology of Major Interventions

Year	Intervention	Main Aims
Access and Retention		
2012	Tuition Fee Free Education Policy	• To abolish school fees and allow all school aged children to go to school.
2005	Education Subsidy Policy	• To subsidize school fees to enable more children to go to school.
	Education Access and Expansion Program	• To expand the capacity of NES to allow more children to have access to particularly basic education.
Quality		
2013	Medium of Instruction Policy	• All schools in the NES to use English as medium of instruction.
2010	National Education Media Policy	• To provide the focus and the direction for designing, developing, implementing, and managing education media programs to support the department's initiatives in making the benefits of education available to all and to improve the quality of education.
2006	School Improvement Program	• To empower school boards and communities to take ownership of their schools by working together to improve teaching and learning outcomes.
2005	National Education Skills Plan	• To promote the development of skills for living within and beyond the school.
1999	Policy for Language in Schools	• To use PNG languages as medium of instruction in elementary school, bilingual education to grade 5, and vernacular maintenance after grade 5.
1993	Curriculum Reforms (Introduction of Outcomes-Based Curriculum)	• To develop, implement, and monitor a relevant curriculum.
	Relevant Education for All Program	• To develop an education system that will meet the needs of PNG and its people, and provide appropriately for the return of children to their communities, formal employment, or for further education and training.
	Equity Interventions	
2003	Gender Equity in Education Policy	• To provide a framework for providing equitable educational opportunities for girls.

	Administration /Governance	
2011	Medium Term Development Strategy	• To provide a medium term strategy for development by clearly setting the sector strategies, targets, deliverables, and their projected estimated cost of implementation.
	TVET Strategic Management Plan	• To provide a framework for the development of TVET in PNG.
2009	Papua New Guinea Vision 2050	• To provide a strategy for guiding the socio-economic development of PNG, transform it into an emerging developing country, and place it amongst the top 50 countries in the UN HDI.
	The Determination Assigning Service Delivery Functions and Responsibilities to Provincial and LLGs	• To clearly demarcate the basic service delivery functions and responsibilities of provincial and local level governments.
2005-2014	National Education Plan	• To provide strategies for improving access, retention, and the quality of education across the whole of the education system.
2005	DoE Corporate Plan	• To provide a platform for the implementation of DoE's mandate and strategies for improving education delivery.
2005-2014	Provincial Education Plans	• To provide provincial strategies for ensuring access, retention, and quality of education for all children in the province.
2004	Special Education Plan	• To provide a framework for providing an inclusive education system that caters to the needs of children with special education needs.
1997	Provincial Education Acts	• To provide an enabling legal framework for the governance and management of the education system in the provinces.
	Cross Cutting	
2007	HIV/AIDS Policy	• To provide a policy framework for approaching and addressing HIV/AIDS in the NES.
2005	HIV/AIDS/STIs Implementation Plan	• To provide a list of activities for implementation by DoE to respond to the multiple challenges of HIV/AIDS.

Overview of Achievements

A number of interventions were made to increase access to all sectors of the NES, particularly at the basic education and TVET levels, to ensure that students, once admitted, remained to complete a full cycle of education, and acquire the minimum required knowledge, skills, and values. The focus over the last decade was to provide more opportunities for children to go to school by increasing education coverage, expanding the absorptive capacity of the NES, providing a more inclusive education, and reducing the gender parity gap between males and females. Some emphasis was placed on the provision of quality education for all, although some initiatives, such as the school of excellence, are contradictory to this fundamental belief. A major intervention, despite the controversies about its relevance to PNG, was the introduction and the implementation of the Outcomes-Based Curriculum (OBC). Notwithstanding the many

challenges faced by the NES, a number of milestones were achieved, particularly in the provision of education at the elementary, primary, and secondary levels of education. These are outlined below.

Achievements in Access

Education policies, plans, and programs developed

A number of policies, plans, and programs were developed and implemented since 2005, the year NEP 2005 – 2014 was earmarked for implementation. Eighteen of these platforms for action towards the achievement of PNG's education aspirations are listed in table 3. These were meant to expand access to education and training at all levels of education by providing inclusive and equitable educational opportunities to all PNG citizens regardless of their circumstances, creating and fostering barrier free and inclusive education environments, and mainstreaming gender, HIV/AIDS, and people with disabilities in education discourse and practice. These initiatives were also targeted at improving the quality of teaching and learning by providing quality teachers and teaching and learning resources, providing professional learning opportunities, monitoring standards, and creating and sustaining environments conducive for effective teaching and high pupil achievement. These policies, plans, and programs have contributed towards improving access however they have not had the desired impact on the quality of education.

Education coverage

The expansion of the education system was targeted at providing more opportunities for school aged children to have access to, and participate in, schooling, particularly at the basic education level, by increasing education coverage, expanding the absorptive capacity of the NES, and reducing disparities amongst males and females, and regions, provinces, and districts. Much progress has been made in achieving this goal, particularly at the elementary and primary levels of education. The following have been the main achievements since 2007:

Elementary Education Level

- An additional 1,155 or 21.6% of schools have been established. Elementary schools increased from 5,349 in 2007 to 6,505 schools in 2012 (NEP target 172 new preparatory classes).
- Student enrolment increased by nearly 100% or 371,028 students. It increased from 356,087 in 2007 to 727,115 in 2012 (NEP target 604,204).
- Teachers increased by 4,292. The number of teachers increased from 10,494 in 2007 to 14,494 teachers in 2012 (NEP target 18,673 teachers)

Primary Education Level

- Primary schools increased by 70 schools. The number of schools increased from 3,490 in 2007 to 3,560 in 2012 (NEP target 1,500 new grade 7 classes).
- Student enrolment increased by nearly 31.1% or 284,925 students. It increased from 632,140 in 2007 to 916,065 in 2012 (NEP target 765,657).
- Teachers increased by 24% or 5,896 teachers. The number of teachers increased from 18,810 in 2007 to 24,706 teachers in 2012 (NEP target 1,200 teachers college intake).

Secondary Education

- Student enrolment increased by 31% or 40,115 students. The number of students increased from 88,963 in 2007 to 111,591 students in 2012 (NEP target 103,370).
- Additional 21.1% or 935 teachers joined the secondary education sector between 2007 and 2012. The number of teachers increased from 3,508 in 2007 to 4,440 teachers in 2012 (NEP target 3,983 teachers).

Flexible, Open and Distance Education

- Current enrolment is 23,000 students.
- Female enrolment was 50% of the total student enrolment
- Subject-based enrolment is about 55,000 students.

Technical Vocational Education and Training

- Vocational Education and Training student enrolment increased by 42.9% or 11,957 students. The number of students increased from 15,917 in 2007 to 27,874 students in 2012.
- Additional 27.8% or 326 instructors joined the vocational education and training sector between 2007 and 2012. The number of instructors increased from 848 in 2007 to 1,174 teachers in 2012.

Access and Participation Indicators

Elementary Education

- NAR increased by 22% between 2007 and 2012. NAR increased from 11.5 % in 2007 to 35.5% in 2012.
- GAR increased by 41.8% between 2007 and 2012. GAR increased from 83.8% in 2007 to 125.6% in 2012.
- NER increased by 36.5%. NER increased from 31.4% in 2007 to 67.9% in 2012.
- GER increased by 41.8%. GER increased from 83.8% in 2007 to 125.6% in 2012.

Primary Education

- NER increased by 13.1%. NER increased from 37.1% in 2007 to 50.2% in 2012.
- GER increased by 18.7%. GER increased from 61.2% in 2007 to 79.9% in 2012.

Secondary Education

- Grade 10 to grade 11 TR increased by 1.6%. Grade 10 to grade 11 TR increased from 46% in 2007 to 47.6% in 2012.
- NER increased by 2.5%. NER increased from 10.6% in 2007 to 13.1% in 2012.
- GER increased by 1.2%. GER increased from 28.5% in 2007 to 29.7% in 2012.

Achievements in Education System Efficiency

Elementary Education

- CR increased by 34.6%. CR increased from 81.3% in 2007 to 115.9% in 2012.

Primary Education

- RR increased by 28.1%. RR increased from 57.8% in 2007 to 85.9% in 2012.
- Female CR increased by 16%. Female CR increased from 42% in 2007 to 58% in 2012.

Secondary Education

- Lower secondary RR increased by 6.5%. RR increased from 89.6% in 2007 to 96.1% in 2012.
- Upper secondary RR increased by 3.9%. RR increased from 80.8% in 2007 to 84.7% in 2012.
- Lower secondary CR increased by 5.3%. CR increased from 22.6% in 2007 to 27.9% in 2012.
- Upper secondary CR increased by 1%. RR increased from 9.1% in 2007 to 10.1% in 2012.

Achievements in Quality

- Phasing in of OBE across elementary, primary, and secondary education levels.
- Grade 8, grade 10, and grade 12 examinations on OBC conducted
- Procurement and distribution of textbooks.

Achievements in Equity in Education and Training

Elementary Education

- GPI increased by 0.2%. GPI expanded from 0.95 in 2007 to 0.97 in 2012. The ratio of girls and boys in elementary education was about equal.
- Female NAR increased by 22.2%. Female NAR increased from 11.3% in 2007 to 33.5% in 2012.

- Female GAR increased by 45.6%. Female GAR increased from 77% in 2002 to 122.6% in 2012.
- Female and Male GARs were about equal from 2007 to 2010. Gender goal of gender parity was achieved in that period.
- Female NER increased by 32.8%. Female NER increased from 31.5% in 2007 to 64.3% in 2012.
- Female GER increased by 41.8%. Female GER increased from 81.7% in 2007 to 123.5% in 2012.
- Female CR increased by 46.5%. Female CR increased from 70% in 2007 to 116.5% in 2012.

Primary Education

- Female NER increased by 9.8%. Female NER increased from 36.6% in 2007 to 46.4% in 2012.
- Female GER increased by 17.1%. Female GER increased from 56.7% in 2007 to 73.8% in 2012.
- Female RR increased by 29.9%. Female RR increased from 55.7% in 2007 to 85.6% in 2012.
- Female CR increased by 16%. Female CR increased from 42% in 2007 to 58% in 2012.

Secondary Education

- Female NER increased by 1.2%. Female NER increased from 9.7% in 2007 to 10.9% in 2012.
- Female GER increased by 0.7%. Female GER increased from 29.5% in 2007 to 30.2% in 2012.
- Lower secondary female RR increased by 4.9%. Female RR increased from 89.7% in 2007 to 94.6% in 2012.
- Upper secondary female RR increased by 6.7%. Female RR increased from 80.9% in 2007 to 87.6% in 2012.

- Lower secondary female CR increased by 4.3%. Female CR increased from 19.1% in 2007 to 23.4% in 2012.
- Upper secondary female CR increased by 1.1%. Female RR increased from 7.6% in 2007 to 8.7% in 2012.

Achievements in Education Management

- Developed and implemented more than 18 policies and plans.
- Implemented Tuition Fee Free Education Policy.
- Formulated the Free and Compulsory Education Policy.

ELEMENTARY EDUCATION

Introduction

Elementary education was introduced in the early 1990s and became an integral part of the NES strategy to expand education coverage and boost education access and participation of especially young children. It became the first level of formal education, comprising elementary prep and grades 1 and 2. The official entrance age to this level of education is 6 years of age. By the time children reach grade 3 they should be 8 years old. All children are expected to be admitted at the correct entrance age and complete the full elementary school cycle. This is a key education target which has been pursued since 1995 (DoE, 2009a; DoE, 2004 & DoE, 1995).

A curriculum was developed and implemented targeting the perceived learning needs of elementary school age related population (6 – 8 years). This curriculum focused mainly on literacy, numeracy, and cultural bonding. Children would learn basic mathematical concepts, language and cultural knowledge, values, and skills, and attain initial literacy in local vernacular. Vernacular will then be bridged to English. Moreover, the language of instruction was to be in a language chosen by the local community, which in most cases, was the local vernacular.

The decision to include elementary education in the NES was informed by research evidence and based on best practice relating to access and participation of young children in education, and the acquisition of initial literacy in vernacular (see Matsuura, 2008; Ope, 2013; Paraide 2008 & 2009). Nonetheless, this evidence together with the recommendations of the ESR (1991), were lost in the process of their translation into policy and practice. This resulted in poor governance and management of elementary education at all levels, poor coordination and monitoring of its operations and performance, particularly the monitoring of education standards, poor teacher education and training, a critical shortage of teaching and learning resources, and a serious deterioration in the quality of student learning (Jones, 2013; Webster, 2013).

This chapter provides an analysis of the elementary level of education by critically assessing its performance and progress made since 2007. Its performance will be analyzed using a core set of access, retention, quality, equity, and management indicators.

Access to, and Participation in, Elementary Education

Children's access to, and participation in, elementary education depends on many factors. Availability, location, and distance to and from schools have been identified as the main barriers to children's access and participation in elementary schooling. Research carried out by Guy, Paraide, Kippel and Reta (2001), Kukari, Paraide and Kippel (2009), and Paraide, Kippel, Kukari, Agigo and Irima (2010), show that the location and the distance children travel to and from school do hinder their access and participation. These barriers were revealed by the ESR (1991) as two of the main contributing factors to poor school access and sustained participation by school aged children, especially young children, including girls. The establishment of community-based elementary schools was then recommended by the ESR (1991) to mitigate the aforementioned barriers to increase demand and, at the same time, enable easy access to schools and permit children to complete the full cycle of elementary education.

The key access and participation targets for elementary education was firstly, for all 6 year olds to be admitted to elementary prep by 2012, and secondly, for all of them to remain in school and complete 3 years of elementary education (DoE, 2004; DoE, 1991). This was emphatically stated by the then Secretary for Education, Mr. Jerry Tetega, in his letter to the late Hon. Utula Samana, Minister for Education. With regards to the pending education reforms, he said "This reform is designed to immediately increase access for 6 year olds and provide initial literacy and early education in a language which the child speaks" (DoE 1991, p.1) In order to pursue these targets, a number of strategies were developed and implemented under the "Access Expansion Program", which included the use of multi-grade teaching.

Nonetheless, not much progress has been made since 1991 towards the full attainment of the above targets. By the end of 2014, PNG would have had 10 years of education planning and action towards the full attainment of elementary education access and

participation targets. Yet, PNG has failed to provide access to all 6 year olds to basic education and enable them to complete at least grade 3 by its target date of 2012. In 2007 only 11.5% of 6 year olds were admitted to elementary prep and only 31.4% of 6 – 8 year olds were enrolled in elementary school. The rest of the student population comprised of underage and overage children. More than three quarters of 6 year olds did not have access to the first grade of elementary education and more than two quarters of children from the school age related population (6 – 8 year olds) were not in school in 2007.

Poor performance of PNG in achieving key access and participation targets embedded in the NEP 1995 – 2004 and 2005 – 2014 could be attributed to, inter alia, poor governance and management of elementary education at all levels, inadequate and declining levels of government funding (Packer, Emmot & Hinchliff, 2009), ad hoc education policy making, diversion of funds away from original priorities, poor coordination and ineffective monitoring (Gelu, 2010; Kukari, 2012), lack of clarity and poor understanding of governance and administrative roles and responsibilities over elementary education (DoE, 2004; Kukari, 2009), non compliance of education policy (Kukari, Paraide & Kippel, 2009), provincial and district disparities in the provision of elementary education (Kukari, Reta, Michael, 2014).

The access and participation of 6 – 8 year olds in elementary education is likely to get worse if the current negative access and participation trends are allowed to persist without effective measures being taken to reverse them. The abolishment of school fees may increase demand and boost enrollments but other factors, including the above factors, must be addressed simultaneously to guarantee access and sustained participation by all children from the school age related population.

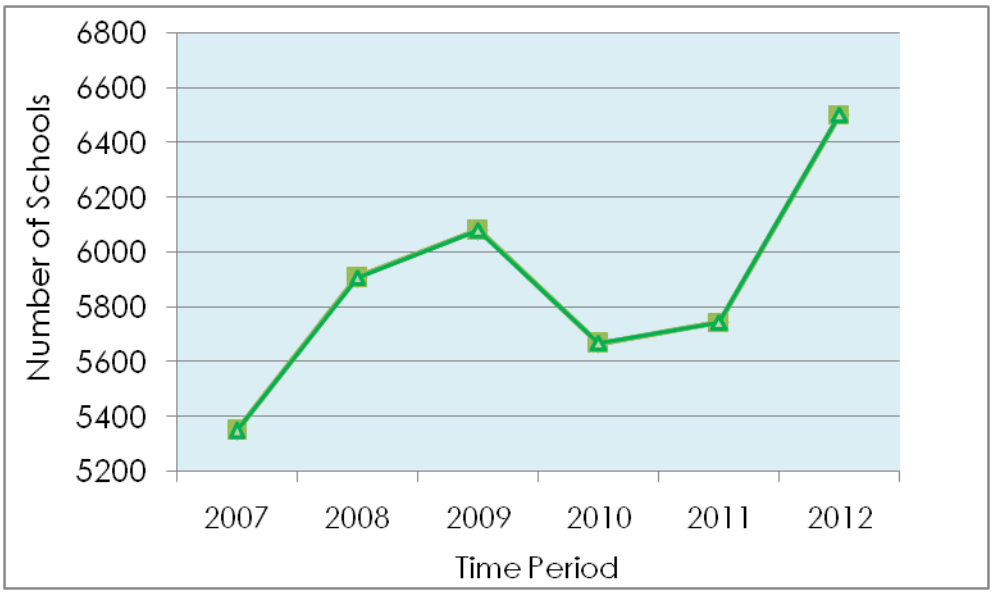
Access Indicators

The extent to which school age children have access to the elementary education will be measured using the number of schools, number of students enrolled, number of teachers, and net and gross enrolment rates. These indicators measure both the coverage and the absorptive capacity of the elementary education system.

Number of Elementary Schools

Number of schools is used to measure the absorptive capacity of the elementary education system to meet the demand for education at this level. It tends to have a direct effect on school age children's access and participation in school particularly in terms of availability of classroom space. The projected number of new preparatory classes to be provided by 2014 is 172. Figure 2 shows the total number of elementary schools in operation from 2007 to 2012.

Figure 2: Number of schools, elementary education, 2007 - 2012



Source: DoE EMIS Data, 2007 - 2012

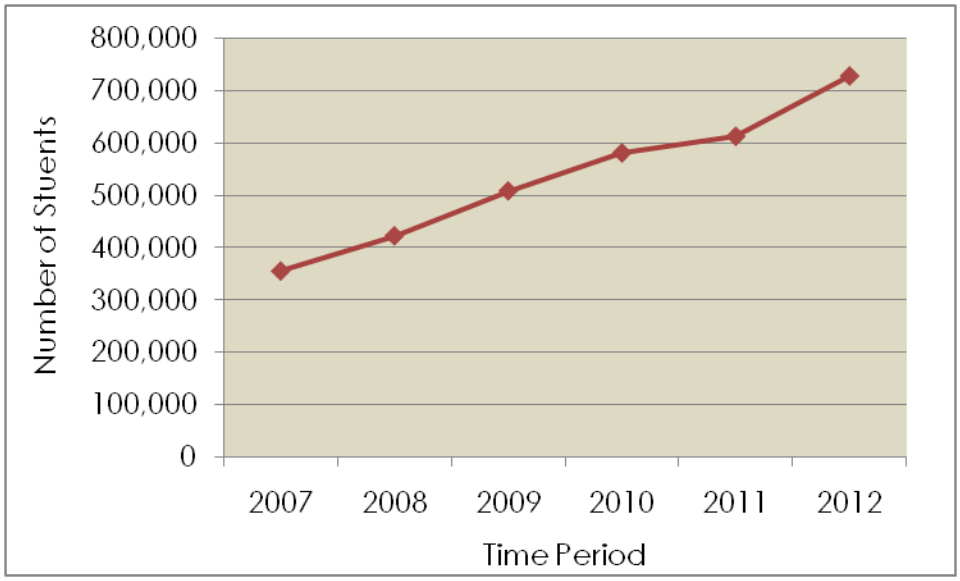
Data from figure 2 show that the number of elementary schools increased rapidly between 2007 and 2009 and then declined in 2010 but rose sharply thereafter picking at about 6,504 schools in 2012. This indicates a rapid expansion of the elementary level of education. The increase in the number of schools since 2007 has outstripped the projected target of 172 new preparatory classes. The massive increase in the number of schools could be attributed to, amongst other factors, poor administration and management of the processes of establishing new schools (DoE, 2008).

Establishment of new schools must be justified in terms of the population of 6 year olds to be captured and where these schools will be located. There must be some control of the expansion of the elementary school sector so that schools are not established without a proper needs analysis and support from the community.

Number of Students

The rapid expansion of the elementary school sector between 2007 and 2012 expanded its absorptive capacity and provided more children the opportunity to gain access to, and participate in, this level of education. The projected enrolment target given in the NEP 2005 – 2014 is 604,204 students. Student enrolment figures for 2007 - 2012 are presented in figure 3.

Figure 3: Number of students, elementary education, 2007 - 2012



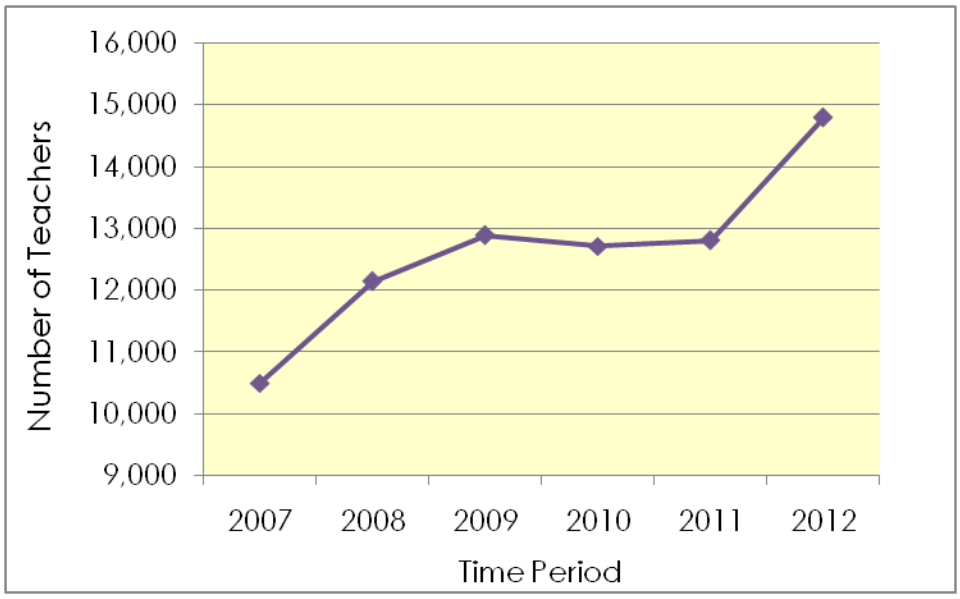
Source: DoE EMIS Data, 2007 – 2012

Student enrolment grew from 356,087 students in 2007 to 727,115 in 2012. Student enrolment increased by 371,028 students or nearly 100% in that period. This phenomenal increase in student enrolment has surpassed the projected student enrolment of 604,204 by 122,911 students. The number of students is set to increase further when 2013 and 2014 student enrolment data is analyzed. This increase in student enrolment has not only had a positive impact on PNG's progress towards the goal of UBE but shows that PNG is committed to ensuring the right of every Papua New Guinean child to education regardless of his or her background. Regardless of this positive trend in the enrolment of elementary school aged children, much remains to be done to make elementary education universally available to all children.

Number of Teachers

The number of students accessing elementary education increased substantially between 2007 and 2012. In order to adequately cater for their learning needs, teachers were literary mass educated and trained to teach at the elementary school level. The NEP 2005 – 2014 projected number of teachers is 18,673 by 2014. Figure 4 shows the number of teachers teaching at the elementary school level between 2007 and 2012.

Figure 4: Number of teachers, elementary education, 2007 - 2012



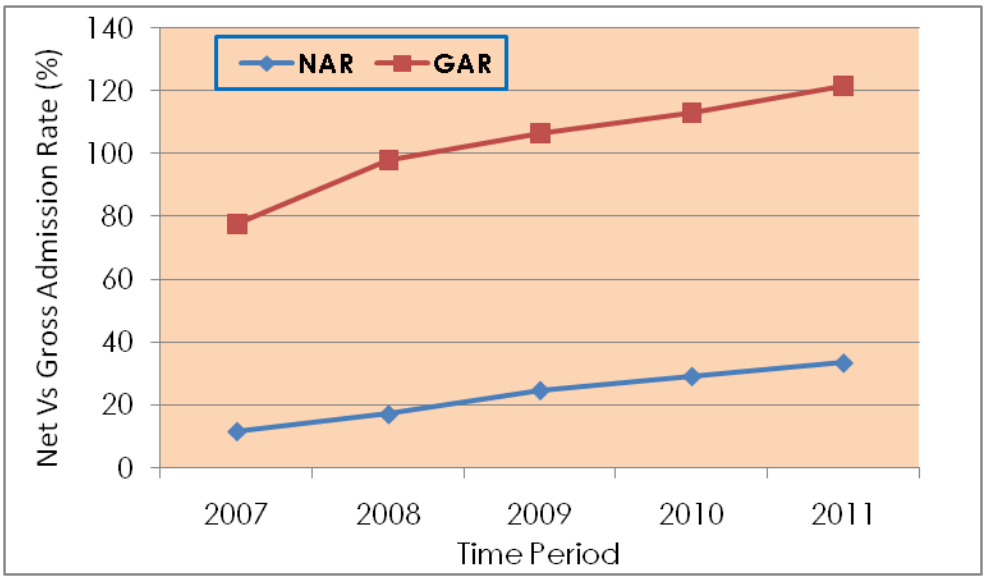
Source: DoE EMIS Data, 2007 – 2012

There was a gradual increase in the number of elementary school teachers from 2007 and 2009. The number of teachers declined in 2010 but assumed an upward trend from 2011 and peaked in 2012. By 2012 the total number of teachers teaching at the elementary school level was 14,786. This is 3,887 teachers less than the 2014 target of 18,673. Hopefully, this gap can be filled in by 2014. The education and deployment of additional teachers will hopefully reduce the PTR to nationally recommended rates and for students to be effectively taught. This measure is important for the achievement of quality education outcomes.

Net and Gross Admission Rates

NAR and GAR data are presented together to illuminate and compare their 2007 – 2011 trends, ascertain the access gap between the children of the official entrance age (6 year olds) and overage and underage children, and understand the extent of the demand for elementary education. The target according to the NEP 2005 – 2014 is for all 6 year olds to be admitted to elementary prep by 2014. The NAR and GAR 2007 – 2011 data is presented in figure 5.

Figure 5: Net and gross admission rates, elementary education, 2007 - 2011



Source: DoE EMIS Data, 2007 – 2011

Overall, analysis of student enrolment data shows that at the national level the admission of 6 year olds to elementary prep increased progressively since 2007. Nevertheless, this increase was slower than the increase in the admission of overage and underage children, which increased markedly between 2007 and 2008 and at a steady pace thereafter. The NAR increased from 11.5% in 2007 to 33.5% in 2011, an increase of 22%. Conversely, the GAR grew from 77.5% in 2007 to 121.6% in 2011, an increase of 44.1%.

Comparatively, there were more children outside of the official entrance age population admitted to elementary prep than there were children of the official entrance age. There is a visibly expanding access gap between 6 year olds and older and younger children. This is more likely due to, amongst other factors, preference being given to the enrolment of

older children and the practice of biannual intake employed by many schools (DoE, 2009b; Kukari, Paraide, & Kippel, 2009). The challenges of providing equitable access, especially to all 6 year old boys and girls, cannot be underestimated. These must be carefully ascertained and effectively addressed to enable this goal to be achieved. Nonetheless, at this stage, it is highly unlikely that PNG will achieve this target by 2014.

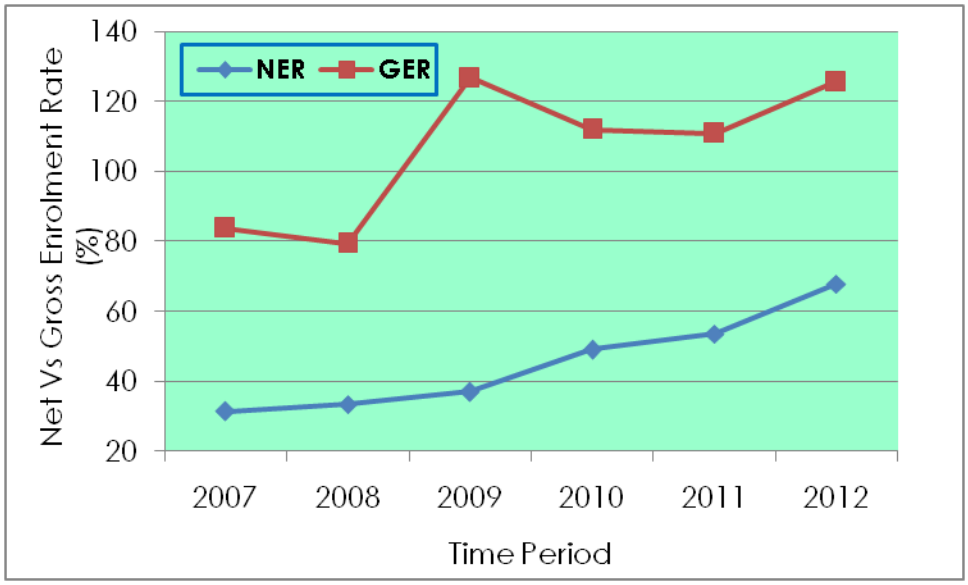
Participation Indicators

The participation of school aged children in elementary education is measured using the Net Enrolment Rate (NER) and the Gross Enrolment Rate (GER). NER measures the number of 6 – 8 year olds enrolled in elementary school whereas GER measures all children enrolled in elementary school regardless of their age.

Net and Gross Enrolment Rates

The presentation of NER and GER data is combined to compare their progress since 2007, understand the participation gap between the school age related population (6 – 8 year olds) and the overage and underage children, and to ascertain the availability of space to cater for all children from the school age related population. A national target of 98% NER was given for achievement by 2014. NER and GER data for 2007 to 2012 are presented in figure 6.

Figure 6: Net and gross enrolment rates, elementary education, 2007 - 2012



Source: DoE EMIS Data, 2007 – 2012

Both NER and GER experienced an upward trend since 2007 yet NER's rate of increase was slower than that of GER. NER increased from 31.4% in 2007 to 67.9% in 2012, an increase of 36.5%. In the same period, GER increased from 83.8% in 2007 to 125.6% in 2012, an increase of 41.8%. This data indicates that while there was an increase in the number of children from the official elementary school age population this number was not only lower than the number of younger and older children, it was also increasing at a much slower pace. This data shows that PNG was making a positive progress towards achieving its target of 98% NER by 2014. However, more effort will be required to get there, including the provision of increased opportunities for 6 – 8 year olds to enroll. This is a major challenge for the NES to address.

Research carried out by the National Research Institute and elsewhere has found that the main contributing factors were the admission of older children to elementary prep and repetition of children (Kukari, Paraide & Kippel, 2009), and re-enrollment of children who left school for a variety of reasons. Efforts should be made to address these and other causal factors to enable more children from the official elementary school age population to enroll.

Elementary Education System Efficiency

Once admitted to elementary prep, children are expected to continue and complete their elementary schooling. However, this is not always the case. Quite a number of children drop out of school before they complete the final grade of elementary education. This could be due to one or more of the factors given under access and participation. The 2007 National Annual School Census (NASC) data show a RR of 139.8% and a CR of 81.3%. Even though these indicators seemed to portray a rosy picture of the elementary school system, they do not represent accurately the real situation of elementary education in PNG. This data is suspect because it is subject to inflation of enrolment data by schools (Kukari, 2010) and variations based on migration trends.

Efficiency Indicators

Elementary Education System (EES) efficiency is measured using the Retention Rate (RR) and the Completion Rate (CR). These indicators will bring to light the extent of leakages and wastages in the EES so that appropriate interventions can be made to mitigate the contributing factors to allow all children to continue their schooling and complete the full elementary education cycle.

Retention Rate

Retention rate refers to the extent to which children are retained and progress to complete the full cycle of elementary education without dropping out. Elementary school RR data is presented in figure 7.

Figure 7: Retention rate, elementary education, 2007 - 2012



Source: DoE EMIS Data, 2007 - 2012

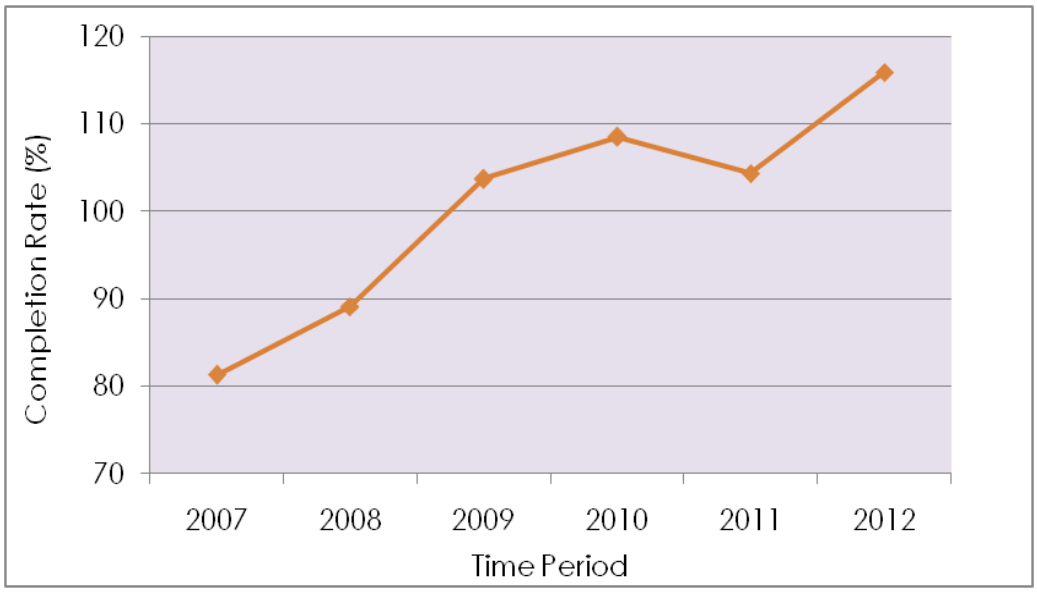
Retention of children in elementary education has been and continues to be a major problem for the PNG NES. This is despite a massive increase in the number of children enrolled at this level of education. While enrolments have increased steadily between 2007 and 2012, student retention had deteriorated during this period. There has been a continuous downward trend for a number of years and this trend has persisted. This flies in the face of commitment and efforts by the GoPNG and all stakeholders to universalize basic education at this foundational level of the NES. PNG has an inefficient elementary education system punctuated by a lot of wastage with large numbers of children leaving

school every year. Action is thus required by stakeholders at all levels to create and sustain an enabling environment for all children to remain in school and complete the full cycle of elementary education.

Completion Rate

Completion of elementary education by students has been an ongoing problem. Poor retention of students at this level of education has meant that many of them do not continue with their education and complete the elementary school cycle. Data on the CR is presented in figure 8.

Figure 8: Completion rate, elementary education, 2007 - 2012



Source: DoE EMIS Data, 2007 - 2012

Data from figure 8 shows that CR increased steadily from 2007 to 2010, dropped slightly in 2011 but picked up and reached a peak of 115.9% in 2012. This relatively positive trend in the number of children completing the elementary school cycle could be due to, amongst other factors, a high rate of students repeating grades, effective mitigation of school participation barriers and, as found by Kukari, Paraide, and Kippel (2009) in their review of the state of education on Lihir, due to an increase in the parents' level of education and their awareness and direction action to promote and protect the rights of their children to education. The sustainability of these enabling factors could see more positive gains being made in the number of children progressing from elementary prep to complete grade 2.

Quality of Education

The overall quality of the PNG NES was also reviewed by the Task Force tasked to review the PNG education system in 1991. The task force raised concerns about the relevance of the prevailing curriculum and its focus, and recommended the following to improve curriculum relevance and the overall quality of student learning:

- the language of instruction will be in a language chosen by the local community with a transition to English;
- prep curriculum to focus in initial literacy, numeracy, and cultural bonding;
- grades 2 and 3 to have an integrated curriculum centered on Language and Cultural Studies, Mathematics, Creative Expression and Physical Education, and Home Room Activities, and
- teaching to be done by one teacher using multi-grade teaching skills

The implementation of the above recommendations was lost in their translation into policy and action. For example, instead of guiding the communities to choose a language of instruction, communities were led to use their local vernacular as medium of instruction.

An adequate supply of teachers was desperately needed to fill up the hundreds of positions created by the sudden introduction of elementary education. There were no specialized elementary school teachers available to teach at this foundational level of education. In order to address the massive shortage of elementary school teachers, communities were tasked with the responsibility of selecting school leavers from their communities to undergo a "sandwich" teacher education and training program to prepare them to teach in elementary schools. These teachers were also required to translate the national curriculum statement, develop their curriculum in partnership with the local community, and teach using the local vernacular.

All the above was implemented to ensure that all children have access to a quality elementary education. However, as it became very apparent later, that the entire system was set up to curtail and suppress students' cognitive development. The academic

achievement of students suffered resulting in their total lack of reading, writing, mathematics, and cultural competency. This attracted a lot of criticism and debate about the quality of elementary education. This debate centered mainly on the use of local vernacular as the medium of instruction, poor teacher preparation and support, poor understanding and teaching of Outcomes-Based Curriculum, and shortage of teaching and learning resources.

Poor quality of elementary education may be attributed to, amongst many other factors, poor teacher education and training, a lack of curriculum development and monitoring knowledge, poor understanding and translation of curriculum, inadequate teaching and learning resources, poor teacher performance and student learning monitoring, lack of sustainable teacher professional learning, and ineffective multi-grade teaching (DoE, 2012; Kukari, Paraide & Kippel, 2009; Packer, Emmot & Hinchliffe, 2009; Paraide, 2009; So, 2009).

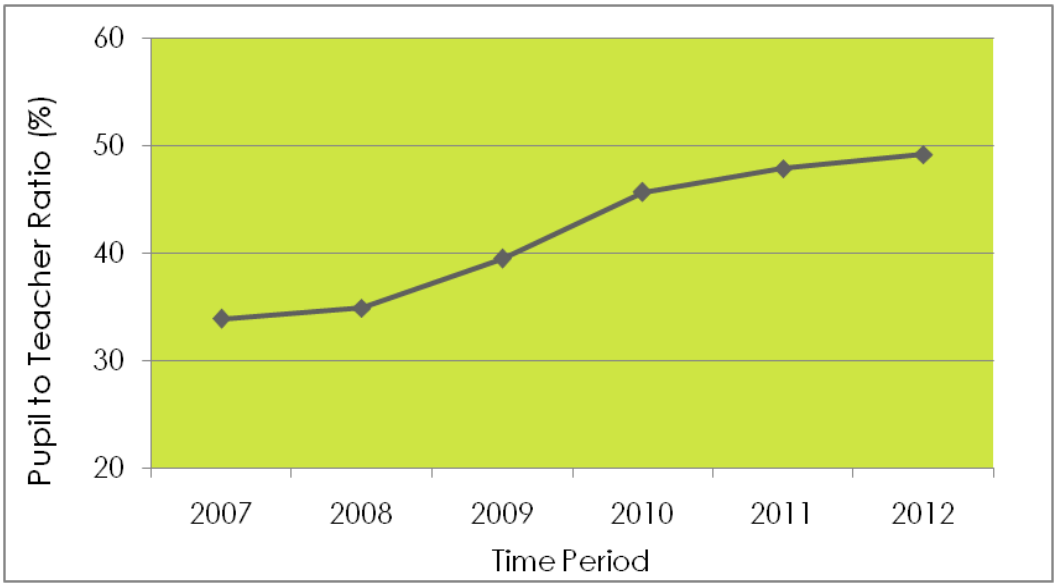
Quality of Education Indicators

Quality of education is measured using Pass Mark (PM) derived from students' national examination performance or other nationally prescribed student learning measures. However in most cases, this data is often not collected or, if it is collected, it is not often analyzed and disseminated. Instead, proxy indicators such as Pupil Teacher Ratio (PTR), Pupil Textbook Ratio (PTR), and Qualified Teachers (QT) are used as measures of quality.

Pupil to Teacher Ratio

The elementary education PTR target given in the NEP 2005 – 2014 is 32.4 pupils to a teacher. This target is to be achieved by 2014. PTR data for elementary education is given in figure 9.

Figure 9: Pupil to teacher ratio, elementary education, 2007 - 2012



Source: DoE EMIS Data, 2007 - 2012

There has been a gradual increase in the PTR since 2007 and this trend is more likely to continue. The PTR in 2007 was 33.9 pupils to a teacher. This increased gradually and picked at 49.2 pupils to a teacher in 2012. This was much higher than the projected PTR of 32.4 pupils to one teacher. The high PTR is caused by a massive increase in student enrolment and a critical shortage in the supply of teachers in the same period. Increase in student numbers is putting a lot of pressure on schools to adequately accommodate them and, simultaneously, to ensure that they receive an education of good quality. Paraide (2014) in her TFFE tracking study of two schools in the National Capital District found that increased in student enrolment resulted in overcrowded classrooms, a shortage of teaching and learning materials, and an increase in teachers' stress levels. Consequently, some students dropped out or withdrew from school and teacher absenteeism was high.

PTR will be further increased as demand for elementary education increases and supply remaining stagnant due to the implementation of Tuition Fee Free Education (TFFE) and the introduction of Compulsory Education. High PTR will have a negative impact on the quality of teaching and the level of pupil academic achievement. Increase in the supply of additional classrooms, schools, teachers, and textbooks, etc. and proper planning based on good evidence could ameliorate the very high and unmanageable PTR situation.

Equity

It was anticipated that the structural education reforms which began in the early 1900s would increase female access and participation in education (Mead, Fox, Andrew, Zariga & Kesno, 1995). Nevertheless, increased in the enrolment of girls will require more than a change in the structure of the NES. Structural reforms will increase coverage and the absorptive capacity of the NES. Yet, this expansion will not necessarily contribute to increasing girls' chances of going to school and retained to complete a full education cycle. It requires a change in a host of other critical areas as well including a change in the deeply rooted cultural perceptions of the role of girls and women in society, parental and community attitudes towards girls' education, and the whole approach of education service delivery.

Overall, girls face many more challenges than boys not only in accessing education, but also in continuing their education. Research has shown that poor female enrolment is caused by a variety of cultural barriers (Mead, Fox, Andrew, Zariga & Kesno, 1995; Seta, 1993), in school factors (DoE, 2009a, Kukari, 1990 & 2008a), the lack of security, particularly in locations where there are tribal conflicts (Kukari, 2008b), and violence against girls and women (Wilson, 2013).

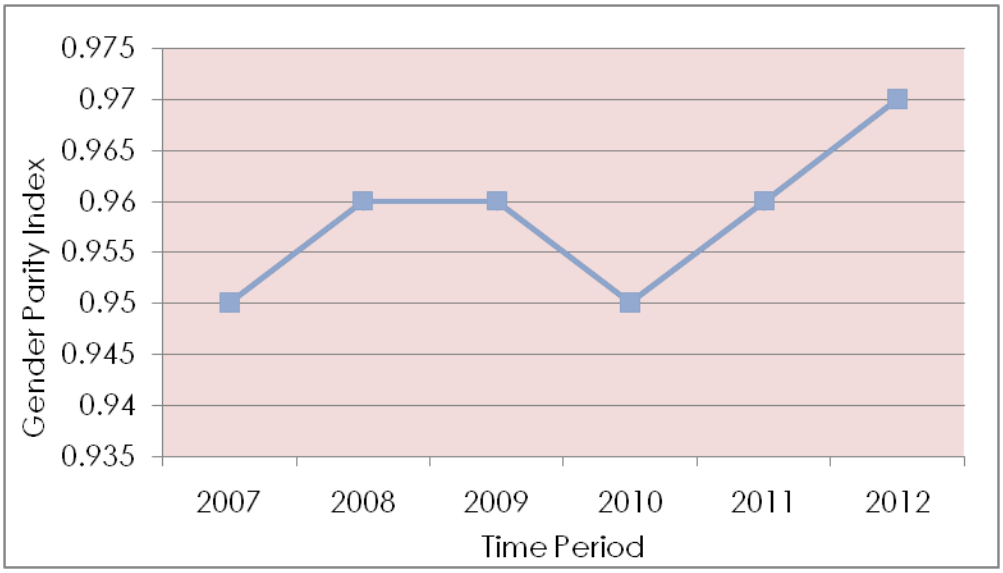
Equity Indicators

Gender Parity Index (GPI) is used here to measure and compare the access and participation of girls and boys in elementary education. In addition, NAR, GAR, NER, GER, RR, and CR are disaggregated to show the degree of male and female performance on each of these indicators. The use of these indicators will permit an understanding of gender parity gaps and the contributing factors.

Gender Parity Index

GPI measures the participation of both girls and boys in education, with a particular emphasis on the access and participation of girls. The trend of girls and boys access and participation in elementary education is given in figure 10.

Figure 10: Gender parity index, elementary education, 2007 - 2012



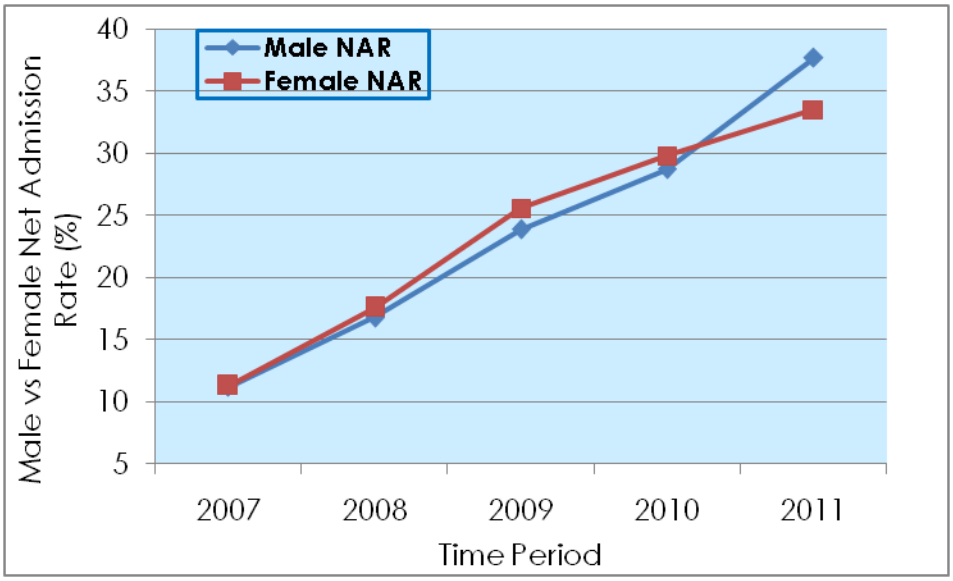
Source: DoE EMIS Data, 2007 - 2012

Data from figure 10 shows that GPI rose from 0.95 in 2007 to 0.96 in 2008 but leveled off between 2008 and 2009 and then declined sharply to be at 0.95 in 2010 before assuming an upward trend in 2011 and peaking at 0.97 in 2012. What is important about this data, in spite of inconsistencies in the general trend, is that positive progress in the GPI was visible from 2011 to 2012. Although data indicates that girls still lag behind boys, the gender parity gap between both sexes at the primary education level was narrowing. An increasing number of girls are being given the opportunity and the space to receive an elementary education. Educational opportunities were increasingly becoming more equitable at the elementary education level. If this positive trend continues, gender parity could be achieved in the next 5 to 10 years. Nonetheless, for this to happen, relevant interventions must be implemented at all levels to mitigate access and participation barriers to enable all school age girls to have access to, and participate in, receiving a quality elementary education.

Male and Female Net Admission Rates

Male and female NARs are presented to compare the admission pattern of both groups to elementary prep between 2007 and 2011, and to understand the admission gaps and disparities. Male and female net admission rates for 2007 – 2011 are given in figure 11.

Figure 11: Male and female net admission rates, elementary education, 2007 - 2011



Source: DoE EMIS Data, 2007 - 2012

Overall, the NAR data indicates that more girls were admitted to elementary prep between 2007 and 2011 than there were boys. NAR for both boys and girls increased rapidly between 2007 and 2010. However, more 6 year old girls were admitted to elementary prep during that period than there were 6 year old boys. There was a deviation from this trend between 2010 and 2011, which saw a surge in the admission of 6 year old boys, creating an access gap between them and the girls.

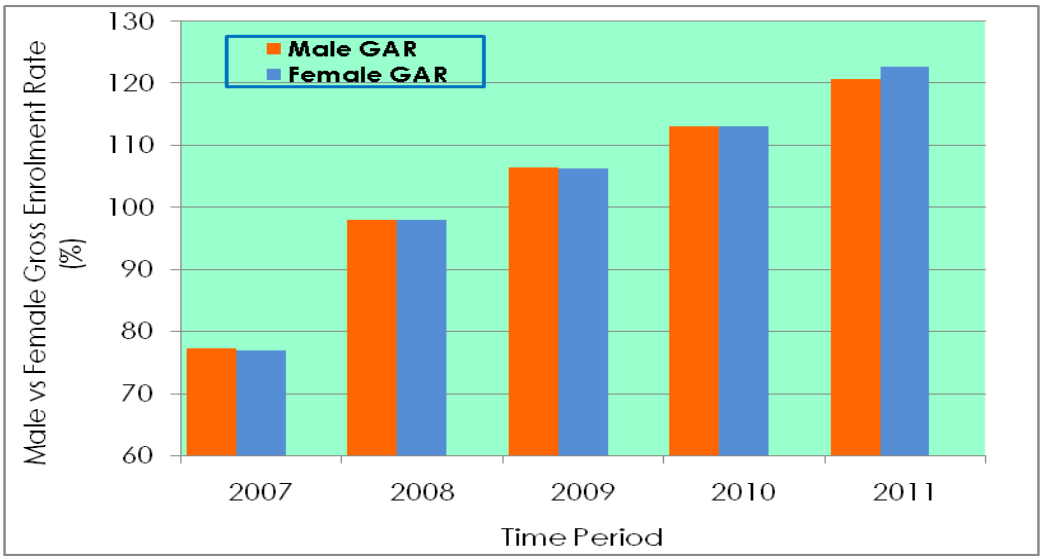
The gains made in the admission of 6 year old girls between 2007 and 2010 vanished between 2010 and 2011. This was more likely due to preference given to the enrolment of older children (Kukari, Paraide & Kippel, 2009) than any other factor. This is because the admission of girls regardless of age increased and was on par with the admission of boys in the same period (see figure 12). Appropriate action must be taken to sustain the gains made between 2007 and 2011 and further increase the number of 6 year olds, especially girls, admitted to elementary prep.

Male and Female Gross Admission Rates

Male and female GARs are used to show the percentage of boys and girls admitted to elementary prep without making reference to their ages. This data can help in understanding not only the admission patterns but also the practices of admitting children

to elementary prep. Male and female gross admission rates for 2007 – 2011 are presented in figure 12.

Figure 12: Male and female gross admission rates, elementary education, 2007 - 2011



Source: DoE EMIS Data, 2007 - 2012

Data from figure 12 shows that there was a simultaneous increase in the GAR of both boys and girls between 2007 and 2011.The data also show that there was parity in the admission of boys and girls between 2007 and 2011. PNG should be commended for achieving this significant milestone. The achievement of the goal of gender parity in the admission of school aged children to elementary prep was more likely due to the increased levels of parental education, increased capacity of parents to afford school fees for all their children, and parental awareness and actions towards protecting and promoting their children's right to receive an education (Kukari, Paraide & Kippel, 2009; Kare & Sermel, 2013; Kukari, 2009; Packer, Emmott & Hinchliffe, 2009).

Comparatively, the rate of increase of the GAR of both sexes was much higher than the rate of increase of NAR in the same period. This means that there were more overage and underage girls and boys admitted to begin their elementary education than there were girls and boys from the official entrance age population. The increased enrolment of older and younger children means that children from the official entrance age group were denied access as space is taken up by this group of children. Unless this trend is reversed,

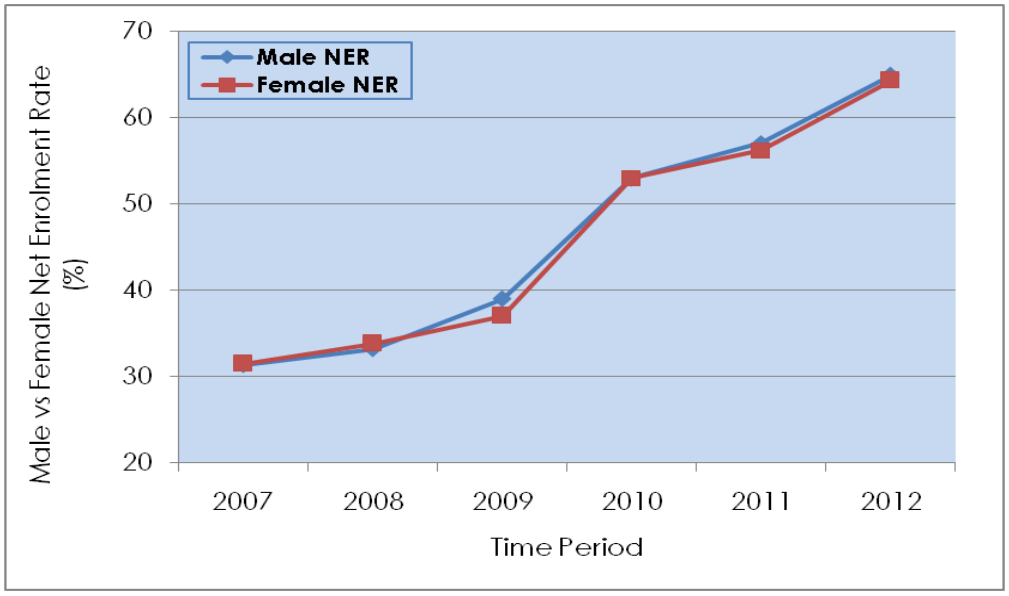
children from the official entrance age population will continue to be denied access, especially girls and other disadvantage children.

Nonetheless, the admission of girls is likely to continue to increase as demand for elementary education is addressed with the introduction of the TFFE and the Compulsory Education Policy, and as more parents become aware of and promote the right of their girl child to education. Yet, this positive trend could be easily reversed and the positive gains made since 2007 evaporate if appropriate actions are not taken to address the poor absorptive capacity and education provision disparities at the district and the school levels (Kukari, Reta & Michael, 2014), and other barriers that continue to persist and hinder girls from accessing elementary education.

Male and Female Net Enrolment Rates

Male and female net enrolment rates are presented to compare the enrolment pattern of both sexes and to understand the participation gaps. Male and female net enrolment rates for 2007 – 2012 are presented in figure 13.

Figure 13: Male and female net enrolment rates, elementary education, 2007 - 2012



Source: DoE EMIS Data, 2007 - 2012

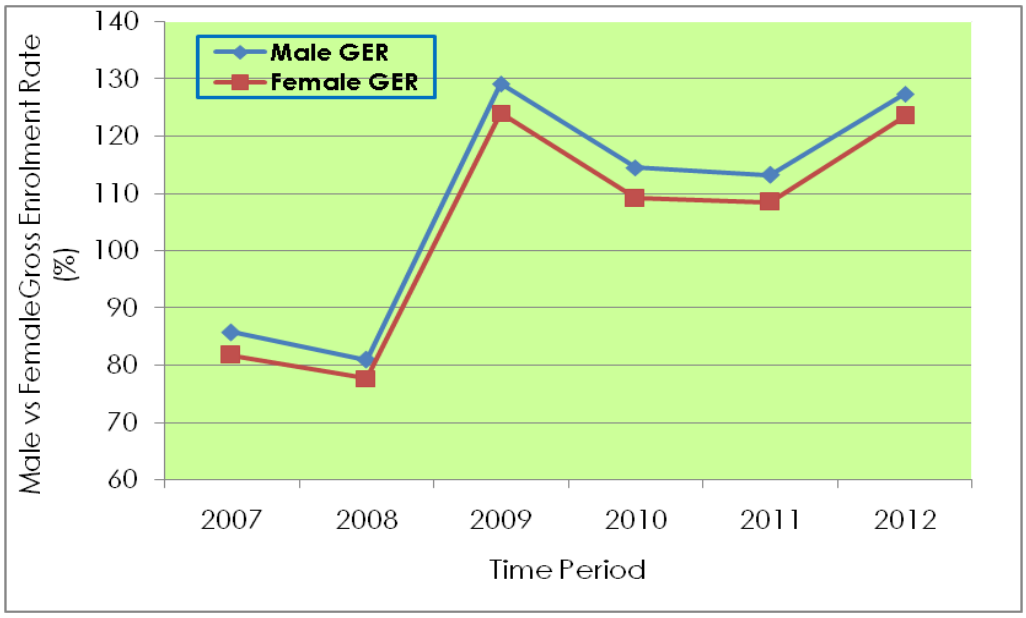
The participation trend of boys and girls from the school related age population (6-8 year olds) in elementary education is quite similar, although the percentage of boys was

slightly higher from 2008 to 2010 and from 2010 to 2012. There was close to an equal number of boys and girls enrolled in elementary education from 2007 to 2008 and in 2010. Gender parity was achieved in this period but dropped slightly between 2008 and 2010, and between 2010 and 2012 in favour of the boys. It is important not to lose sight of the variation in the participation trend of both sexes, especially girls. The participation gap must be closely monitored and appropriate interventions are made to close it so it does not expand out of control and out of sight.

Male and Female Gross Enrolment Rates

Male and female GER are presented to compare and understand the participation trends of children, particularly girls, enrolled in elementary education regardless of their age, and compare this data with the net enrolment rate for both sexes, particularly girls. Male and female GER for 2007 – 2012 are presented in figure 14.

Figure 14: Male and female gross enrolment rates, elementary education, 2007 - 2012



Source: DoE EMIS Data, 2007 - 2012

The male and female GER trends were quite similar. GER for both sexes declined briefly between 2007 and 2008 and then assumed a dramatic upward trend between 2008 and 2009 before experiencing a relatively sharp fall between 2009 and 2010. It stabilized between 2010 and 2011 before increasing again in 2012. In spite of this GER pattern similarity, the female GER was slightly lower than that of the males. This indicates that

there were more males than there were females enrolled at the elementary school level between 2007 and 2012. The participation gap between the males and the females increased gradually between 2009 and 2012. Although small, it could widen further if it is not closely monitored and effectively addressed.

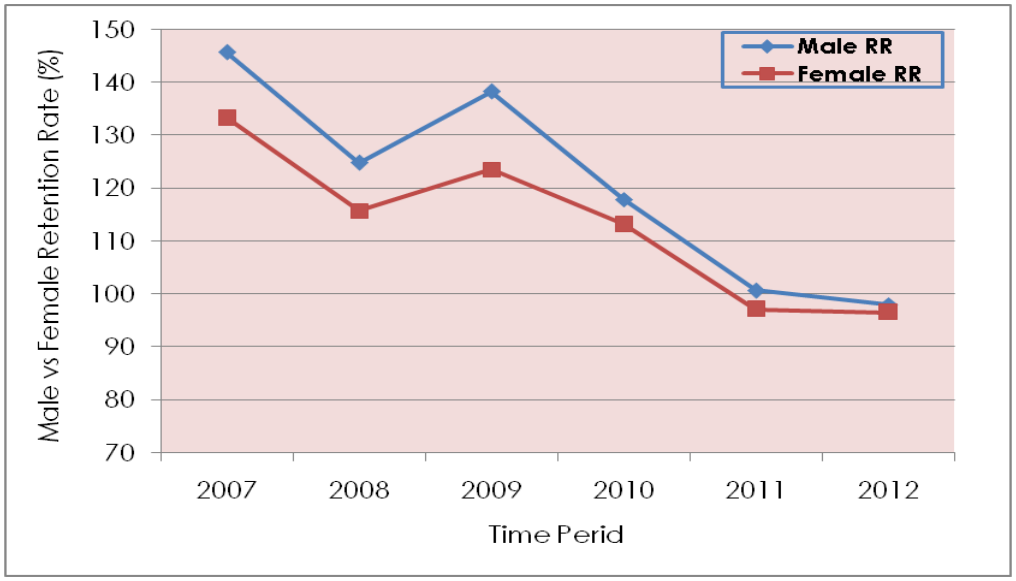
Comparatively, although there was a rapid increase in the NER between 2007 and 2012, this increase was insufficient to close the participation gap between males and females from the school age related population and overage and underage population. GER increased at the same time as NER between 2007 and 2012, although not at the same rate of increase, this increase was sufficient to maintain the participation gap between these two groups.

Data thus show that there were more overage and underage males and females enrolled in elementary education between 2007 and 2012 than there were males and females from the school related age population. Moreover, data also show that the number of older and younger females enrolled in elementary education was higher than the number of females from the school age related population between 2007 and 2012.

Retention Rate

When school aged children, particularly girls, get admitted to elementary prep they are expected to remain in school and complete the full cycle of elementary education. Male and female RR data is presented in figure 15.

Figure 15: Male and female retention rates, elementary education, 2007 – 2012



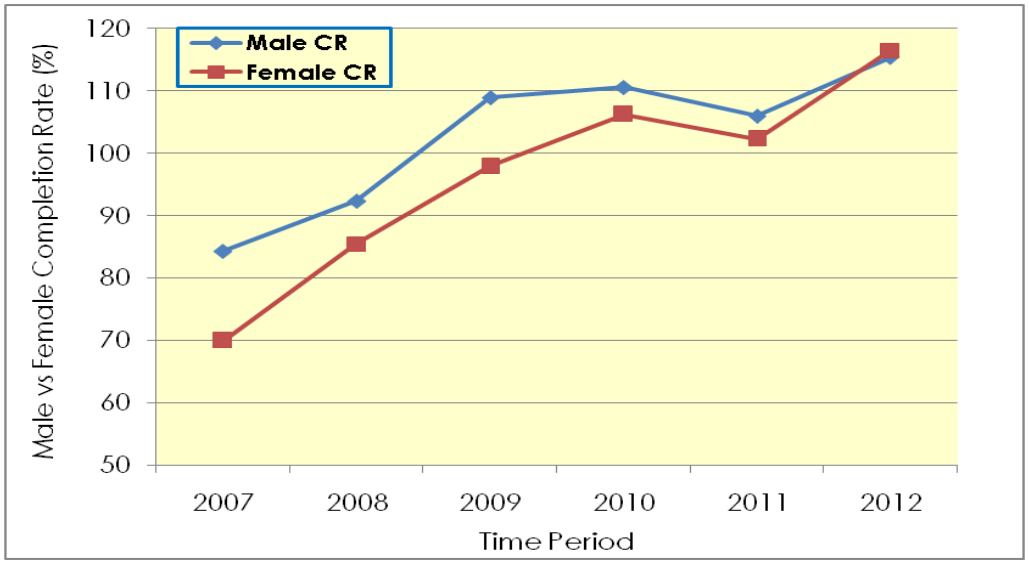
Source: DoE EMIS Data, 2007 - 2012

Male and female RR trends are quite similar, although male retention rate is higher than that of females. Male and female RR declined between 2007 and 2008 and increased again reaching their highest peak in 2009 before deteriorating to below 100% in 2012. Overall, data seems to indicate that more children were dropping out or withdrawing from school especially between 2009 and 2012. Comparatively, more girls were dropping out or withdrawing from school than there were boys. The attrition rate of both sexes is extremely high. Although the retention gap between boys and girls was quite visible, this gap was closing gradually. This situation must be a concern for everyone concerned about the delivery of elementary education in PNG. It is symptomatic of a very inefficient NES. Action must be taken to not only close this gap but reverse the downward trend in student retention of both boys and girls.

Completion Rate

Ideally, every child is expected to complete the elementary school cycle after being admitted to elementary prep. The completion rates for both boys and girls are presented in figure 16.

Figure 16: Male and female completion rates, elementary education, 2007 - 2012



Source: DoE EMIS Data, 2007 – 2012

The pattern of completion rates of both girls and boys since 2007 was quite similar, showing a narrowing gap between them from 2007 and 20011. This gap eventually closed in 2012 with both sexes attaining the same completion rate. This means that gender parity was achieved with an equal proportion of girls and boys completing the basic education cycle that year. This was a major achievement and an important milestone of the NES. Efforts must be made at all levels to sustain these gains.

Completion rates above 100% indicate a high rate of students transferring in and out of the elementary school system due to inward and outward migration, increased economic activities, and increased parental choice with regards to the schools they enroll their children. It could also be due to a high rate of students repeating grades within the elementary school system.

The positive progress in the number of boys and girls completing the elementary school cycle could be attributed to, amongst other factors, increased support for girls' education owing to increased levels of parental education and awareness of and promotion of children's right, particularly the girl child's right, to education and capacity of parents to pay school fees (Kukari, Paraide, Kippel, 2009). TFFE is, therefore, a significant intervention in this regard. If sustained in the long term, it could help to sustain the gains of 2012 and further increase the RR.

The reverse trend is more likely to happen if TFFE is withdrawn. All the gains made so far will disappear if this happens.

Management

Management of the NES must be focused on the achievement of results. In other words, management should be results-based. Leaders' performances must be evaluated against progress being made towards the full attainment of intended access, participation, efficiency, equity, quality, and management outcomes. Those responsible for managing the NES must be held to account for the achievements and the failures of the education system. This approach will go a long way in improving the overall management of the NES and the achievement of planned education goals and targets.

Elementary Education Goals and Targets

The goals and targets for elementary education are captured in the NEP 2005 – 2014 and the UBE Plan 2010 - 2019. The elementary education targets in the current NEP are in most cases too ambitious, lack clarity, and difficult to measure. This was a major drawback in the monitoring of performance and measuring progress towards their achievement. Education targets must be clearly defined. They must be achievable and measurable, and easy to track. The targets for elementary education are clearly set out in the UBE Plan, including the strategies for achieving them. These could be used as a basis for setting the targets for elementary education and developing strategies for attaining them in the new NEP.

Government Roles and Responsibilities

National and provincial governments' governance roles and responsibilities relating to elementary education are defined in the relevant provisions of, amongst other legal frameworks, the National Constitution, the National Education Act, 1995, the Provincial Education Acts, the Organic Law on Provincial and Local Level Governments, and the Determination Assigning Service Delivery Functions and Responsibilities to Provincial and Local Level Governments 2009.

According to the Determination Assigning Service Delivery Functions and Responsibilities to Provincial and Local Level Governments (2009) the provinces and LLGs are responsible for:

- recommending members of boards of management for appointment;
- developing and monitoring the implementation of policies and plans;
- managing the process of establishing new schools;
- preparing and implementing an annual infrastructure plan;
- managing teacher conditions such as salaries and leave fares, and
- overseeing school operations.

Operation of elementary schools and the achievement of their education outcomes depend on how effective and prudent governments at the provincial and district levels perform their roles and responsibilities. The dire condition of elementary education, particularly the situation of poor student learning, the under representation of marginalized children, and the inability of the sub-sector to achieve its targets, continue to persist because governments at the sub-national levels are not effective in performing their roles and responsibilities. Kukari, Paraide and Kippel (2009) in their extensive review of the education system of Nimamar Rural LLG in the Namatanai District of New Ireland Province found that LLG members did not understand their education roles and responsibilities and hence did not carry them out. This had a significant impact on the poor situation of elementary education in the LLG. Other contributing factors include poor coordination and interface between the national and the provincial departments of education (DoE, 2004; Kukari, 2009), a critical shortage of both hard and soft capacities (Kukari, 2010), and a lack of clarity in the education roles and responsibilities at the different levels of government (Gelu, 2010; Kukari, 2009). These issues should be addressed to enable elementary education to be effectively governed and managed so that the desired outcomes can be achieved.

Enabling Policies and Plans

A number of significant policies and plans have been developed to provide the platforms for action towards the full attainment of the elementary education goals and targets. The most notable of these frameworks are the NEP 2004 – 2015 and the UBE Plan 2009 –

2019. The provinces were also compelled to develop and align their provincial education plans with the national plans. A lot of donor funds were spent on developing these plans as well as policies and programs targeted at increasing school age relation population's access to and participation in, elementary education. Nevertheless, these efforts, in most cases, did not have the desired impact and achieve the intended results due mainly to poor governance and management, poor coordination and leadership at all levels, shortage or lack of both hard and soft capacities at the national and sub-national levels, and poor monitoring of policies and plans. These causal factors should be critically reflected on and addressed in the development of new policies and plans.

Elementary Education Capacity

Available evidence point to a serious lack of both hard and soft capacities at the national, provincial, and district levels to implement government's education policies, plans, and programs. The NES has a serious shortage of absorptive capacity as well. Lack of capacity has been and continues to be a main hindrance to the achievement of the intended education outcomes not only at the elementary education level but across the whole of NES.

In order to provide an inclusive and an equitable access to a quality elementary education, coverage must be expanded across all districts and all LLGS. Uneven coverage has contributed to the denial of school age children's right, especially the right of 6 year olds, to access and participate in receiving an elementary education. Kukari, Reta and Michael (2014) found in their analysis of 2007 student enrolment data that there were significant regional, provincial, district, and LLG disparities in the provision of elementary education. These disparities contributed to the underrepresentation of children from the school related age populations especially girls and children from other vulnerable population groups.

Teacher Supply

Student enrolment has increased by 100% since 2007. However, the supply of teachers had not kept pace with this increase. An adequate supply of teachers is required annually to cater for the demand for elementary education. Teacher numbers have to be carefully

planned in collaboration with teacher education educators so that teacher supply targets are met on an annual basis.

A major concern has been the poor quality of teachers. Teachers have been trained using the "sandwich" model of teacher education. This model has contributed to the education and training of low quality, incompetent teachers. Elementary education has and continues to be staffed by these teachers who have contributed significantly to the lowering of education standards and the considerable deterioration in the quality of student learning. Poor teacher quality is exacerbated by a lack of critical support in terms of professional learning opportunities, shortage of teaching and learning resources, poor and, in some cases, no performance monitoring, and poor terms and conditions. The whole approach to teacher education and teacher management should be critically analyzed to improve the education of teachers and the management of their performance and welfare.

Funding of Elementary Education

The NEP 2005 - 2014 target is to provide an elementary education that "is cost-effective and affordable for parents and government" (DoE, 2004, p. 49). This achievement of this target has been fast tracked through the implementation of the TFFE program. The change is to make this program permanent so that the school fee barrier is totally eliminated to enable an easy passage for school age children to access elementary education. Additional funds have been continuously provided by the government and the development partners to fund various programs to help close the access and participation gaps, and ensure the delivery of quality education. These funds, if prudently expended, will go a long way in providing an equitable opportunity for all 6 – 8 year olds to have access to, and participate in, receiving a quality elementary education.

TFF funds and, to some extent, the Basic Services Improvement funds and the Functional Grants, can be used to increase as well as address the demand for elementary education through the provision of additional infrastructure, teachers, teaching and learning resources, renovation of existing infrastructure, funding teacher professional learning activities, and help in addressing the overall capacity of the elementary education system. Yet, serious lack of teaching and learning resources, deterioration in the quality of

teaching and learning, poor teacher support, a critical shortage of appropriate permanent infrastructure continue to persist. This situation prevails because of poor planning, budgeting, and monitoring of expenditure and outcomes, misapplication and misappropriation of funds, leakages in the flow of funds to schools, and failure at all levels to acquit funds. These issues must be addressed as a matter of priority to ensure accountability and transparency in the expenditure of funds at all levels, proper monitoring and reporting of budget expenditures, informed prioritization of education priorities, and effective monitoring of progress towards education targets.

PRIMARY EDUCATION

Introduction

Primary education is the second level of formal education. It comprises grades 3 to 8. This may also include community schools, which comprise of grades 1 to 6. However, the number of community schools is relatively small compared to the number of primary schools. The school age related population of this level of education is 9 to 14 year olds. Children should be 14 years of age when they complete grade 8. Nonetheless, this is not often the case.

Primary education was introduced in the early 1990s as a strategy to universalize basic education from elementary prep to grade 8. This strategy would provide both inclusive and equitable access to, and participation in, basic education by children from especially the school age related population (6 – 14 year olds). Furthermore, it will enable all school age children to receive a basic education of good quality. All children once admitted to elementary prep will continue and complete grade 8, which is the final grade of the basic education cycle. For this to happen, all community schools that operated since independence were to be converted into primary schools. The strategy of providing universal access to basic education was further validated by its inclusion in subsequent national development policies and plans (DoE, 2009; Kare & Sermel, 2013, Kukari, 2010).

Curriculum reforms were also recommended by the ESR (1991) to make primary education more relevant to the needs of both the students and the community in which the students live or will return to after their schooling. In relation to the proposed curriculum reforms for primary education, the ESR (1991) noted, "With longer primary school period, it will be important that students move gradually from a more integrated form of teaching to sub-centered teaching; that they have enough opportunity to become literate and numerate in their own and in the English language; that they learn less content (or content titles) but have more opportunity to understand what is being taught and more opportunities to be helped when in need of extra assistance" (p.178).

What is more, it was recommended that an integrated curriculum to be taught in grades 3, 4, and 5 and a subject-centered curriculum to be taught in grades 6, 7 and 8. English was recommended as the medium of instruction in primary school. Students who transit from grade 2 in elementary education will be bridged to English in grade 3.

However, the above proposals were deliberately misrepresented especially by DoE and some stakeholders. This resulted in the introduction and the implementation of Outcomes-Based Curriculum, inconsistency in the bridging of students from vernacular to English, poor education and training of teachers, inadequate resourcing of schools, and poor understanding and translation of Outcomes-Based Curriculum into practice (Agigo, 2010; GoPNG, 2013; DoE, 2012; Kukari, Paraide & Kippel, 2009). Collectively, these actions resulted in a severe deterioration of the quality of student learning at the primary education level.

This chapter provides an analysis of the primary level of education by analyzing the progress made since 2007 in relation to core access, retention, quality, equity, and management indicators.

Access to, and Participation in, Primary Education

The primary education sector was expanded at the same time as the elementary school sector. The purpose of this strategy was twofold – firstly to expand access and participation and secondly, to make education from elementary prep to grade 8 available to all children. For these purposes to be achieved, except for a few, all community schools were converted into primary schools. Also, grades 7 and 8 were relocated from high school to primary school. This was to enable all students to complete at least grade 8, which not all children were able to do prior to the structural reforms. Additionally, more schools had to be built to meet the demand for primary education.

A number of community schools in some provinces were yet to be converted into primary schools. This may have a bearing on the availability of space for children transiting from the elementary school level. Kukari, Reta, and Michael (2014) in their analysis of 2007 provincial and district student enrolment data and education system capacity noted that there were a lot of students enrolled at the elementary school level. Yet, there was a

shortage of capacity at the primary school level to absorb this number of students when transiting from elementary grade 2 to grade 3. There is an obvious need to breach the access and participation gaps between the elementary and primary education levels to enable all children progress through to the final grade of primary education.

Structural reforms are necessary for education coverage expansion however this in itself will not contribute to increased access and participation. Additional schools can be provided and additional classrooms can be built but if all other enabling factors are not simultaneously addressed, not all children will access these facilities and not every one of them will attend school. Poor access and participation of children in primary education are also due to other factors. Some of these factors were alluded to under elementary education. One of the most critical factors is the availability of qualified and committed teachers.

To teach at the primary school level, teachers were required to possess at least a Diploma in Primary School Teaching. To have available this caliber of teachers, teachers colleges were asked to upgrade their certificate to diploma programs. Serving teachers, most of who had a teaching certificate, were required to upgrade their qualifications to a diploma in order to teach at the primary school level. This in fact is still in progress and as of this date not all teachers have upgraded their qualifications. This may have a bearing on the availability of qualified teachers, student access and participation, and the delivery of quality primary education.

Children's access and participation in schooling depends also on the availability and the commitment of teachers. Structural reforms must take into serious account other critical inputs such as the availability of teachers and their appointment to teaching positions. Teacher appointment in particular continues to be a problem for the NES. Teacher appointment at the primary school level continues to be mismanaged with serious consequences for children's access and learning. In an eight province study of teacher appointment at the primary education level, Kukari, Paraide, Kelep-Malpo, Mugup, and Wilson (2012) found that the teacher appointment process was defective and lacked transparency. Teacher appointments were always very late and, in most cases, teachers refused to take up their appointments because these were not according to their choice.

The likely consequence of this is that many schools were not fully staffed. This has serious implications for children's access, participation, and quality of learning.

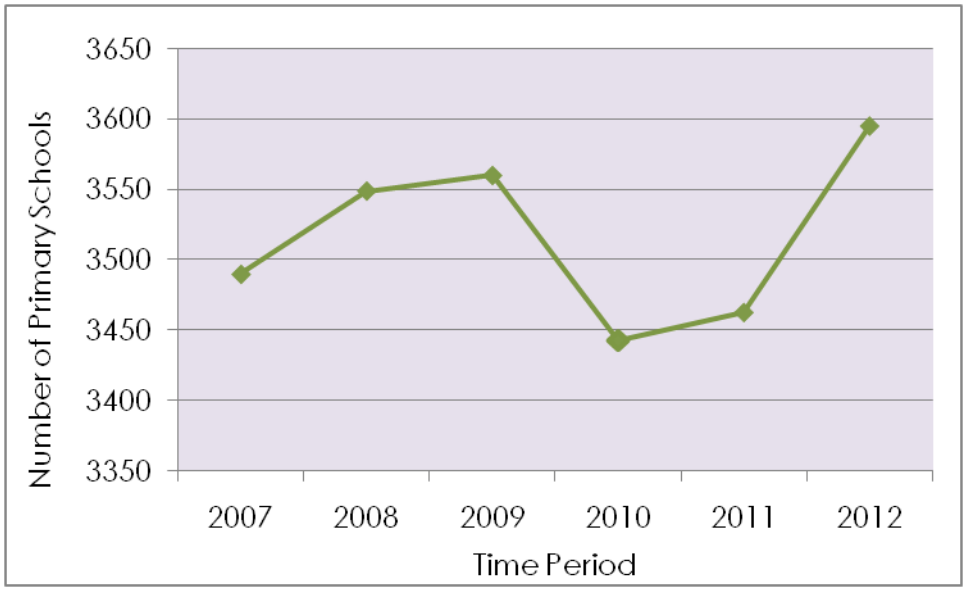
Access Indicators

Number of schools, number of students enrolled, number of teachers, NAR, and GAR are used to measure school age children's access to primary education. These indicators will enable the extent of coverage and absorptive capacity to be illuminated.

Number of Primary Schools

Data on the number of primary schools has been systematically collected since 2007 to show the trend in their establishment and, most importantly, to understand the absorptive capacity of the primary education system and the extent to which this level of education is being accessed by all school aged children, particularly those transiting from the elementary level of education. Data on the number of primary schools is presented in figure 17.

Figure 17: Number of schools, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The number of primary schools increased from 3,490 in 2007 to 3,560 schools in 2009 before declining sharply to 3,443 schools in 2010. The number of primary schools increased again to 3,463 in 2011 before peaking at 3,595 primary schools in 2012. The number of primary schools increased by a mere 0.4% since 2009, which is much slower

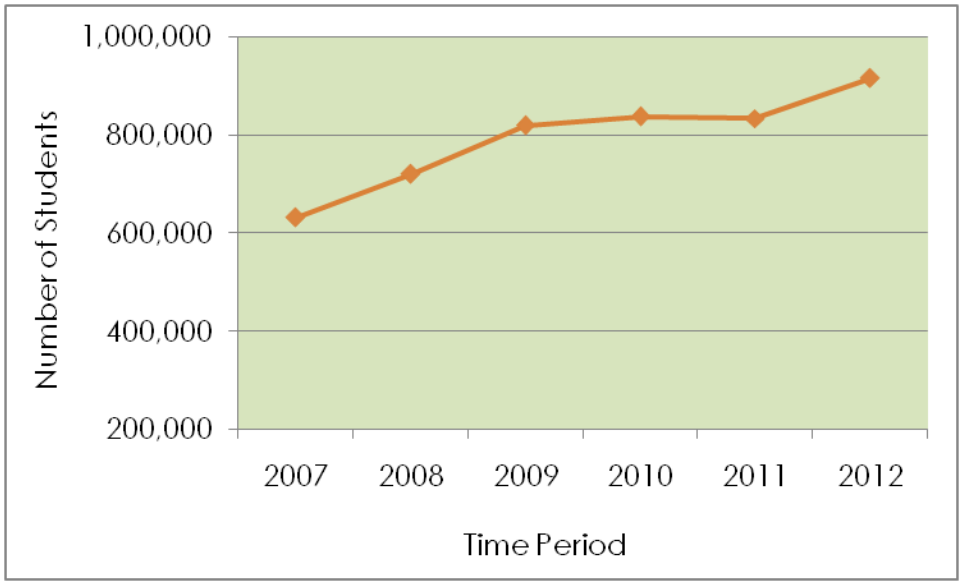
than the national population growth rate of 3.1% and the rate of expansion of elementary schools, which was 6.5% in the same period. This data indicates that the expansion of the primary education sector was lagging behind the expansion of the elementary school sector and the national population growth rate.

There is now a critical bottle neck situation existing at the elementary school level and unless urgent actions are taken to create more space at the primary school level, an increasing number of school age children, particularly those completing the elementary school cycle, will miss out on enrolling at the primary school level. Data indicates that there is a serious shortage of capacity at the primary school level to absorb all students transiting from the elementary school level.

Number of Students

Student enrolment data has been collected since 2007. This data is useful not only to understand the extent of children's access and participation at primary education level but also to understand the overall demand for education at this level and what is required to adequately address this demand. Student enrolment data for 2007 – 2012 is presented in figure 18.

Figure 18: Number of students, primary education, 2007 - 2012



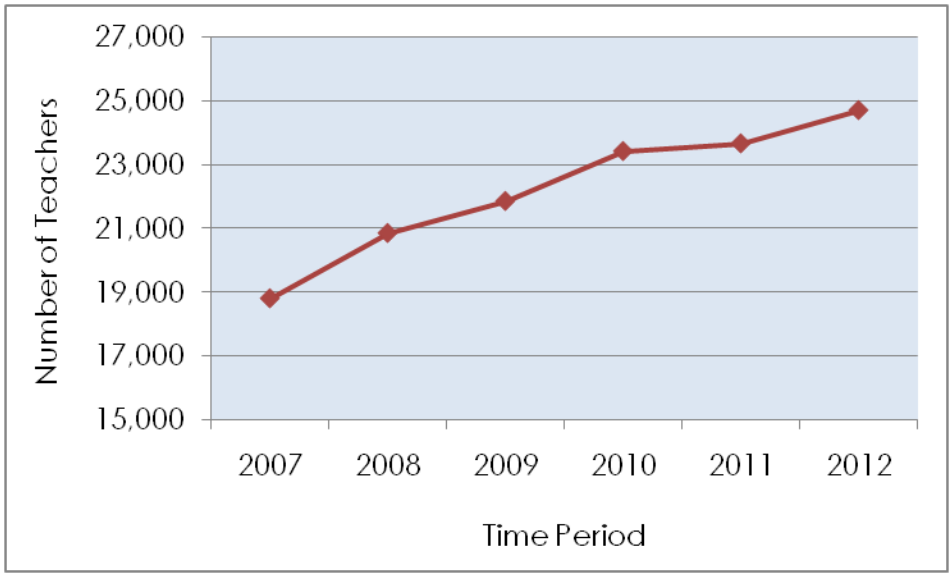
Source: DoE EMIS Data, 2007 – 2012

The number of students enrolled at the primary school level increased substantially from 632,140 students in 2007 to 837,273 students in 2010 however, student enrolment dropped slightly between 2010 and 2011 before climaxing at 916,065 students in 2012. Student enrolment increased by 31.1% or 284,925 students between 2007 and 2012 in real terms. This is a big increase in student enrolment and seemed to point to positive progress towards the achievement of the goal of expanding the basic education level, which is, to provide an opportunity for all primary school age children to have access to, and participate in, receiving a primary school education. Nonetheless, about 50% of children from the primary school age related population (9-14 year olds) was yet to have access to primary education in 2012. Additional effort should be made by stakeholders at all levels to enable this segment of children to be enrolled, including increasing the supply of space, teachers, and essential teaching and learning resources.

Number of Teachers

An adequate supply and an effective deployment of teachers are essential for addressing the demand for education, ensuring that all schools are fully staffed, and for enabling all school aged children to be effectively taught. Yet, the education and training of teachers to meet the teacher needs of the NES and the deployment of teachers to primary schools, particularly in remote and hard to reach places remain a major challenge. Kukari, Paraide, Kelep-Malpo, Mugup and Wilson (2012), for example, found from their study of primary school teacher appointment in 8 provinces in PNG that appointment of teachers to teaching positions was not prudent, was always late, and teachers often refused to take up their appointments because they did not apply for these positions. As a consequence, many schools were left with vacant teaching positions throughout the school year. Data on the number of teachers who taught at the primary school level from 2007 to 2009 is presented in figure 19.

Figure 19: Number of teachers, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The number of teachers teaching at the primary school level increased gradually from 2007 to 2012. There were 18,810 teachers in 2007 and by 2012 this had grown to 24, 706 teachers, an increase of 5,896 teachers or about 24%. However, the current number of teachers needs to be further increased to meet the teacher needs of primary education as the demand for teachers will be substantially increased as education at this level of education becomes fully funded by the government and is made free and compulsory.

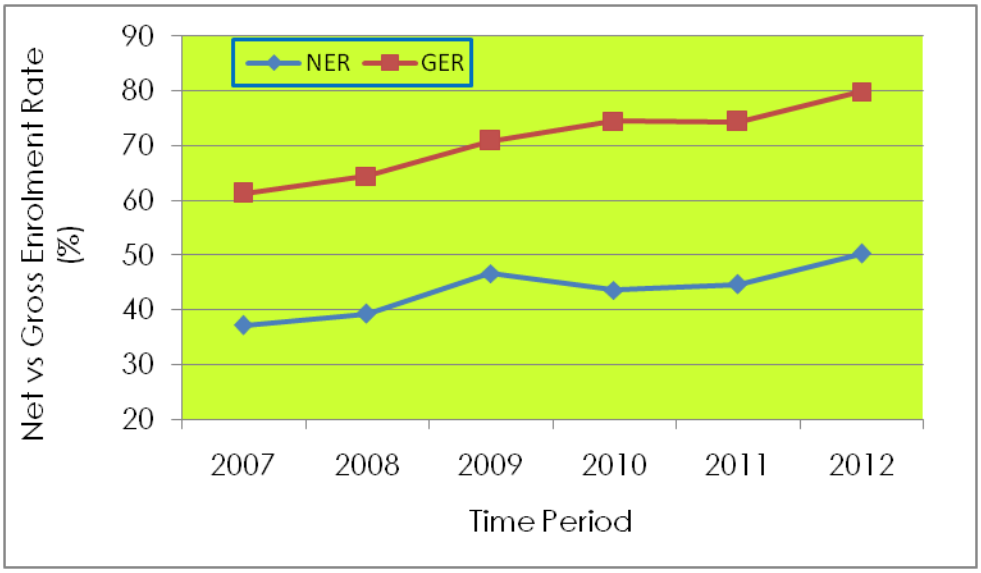
Participation Indicators

The participation of school aged children in primary education is measured using the NER and GER. NER measures the number of 9 – 14 year olds enrolled in primary education whereas GER measures all children enrolled in primary education regardless of their age.

Net and Gross Enrolment Rates

NER and GER are presented together to compare their progress between 2007 and 2012, and to understand the effect of this on the enrolment of school aged children, particularly the enrolment of children from the official school age population. NER and GER data for 2007 to 2012 are presented in figure 20.

Figure 20: Net and gross enrolment rates, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The NER trend varied between 2007 and 2012. It increased from 37.1% in 2007 to a high of 46.6% in 2009 before decreasing slightly between 2010 and 2011. It assumed an upward trend beginning in 2011 to climax at 50.2 % in 2012. This data indicates that about half of 9 – 14 year olds were enrolled in primary education in 2012 whereas the other 50% were out of school. In total, the NER increased by 13.1% between 2007 and 2012. Although, the NER of 50.2% is lower than the national NER target of 70%, positive progress is being made towards the attainment of this target. Efforts should be made at all levels to build on this gain and make further progress towards the national NER target.

On the other hand, the GER trend was quite stable, growing gradually from 61.2% in 2007 to 74.5% in 2010 before experiencing a very minor decline between 2010 and 2011. It increased thereafter to peak at 79.9% in 2012. Overall, the GER grew by 18.7% between 2007 and 2012. This data indicates that more school age children were enrolled in primary education between 2007 and 2012.

Nevertheless, data shows that there were more overage and underage children enrolled in primary education between 2007 and 2012 than there were children from the official school age population. Although there was an increase in the enrolment of 9 – 14 year olds, this increase was slower than the increase in the enrolment of overage and underage

children. If necessary interventions are not pursued to reverse this trend, an increasing number of 9 – 14 year olds will be denied access and participation at the primary school level. The problems of poor education coverage and lack of compliance of government policy on the admission and enrolment of children in school, amongst others, must be addressed to enable more children to go to school.

Primary Education System Efficiency

All children who progress from elementary grade 2 to primary grade 3 are expected to continue their schooling and complete grade 8. However, primary school student enrolment data shows that many children drop out before reaching the final grade of basic education. A review of the literature shows that children often fail to complete the full cycle of basic education due to, amongst other factors, poor parental attitudes towards their children's education (Kukari, Paraide & Kippel, 2009; Ope 2003), unsupportive school environments (Kukari, 1990; Lappan & Ferrin-Mundy, 1993), poor teacher-student relationships (Midgley, Feldlaufer & Eccles, 1989), and lack of parental capacity to pay school fees (Mugup, 2009). The proportion of children leaving school will continue to increase unless effective measures are designed and implemented to mitigate the contributing factors to enable a barrier-free environment to be created and fostered to allow all children complete the full cycle of primary education.

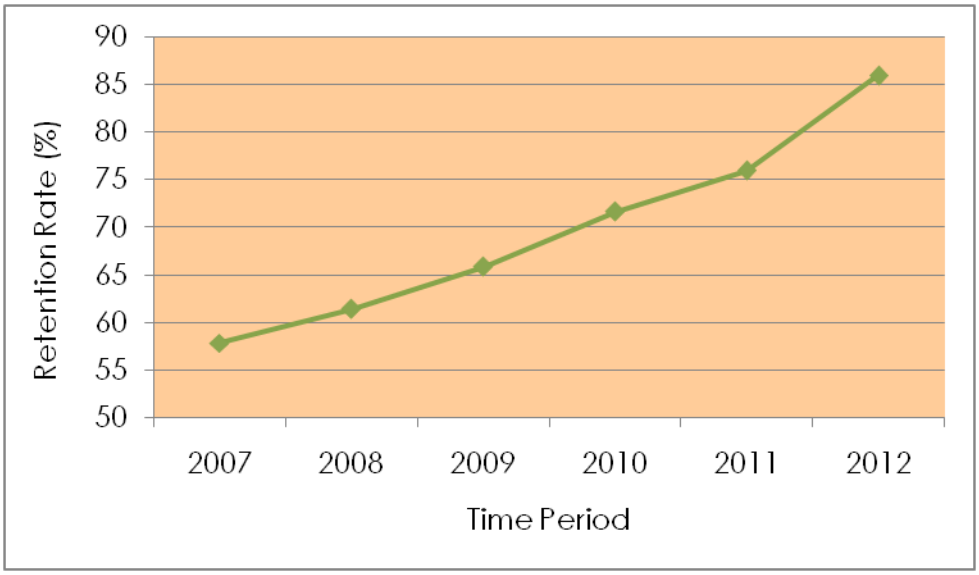
Efficiency Indicators

The efficiency of the primary education system is measured using the RR and CR. RR measures the number of children who remain in school and continue to complete the full cycle of primary education while CR measures the number of children who complete the final grade of primary education.

Retention Rate

Retention of students in primary education has also been a major problem for the NES. While efforts were made at all levels to enable children to stay in school and progress to complete at least grade 8, these efforts were undermined by large numbers of children leaving school each year. Data for student retention in primary education is given in figure 21.

Figure 21: Retention rate, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

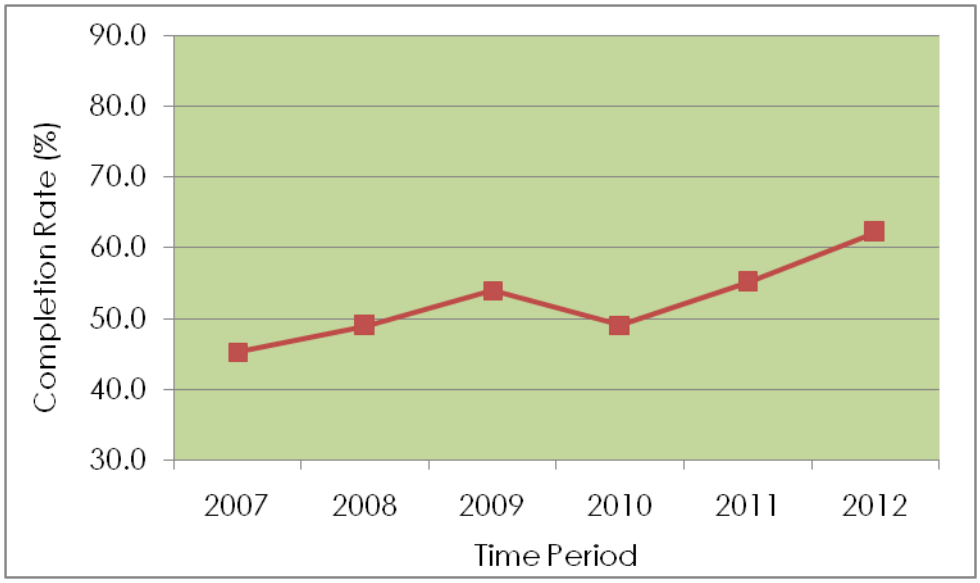
There was a gradual increase in the retention rate between 2007 and 2012. About 58% of students who enrolled in 2007 remained to complete their primary schooling in that year. Nevertheless, the proportion of students leaving school (42%) in the same year was quite high. This number of children decreased gradually as the RR increased from 61.4% in 2008 to peak at 85.9% in 2012. The RR increased by about 28% between 2007 and 2012. By 2012 there was less number of children leaving than there were in primary school. This is an important achievement for the NES as the retention of students at this level of education has been a major challenge. These gains must be sustained and further boosted with the development and the effective implementation of enabling policy and planning frameworks at the national, provincial, and district levels, and the creation and fostering of school and community environments that are inclusive and conducive for all children to survive and learn.

This positive result could be attributed to the subsidization and the abolishment of school fees at this level of education, a change in parental perceptions and attitudes toward the education of their children, improved efforts made by all stakeholders to enable all children to go to school and remain to complete the full cycle of primary education, and sound government policies.

Completion Rate

Poor retention of students often means that very few students complete the primary education cycle, often under very difficult circumstances. Those who are able to remain in school and complete grade 8 often come from well-to-do backgrounds and are usually boys. Those who do not survive and leave school before completing the full primary education cycle were often girls and from disadvantage background. Data on 2007 – 2012 primary education completion rates is presented in table 22.

Figure 22: Completion rate, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The proportion of students completing the full cycle of primary education increased from 45% in 2007 to a high of 54% in 2009 before declining to 49% in 2010 and then increasing rapidly thereafter to climax at 62% in 2012. Overall, the CR increased by 17% between 2007 and 2012. Data shows that more and more children were completing the primary education cycle. This is yet another positive gain made by the NES, which in a way validates the interventions made at the national and sub-national levels to enable all children to stay in school and complete grade 8. It could also be attributed to the changing socio-economic and cultural dynamics of the PNG society relating to not only the importance of education in improving the livelihoods and the living standards of all but, most significantly, in the raising of awareness and the collective critical consciousness of PNG citizens about the changing roles and relationships between males and females as

well as their rights to personal freedom and a better life, in which access to a quality education is the foundation and the catalyst.

Nevertheless, the challenge for the NES and all stakeholders is to make permanent the gains made so far and strive to make additional progress towards enabling all children to complete the primary education cycle. Prudent and well informed governance and management of the NES and active multi-stakeholder involvement and commitment to the goals of education, amongst other critical measures, will ensure that positive progress made thus far is continued and result in the full attainment of the national CR target.

Quality of Education

Student academic achievement at the primary school level continues to be a concern for all stakeholders, particularly the parents. On the whole, students are unable to speak fluently in the English language, cannot read and understand simple texts, and are unable to write fluently. This has been confirmed by two separate studies on primary school students' literacy and numeracy competency levels. Asia South Pacific Association for Basic and Adult Education (ASPABAE) and Papua New Guinea Education Advocacy Network (PEAN) (2011), for example, found from their education experience and literacy assessment in 5 provinces of PNG that less than 20% of children attending primary school could be classified as literate. There were stark differences between male and female literacy rates, with females having much lower literacy rates than those of males. Their findings were supported by the findings of DoE (2013) assessment of literacy and numeracy levels of grade 5 students. This study revealed that 82% assessed in literacy and 64% in numeracy performed well below satisfactory and expected levels. These results point to a serious deterioration in the quality of education at the primary school level.

Poor quality of learning at this level of education could be attributed to, amongst many other factors, the poor understanding and implementation of the school curriculum by teachers (Agigo, 2010; Kukari, Paraide & Kippel, 2009), ineffective teacher education and training (Avalos & Neuendorf, 1991; Kukari, 2000; Matane, 1986), and a shortage of qualified teachers. Poor standard monitoring as well as ineffective teacher professional development (Kukari & Honan, 2010) are the other contributing factors to poor teaching

practices and hence poor student achievement. These factors as well as other input and process factors must be addressed to create and foster an environment conducive for the achievement of quality teaching and learning outcomes.

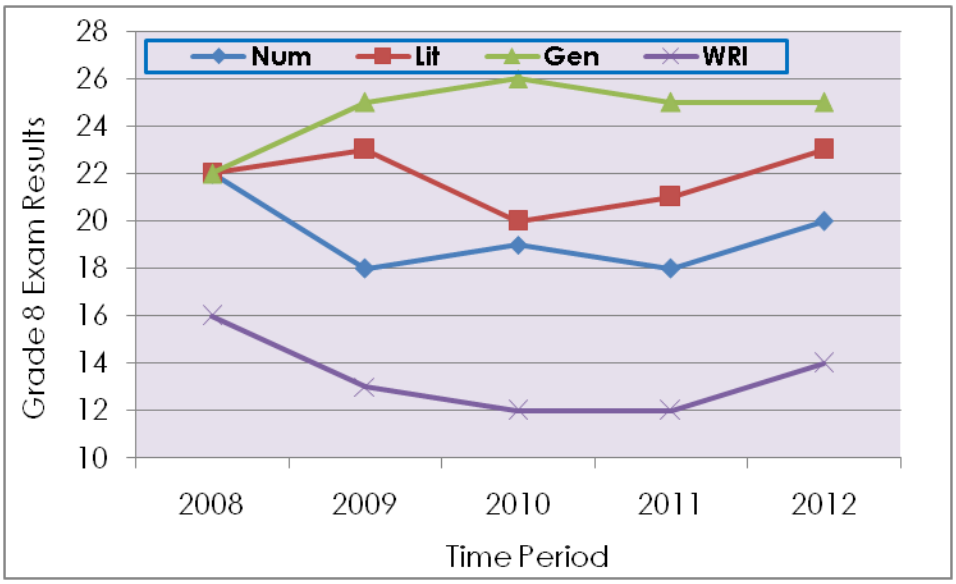
Quality of Education Indicators

The quality of learning at the primary school level is measured using Pass Mark (PM) and PTR. PTR is used as proxy measure of quality when data on PM is not available.

Pass Mark

PM measures the performance of students in national examinations and other measures of learning. In this case, students' performance in the national Grade 8 Certificate of Basic Education Examination is used to measure the quality of student learning. The inaugural Grade 8 Certificate of Basic Education Examination was conducted in 2008. Data on students' performances on this examination between 2008 and 2012 is presented in figure 23.

Figure 23: Pass mark, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

Data from figure 23 shows that, except for the General Subjects, students' performances on Numeracy, Literacy, and Written Expression subjects were well below the pass mark of 25 points. Students' performance in the General Subjects increased from 2008 and

peaked at about 26 points before deteriorating between 2010 and 2012. Conversely, student performances in the other 3 subjects declined initially before assuming a gradual upward trend, especially between 2011 and 2012. However, this was way below the national pass mark of 80 points.

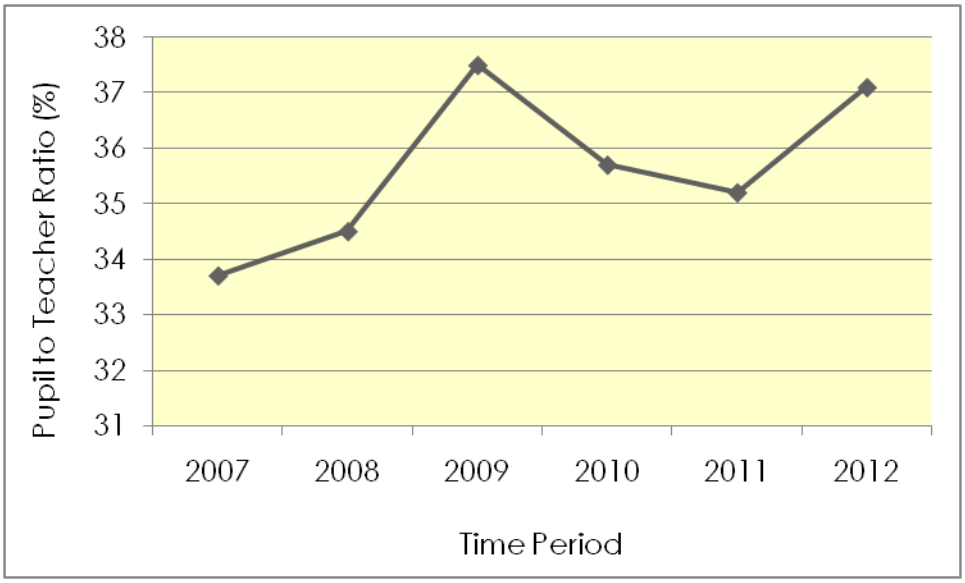
Data indicates that, apart from the General Subjects, all students who sat for the examination failed it and therefore could not progress to grade 9 as they did not meet the nationally prescribed pass mark of 80. However, as is the practice amongst nearly all provinces, the national PM had to be lowered for provinces to select eligible grade 8 students to fill up the quota for grade 9 places. This practice not only severely undermines the quality of education in PNG; it also validates poor teaching, bad education leadership, and lack of accountability by teachers and education administrators over the outcomes of student learning.

The data on students' performance in the Certificate of Basic Education Examination shows a very visible quality of learning gap. This data implies deterioration in the quality of education and, if not urgently addressed, this poor trend will continue to persist and undermine all efforts that have been invested to date to ensure that all children have access to a quality primary education.

Pupil to Teacher Ratio

PTR is critical to student access and participation in schooling as well as in the achievement of quality student learning outcomes. The national target for primary education PTR is 34 students to 1 teacher. This target was set bearing in mind the importance of having manageable class sizes and for students to be effectively taught by the teachers so that every child's learning needs are adequately attended to and addressed by the teacher. PTR data for primary education is given in figure 24.

Figure 24: Pupil to teacher ratio, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The PTR trend varied from 2007 to 2012. PTR increased rapidly from 33.7 pupils to a teacher in 2007 to peak at 37.5 pupils to a teacher in 2009 before declining in 2010 and 2011 to 35.7 and 35.2 pupils to a teacher respectively. PTR increased again in 2012 to 37.1 pupils to a teacher. This PTR is on par with the national primary education target of 37 pupils to one teacher captured in the NEP 2005 – 2014. This means that the national target has been achieved. This shows that the NES was making a positive progress towards the provision of a quality learning classroom environment for all students. Yet, the challenge is for this positive result to be sustained, particularly within a rapidly changing and unstable policy context manifested by "big bang" education policies such as the TFF and Compulsory Education Policies. PTR could easily deteriorate under this policy environment if appropriate inputs and processes are not addressed to cater for the massive increase in the demand for education at this level.

What is also worth pointing out is the connection between PTR and the quality of learning. Data indicates that PTR at the primary school was conducive for effective teaching and relatively high pupil achievement. Yet, this was not the case between 2007 and 2012. Student performance in the Certificate of Basic Education Examination was really poor. This could not be attributed to PTR. It may have been due to other factors including, ineffective teaching, poor understanding and teaching of the Outcomes-Based

Curriculum, inadequate teaching and learning resources, an absence of teacher professional learning, and poor parental and community attitudes towards the education of their children.

Equity

It is the aim of the NES to provide equitable access to quality primary education to all children, regardless of their circumstances. This aim is consistent with the global agenda for education for all, particularly the Millennium Development Goals (MDGs) and the Education For All Goals (EFAG), and children's rights frameworks such as the United Nations Convention on the Rights of Children (CRC) and the Lukautim Pikinini Act (LPA). Nevertheless, this is often difficult to do owing to a number of social, cultural, economic, political, and philosophical barriers. ASPBAE and PEAN (2011) found from their study that "females were seriously disadvantaged compared to their male counterparts in terms of accessing education" (p.6). Inability by parents to afford school fees has been identified as one of the most important barriers to access and participation by girls at this level of education (ASPBAE & PEAN, 2011; NSO, 2010). This barrier has been, to some extent, removed through the implementation of the TFFE program. However, other deeply embedded barriers still remain and need to be addressed to ensure full access and participation by girls.

Girls' academic achievement has improved over the years but not enough to be on par with that of their male counterparts. ASPBAE and PEAN (2011) conclude from their study that despite improvements in literacy levels, girls were less literate. On the other hand, DoE (2013) found in its study of grade 5 students literacy and numeracy competency levels that girls outperformed boys in literacy but performed at a much lower level of competency compared to boys in numeracy. Inconsistency in girls academic performance could be attributed to, amongst other factors, poor quality of teaching, parental attitude towards girls education, girls own attitude towards their education, and other in-school and out-of-school factors. Steps should be taken to identify and mitigate the causal factors to enable the quality of learning outcomes for girls to be improved.

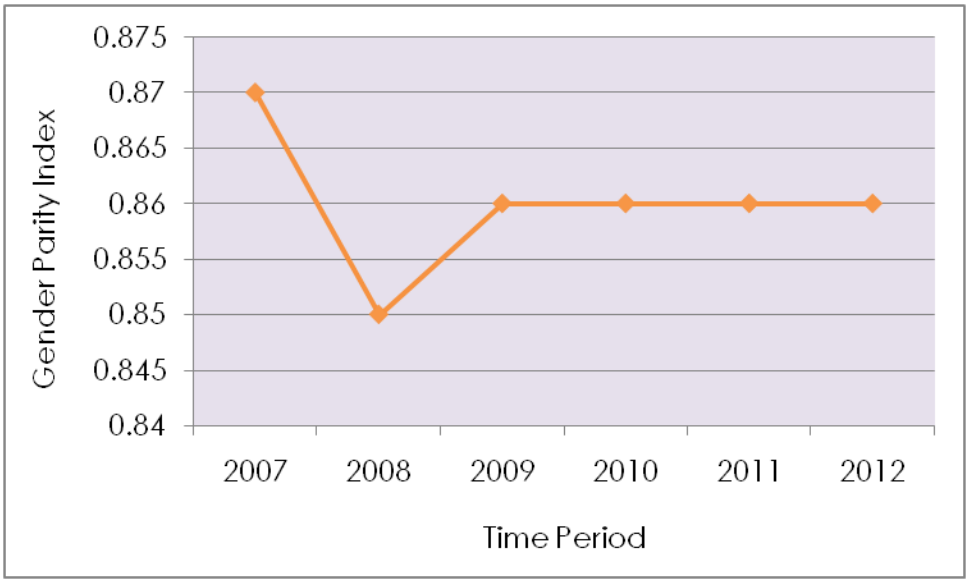
Equity Indicators

Measures such as the Gender Parity Index (GPI) are used to measure performance as well as progress towards the attainment of parity goals and targets. GPI, NER, GER, RR, and CR are used to measure both boys' and girls' access to and participation in primary education between 2007 and 2012.

Gender Parity Index

GPI in this report measures the extent to which boys and girls have access and participation in primary education, with an emphasis on the access and participation of girls. Data on the GPI in primary education is presented in figure 25.

Figure 25: Gender parity index, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

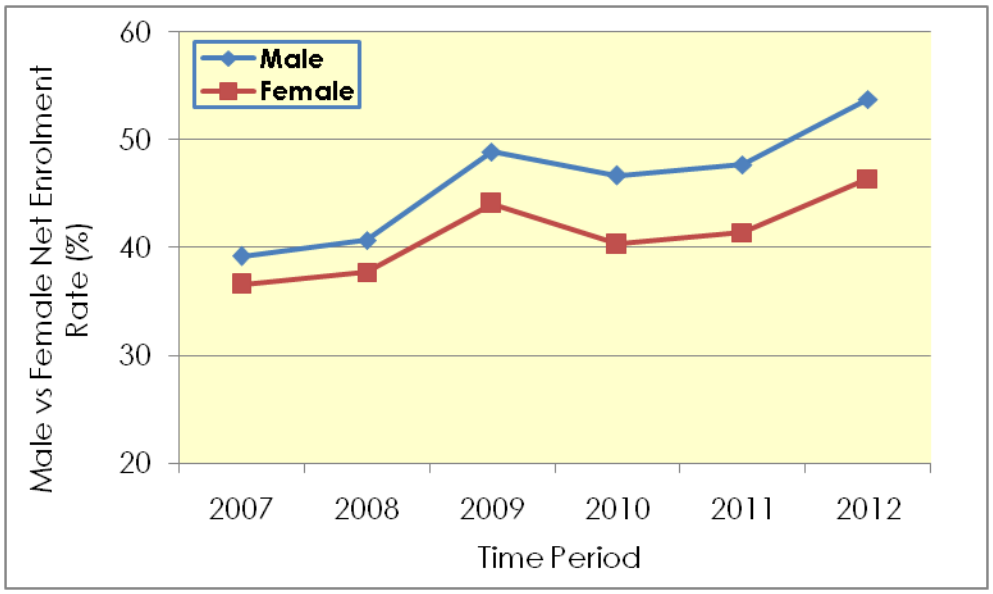
GPI experienced a massive fall between 2007 and 2008 and rose to peak at 0.86 in 2009 before leveling off and stagnating between 2009 and 2012. This data shows that there were fewer girls than there were boys enrolled in primary education between 2007 and 2012. The enrolment of girls stagnated between 2009 and 2012. This allowed the enrolment of boys to increase and create a visible gap between the boys and the girls. Overall, girls were still disadvantaged and lagging behind in boys in their participation in primary education. This could be attributed to one or more of the causal factors alluded to elsewhere in this analysis. It is imperative that evidence-based strategies targeting the

enrolment of girls in primary education are developed, implemented, and closely monitored to mitigate the causal factors to ensure that more girls are given the opportunity to receive a primary education. These strategies should include a critical review of all enabling frameworks, including the Gender Equity in Education Policy (GEEP) and the Church State Partnership Framework (CSPF).

Male and Female Net Enrolment Rates

Male and female NER measure the participation of males and females from school age related population (9-14 year olds) in primary education and provide a basis for comparing the participation of both sexes at this level of education. Male and female net enrolment rates for 2007 – 2012 are presented in figure 26.

Figure 26: Male and female net enrolment rates, primary education, 2007 - 2012



Source: DoE EMIS Data, 2007 – 2012

The primary education NER pattern for both the males and the females varied between 2007 and 2012. The male NER improved from a low of 32.9% in 2007 to a high of 48.9% in 2009 before declining between 2009 and 2010 and then increasing gradually thereafter to peak at 53.8% in 2012. The female NER show a very similar trend to that of the males, but at a much slow pace. Female NER increased from 34.6% in 2007 to peak at 44.1% in 2009 and decreased by 3.8% between 2009 and 2010 before commencing an upward

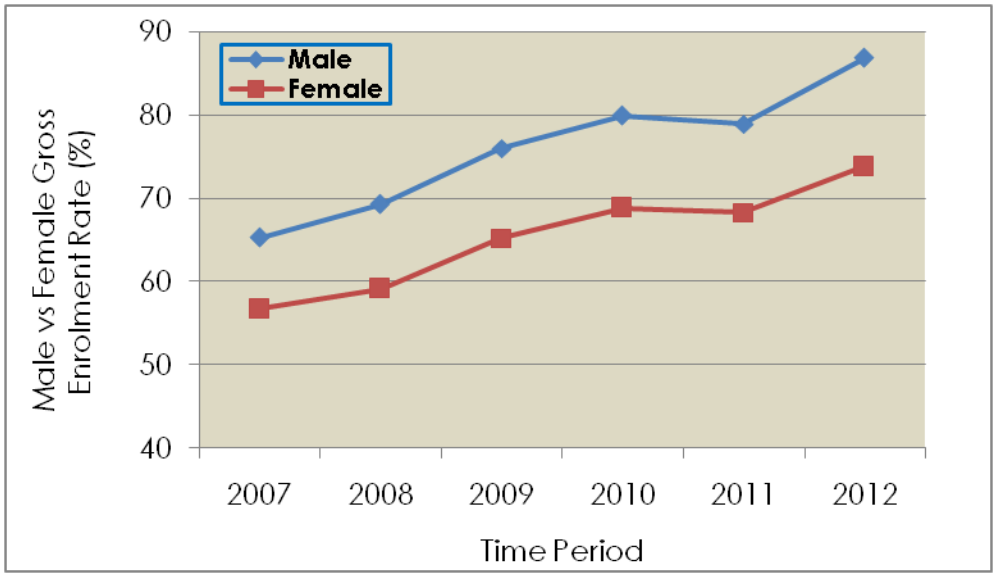
trend climaxing at 46.4% in 2012. Overall, the NER for males increased by nearly 21% between 2007 and 2012 whereas the NER for females increased by about 10%. Female NER has not kept pace with the male NER thus creating a visibly widening gender parity gap between the sexes.

Data shows that there were more males from the school age related population (9 – 14 year olds) enrolled in primary education than there were girls. The enrolment of 6-14 year old girls in primary education has and will continue to deteriorate unless increased opportunities are provided for them to participate. Enabling school and home environments should be created and fostered by all stakeholders, particularly the parents, teachers, and school administrators to permit all 9-14 year old girls to receive a quality primary education.

Male and Female Gross Enrolment Rates

Male and female GER measure and compare the participation of males and females in primary education regardless of their age. This data is important for understanding the extent to which overage and underage children are enrolled in primary education and the challenges this creates with regards to available space and teaching strategies. Both male and female gross enrolment rates for 2007 – 2012 are provided in figure 27.

Figure 27: Male and female gross enrolment rates, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The male and female GER exhibit a very similar trend but at opposing speed. The male GER grew at a much faster rate than the female GER between 2007 and 2012, creating a rapidly widening gender parity gap between the two sexes. The female NER increased from 56.7% in 2007 to 68.8% in 2010 before dropping to 68.3% in 2011. It increased from 2011 to 2012 to reach a high of 73.8% in 2012. In sum, female GER increased by 17.1% from 2007 – 2012. Yet, this increase was out paced by the increase in the male GER. The male GER increased from 65.3% in 2007 to 79.9% in 2010 and then dropped slightly to 78.9% in 2011 before peaking at 86.8% in 2012. The male GER increased by 21.5% in the same period.

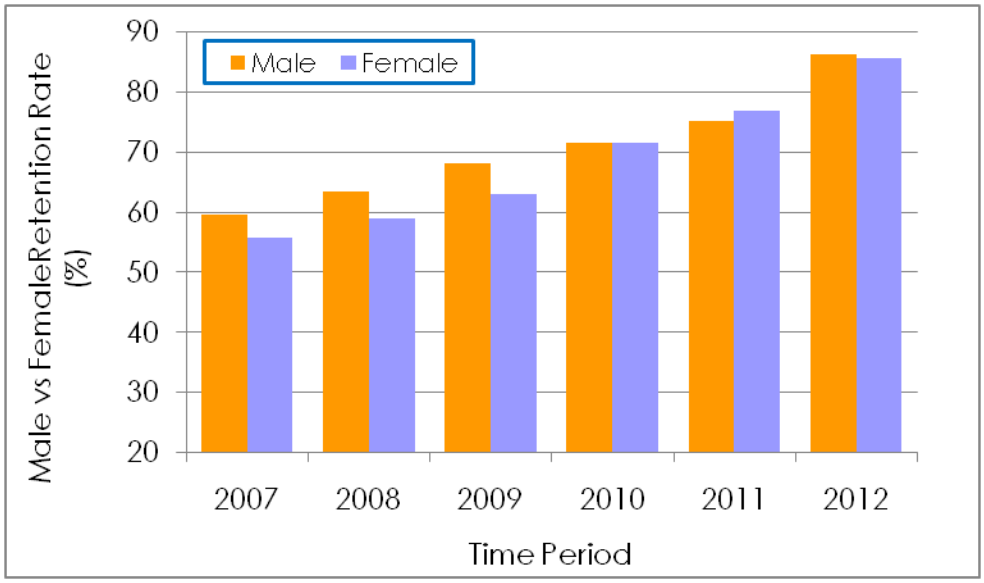
Data from figure 27 reveals not only that there were more older and younger girls enrolled in primary education than there were girls from the school age related population, but also that the rate of increase in the enrolment of this group of girls was quite similar to the enrolment of 9-14 year old girls (see figure 26) between 2007 and 2012. Yet, increase in the proportion of overage and underage girls enrolled in primary education was much lower than the proportion of overage and underage boys, and was increasing at a much slower pace compared to the pace in which the enrolment of boys was increasing. As was the case with the female NER and GER, the male NER and GER grew about the same rate (21%) between 2007 and 2012.

Data indicates that the enrolment of overage and underage children in primary education was increasing at about the same rate as the enrolment of children from the school age related population. The enrolment of girls from both age groups was not keeping pace with the enrolment of boys. Girls were increasingly denied the opportunity to participate in primary education and were seriously lagging behind the enrolment of boys. This situation is getting worse and needs to be addressed urgently. Appropriate multi-stakeholder and multi-level strategies must be developed to mitigate the barriers to girls' education and bring them up to speed with the enrolment of boys.

Male and Female Retention Rates

Retention rates are presented here to compare the retention of males and females in primary education. Retention for both sexes, particularly girls continues to be a problem for the NES. Data on the male and the female RR for 2007 – 2012 are shown in figure 28.

Figure 28: Male and female retention rates, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

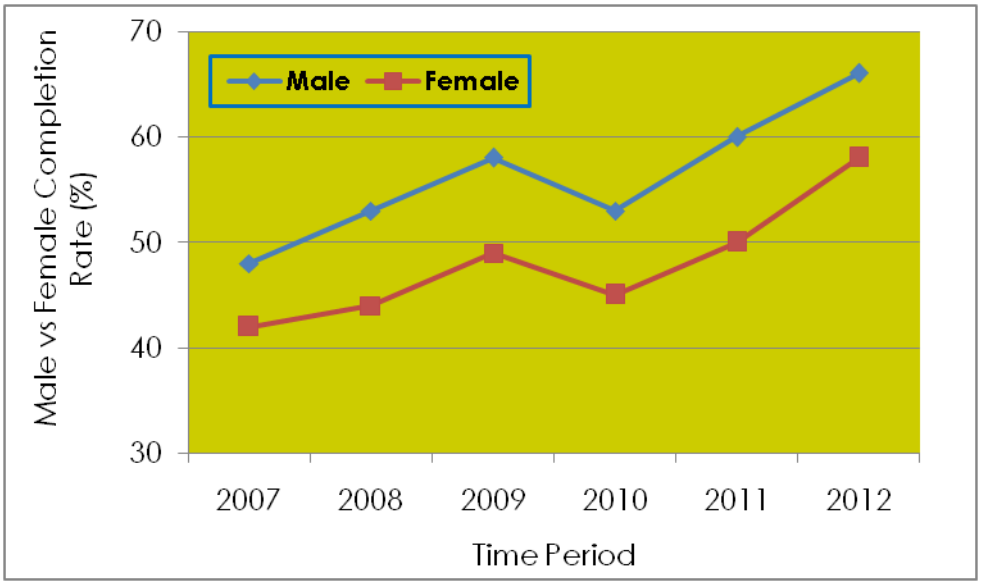
In general, the male RR was higher than the female RR between 2007 and 2012. This is despite parity being achieved in the RR of both sexes in 2010. The male RR increased gradually between 2007 and 2012. In 2007 the male RR was 59.5% by 2012 it was 86.2%, an increase of 26.7%. Conversely, the female RR increased at a relatively slow pace between 2007 and 2009 but accelerated from 2010 to reach a high of 85.6% in 2012. Female RR increased by 29.9% between 2007 and 2012. This data points to an increasing RR for both males and females. Female RR was increasing at a much faster rate than the male RR. This means that an increasing number of girls were remaining in school and continuing their education compared to those leaving school. This trend may continue as barriers to access and participation in primary education such as school fees are removed. However, the challenge for the NES is to increase supply in order to adequately meet the demand that will be created from the removal of barriers to education, particularly barriers to girls' education.

Male and Female Completion Rates

Both male and female students are expected to remain in school and complete the final grade of primary education. Nevertheless, a lot of students, particularly girls, often leave at different stages before completing the primary education circle. CR data is collected and analyzed to show the extent of wastage in the primary education system and for

appropriate actions to be taken to address the contributing factors to allow more children to continue their school and complete their primary education. Data on the male and the female CR for 2007 – 2012 are shown in figure 29.

Figure 29: Male and female completion rates, primary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The CR trend for male and female students is quite similar, although data shows that more males than females completed the primary education cycle between 2007 and 2012. The female CR increased from 42% in 2007 to 49% in 2009 and deteriorated in 2010 before assuming an upward trend to climax at 58% in 2012. On the other hand, the male CR increased from 48% in 2007 to 58% in 2009 and declined in 2010 to 53% before surging to peak at 66% in 2012. Comparatively, female CR increased by 16% whereas male CR increased by18% between 2007 and 2012. However, the increase in the CR of females was insufficient to bridge the completion gap between themselves and the male students. The completion gap has gradually expanded since 2007. This gap could be bridged if the current trend of female students completing the primary education cycle is sustained and further increased through appropriate interventions that will allow for them to remain in school and continue without interruption and complete grade 8.

Management

The management of primary education must focus on the attainment of the key access, retention, quality, and equity outcomes described not only in the NEPs but also in other significant national policies and plans. The key target for primary education is to provide a free and compulsory primary education of good quality to all school aged children by 2015. Even though some progress is being made towards this goal, this is not enough to fully achieve it by 2015. The poor state of progress towards this goal is reflective of systematic failures at various levels to prudently implement and monitor the implementation of enabling national strategies designed to achieve the key UBE targets.

Primary Education Goals and Targets

The global and national goals of primary education are to provide universal access to a quality education to all school age children and achieve gender equality by 2015. The achievement of these two goals is critical to the achievement of all the other MDGs. The Goal of UBE has been pursued since the colonial era yet the target dates for its achievement have been continuously shifted (Avalos, 1993; Kukari, 2010; Webster, 1993). The target date has been shifted again to 2019 (DoE, 2009a). Country specific action platforms and strategies have been developed and implemented over the years to attain these goals and related targets. In spite of these efforts, PNG will miss out on achieving the goal of UBE in 2015.

However, progress towards the full attainment of these targets has been mixed. While there was positive progress towards the achievement of some targets, progress towards the achievement of others deteriorated over the years. This means that PNG will now miss out on achieving the goals of UBE and gender equity in education as mandated by the United Nations, which PNG made a commitment to work towards achieving by 2015.

Government Roles and Responsibilities

The national and provincial roles and responsibilities over the provision, governance, and management of primary education are defined in the relevant provisions of various legal and policy frameworks (see previous chapter). Boards of management are responsible for governing and managing schools at the school level. Their roles and responsibilities are

described in the Boards of Management Handbook. The national and provincial government roles and responsibilities for primary education are similar to their roles and responsibilities for elementary education (see previous chapter).

However, research on the performance of these roles and responsibilities have shown that governments at all levels were either unaware of their roles, and responsibilities, aware of their roles and responsibilities but did not understand how to perform them, or fail to implement them effectively and prudently. Gelu (2010), for example, found from his review of the literature on the reform of inter-government relations in PNG that the roles and responsibilities of governments in the delivery of basic services, including education, were unclear and overlapped. This resulted in the non implementation of these roles especially by the sub-national governments. In addition, Kukari, Paraide and Kippel (2009) found from their review of the education system of Nimamar Rural LLG that LLG members were not aware of their roles and responsibilities therefore they did not perform them. These findings point to a poorly governed education system characterized by a shortage of soft capacities. The effect of this situation on the overall governance and management of the education system is likely to be severe.

Implementation of Policies, Plans, and Programs

Quite a number of enabling policies, plans, and programs have been developed both at the national and the decentralized levels to serve as catalysts for providing an equitable, inclusive, and a quality primary education for all. These frameworks include the NEP 2004-2015, the UBE Plan, 2010-2019, the Education Access and Expansion Program, the Relevant Education for All Program, Primary Teacher Education Project, Basic Education Infrastructure and Curriculum Materials Project, and the Curriculum Reform Implementation Project.

However, many of these policies, plans, and programs did not achieve what was intended because of lack of or shortage of capacity at all levels of the NES, lack of political will and leadership, poor coordination, lack of commitment, and misapplication or misappropriation of resources required to achieve the desired results. Kukari, Paraide, Kapa-Kelep, Mugup, and Wilson (2012), for example, found from their study of primary school teacher appointment in 8 provinces in PNG that the teacher appointment

process was highly corrupted and was highly ineffective and inefficient. As a consequence, often than not, teachers refused to take up their positions, teacher appointments were always late mainly due to the late arrival of the Special Education Gazette and late teacher appointment, which results in late resumption of duties by teachers.

Some policies, plans, and programs were implemented but on an ad hoc, uncoordinated, and ineffective way. These frameworks often do not achieve their intended results because of poor monitoring and evaluation, and a lack of emphasis on analytical research. The NEP 2004-2015 and the UBE Plan, 2010-2019 have not been effectively monitored although these plans are catalysts for the development, provision, and management of education, including primary education, in PNG. These are significant national frameworks for the development of education in PNG. Yet, apart from the initial efforts to decentralize these to the provinces and mobilize support for their implementation, not much was done to implement and monitor these plans to ensure that the aspirations captured in them are achieved. This has been the case with many initiatives by the GoPNG and DoE.

Capacity Challenges

Lack of or shortage of capacity is evident at all levels of the NES. This is a major obstacle to the achievement of PNG's education aspirations. The NES and more so the primary education system does not at the moment have the absorptive capacity to cater for all students transiting from elementary education. Its capacity has to be expanded to ensure that all eligible children are given an equal opportunity to enroll and continue to complete a full cycle of primary education. This will also require an increase in primary education coverage so that demand for this level of education can be met. This will be critical when the burden of school fees is removed creating more demand for education. Moreover, more teachers will have to be trained and more classroom space will be required to accommodate all school age children at this level of education.

There is also lack of or shortage of both hard and soft capacities at the system and at the institutional levels to implement education policies, plans, and programs. This has been and continues to be a main hindrance to the effective and efficient implementation of

education policies, plans, and programs and the achievement of the intended education outcomes. Capacity gaps must be identified and appropriate actions are taken to fill these to enable the NES to be effectively managed and for education interventions to be effectively implemented and monitored for results.

Quality of Learning

The NEP 2005 – 2015 goal is to develop and implement a relevant primary school curriculum and monitor it over the plan period. This goal was to be achieved using the following strategies:

- develop and distribute curriculum materials to schools;
- provide textbooks on a ratio of 1 to 2 at the lower primary and 1 to 1 at the upper primary;
- support the development of locally based curriculum,
- assess student learning using a Curriculum Standards Monitoring Test, and
- monitor education standards using Standard Officers, head teachers, and the boards of management.

The DoE and the education authorities at the sub-national levels have not been fully committed to the implementation and the monitoring of all of the above strategies. Some strategies were partially implemented, for example the distribution of curriculum materials, provision of textbooks, and the monitoring of education standards, while others have not been implemented to date. There was too much reliance on the development partners to fund as well as implement these strategies. While their contributions are acknowledged and appreciated, these efforts were not sustainable. These are some of the factors that have contributed to poor quality of student learning at the primary school level.

Teacher Supply

The NEP 2005 – 2014 has no teacher projections except to say that a required number of appropriately trained teachers will be provided. The actual number of teachers will be determined by an annual teacher demand and supply study. To ensure the education of quality teachers, the NEP proposed for a review of the teachers college curriculum,

provision of professional development opportunities for teachers and teachers college lecturers, and support for the operations of teachers colleges. Not all of these activities have been implemented on a sustainable basis.

By 2012, student enrolment had exceeded the target given in the NEP by 150,408 students. Student enrolments will more likely increase as the school fee barrier is removed and free and compulsory primary education is introduced. Increase in the number of teachers has not kept pace with the increase in student enrolment. An additional 5,896 teachers were supplied between 2007 and 2012. Yet, this increase was not enough to achieve the 2012 target PTR of 35.8. The PTR for 2012 (37.1:1) was slightly higher than the projected target.

The quality of learning depends to a greater extent on the quality of teachers (Kukari & Honan, 2010; Paraide, Evans, Honan, Muspratt and Reta, 2013). Quality teacher education programs and sustainable teacher professional learning at particularly the school level are critical to development of quality teachers. Notwithstanding efforts being made to equip primary schools with quality teachers, these efforts were largely uncoordinated, inconsistent, and program driven with effective sustainability strategies. DoE has not been effective in providing sustainable, career long professional learning for teachers. Its reliance on the use of disempowering approaches to teacher professional development has not delivered the desired results.

High pupil teacher ratios coupled with poor quality of teachers and a shortage of essential teaching and learning resources have contributed to a serious deterioration of student learning. This is made worse by teachers' poor understanding and translation of the Outcomes-Based Curriculum, ineffective bridging of students from vernacular to English, and ineffective teacher appointment and deployment to schools.

Funding of Primary Education

The aim of the NEP 2005 – 2014 is to provide a cost-effective and affordable primary education for the parents and the government. This was to be achieved through the implementation of school subsidies and parental contributions. This goal has been realized through the implementation of the TFFE program and the payment of project

fees by parents. If managed and expended well, these funds could contribute to increasing the capacity of schools and improving the quality teaching and learning for all children. Nonetheless, research carried out on the flow and use of these funds has clearly shown that there was waste in the flow of funds to schools; a small proportion of funds were expanded on teaching and learning related activities, and poor accountability and acquittal of funds by school boards and management (Paraide, 2014; PEAN, 2013). These issues must be addressed as a matter of priority to ensure that funds are properly budgeted, expended, and acquitted.

SECONDARY EDUCATION

Introduction

Secondary education comprises grades 9 to 12. It includes high schools (lower secondary), which comprises grades 9 and 10, national high schools, which comprises grades 11 and 12, and full secondary schools, which comprises grades 9 to 12. These are post primary schools and enroll students who have completed grade 8 in primary school. The number of secondary education institutions is quite small compared to the number of elementary and primary schools. The school age related population of this level of education is 15 to 18 year olds. This chapter provides an analysis of secondary education by analyzing its performance and state of progress since 2007 using a core set of access, retention, quality, equity, and management indicators.

Access to, and Participation in, Secondary Education

Secondary education was recommended for expansion together with the expansion of primary education by the ESR (1991). This strategy was recommended to increase the rate of transition from grade 8 in primary schools to grade 9 in secondary education which up to the time of the review of the education system was very low. ESR (1991) recommended that "as a matter of utmost urgency plans be put in place to provide for new national high school places to reach the target of the National Higher Education Plan for the year 2000 (around 5,000 graduates)" (p.82). It further recommended that "the less costly possibilities be explored for the maximum provision of places within the next ten years. These include attachment of eleventh and twelfth grade classrooms to existing provincial high schools, and the necessary building expansion and provision of equipment and material" (ibid, p.82). These recommendations have been implemented since the early 1990's.

Comparatively, the expansion of the secondary education sector has been relatively stagnant compared to the expansion of elementary and primary education sectors. Although 'The Education Access and Expansion Program' was targeted at increasing access at all levels of the NES by expanding education coverage (Kukari, 2010), there

was a cap on the expansion of the secondary education sector during the period of structural reforms (NEP 1995 – 2004 & NEP 2004 – 2014). This strategy limited secondary education coverage and severely constrained its absorptive capacity thus denying thousands of children access and participation at this level of education.

A serious bottleneck has now been created at the secondary education level raising serious concerns amongst stakeholders about lack of access for thousands of students completing grade 8. This problem was highlighted by ASPABAE and PEAN (2011). They revealed from their education experience survey in 5 provinces of PNG that "while there have been gains in primary school participation there has been little improvement in the percentage going to secondary and tertiary education. In the Sandaun Province less than 20% reached secondary school" (p. viii). These concerns have triggered action at the national and sub-national levels to convert more high schools and primary schools into secondary schools, and establish new secondary schools to meet the high demand for secondary education. However, this process has been quite slow contributing to a large proportion of grade 8 school leavers missing out on a secondary education.

In addition, there exists a disparity gap in the provision of secondary education amongst the provinces and the districts. In their analysis of the 2007 student enrolment data, Kukari, Michael, and Reta (2014) found that there was no equity in the establishment and the location of secondary schools. Some provinces had more secondary education institutions than others. In most cases, schools were located in places where there were fewer primary schools. These factors continue to contribute to denying the majority of secondary school related age population children access to, and participation in, receiving a secondary school education. For many children, especially those living in hard to reach places, the completion of grade 8 is often the end of their formal education as there are no secondary schools available in their locations for them to continue their education.

The access and participation gaps between the primary and the secondary education levels must be immediately bridged to allow for equitable and increased access and participation at the secondary level of education. Some actions and strategies are being devised at the national and the provincial levels to make secondary education more

widely available. This will provide additional space and ease the blockage at the secondary education level. Nonetheless, these efforts are needed to be increased and fast tracked to prevent more children from dropping out of school at grade 8.

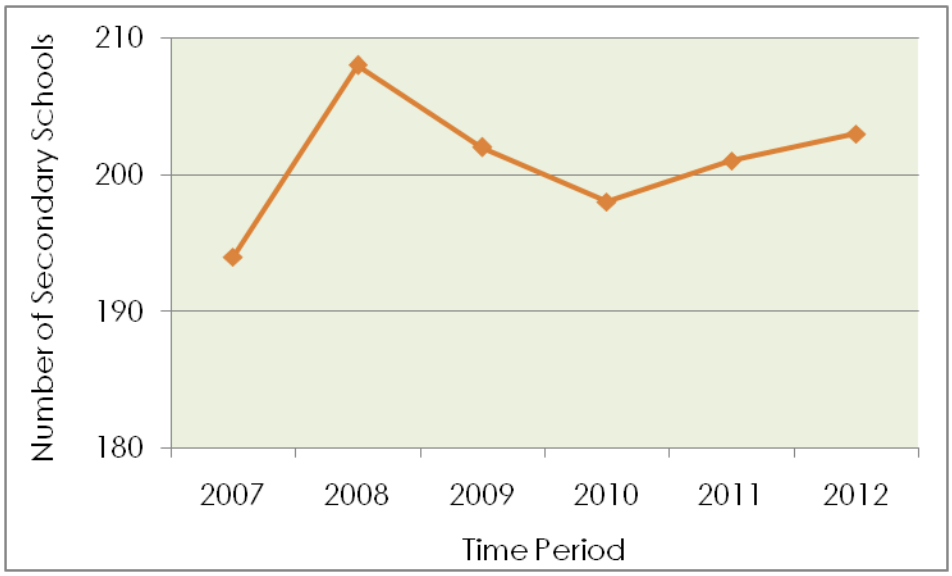
Access Indicators

Access to secondary education is measured using the number of schools, the number of students enrolled, the number of teachers, and transition rate. These indicators will help to understand the extent of secondary education coverage, access and parity gaps, and the absorptive capacity of the secondary education system.

Number of Schools

Data on the number of secondary schools is presented here to illuminate the absorptive capacity of secondary education and highlight its coverage across PNG. Data on the number of primary schools is presented in figure 30.

Figure 30: Number of schools, secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

Comparatively, there were more elementary and primary schools than there were secondary schools in 2012 (see figures 2 & 17). The number of secondary schools expanded from 194 schools in 2007 to 208 schools in 2008 but declined by 10 schools from 2009 to 2010 to reach a low of 198 schools in 2010 before increasing slightly to 203

schools in 2012. There was an addition of only 9 secondary schools in that period. The decline in the number of schools may have been due to the conversion of conventional secondary schools into technical high schools. This could be also due to schools not being counted because of their failure to complete and submit their annual school census forms.

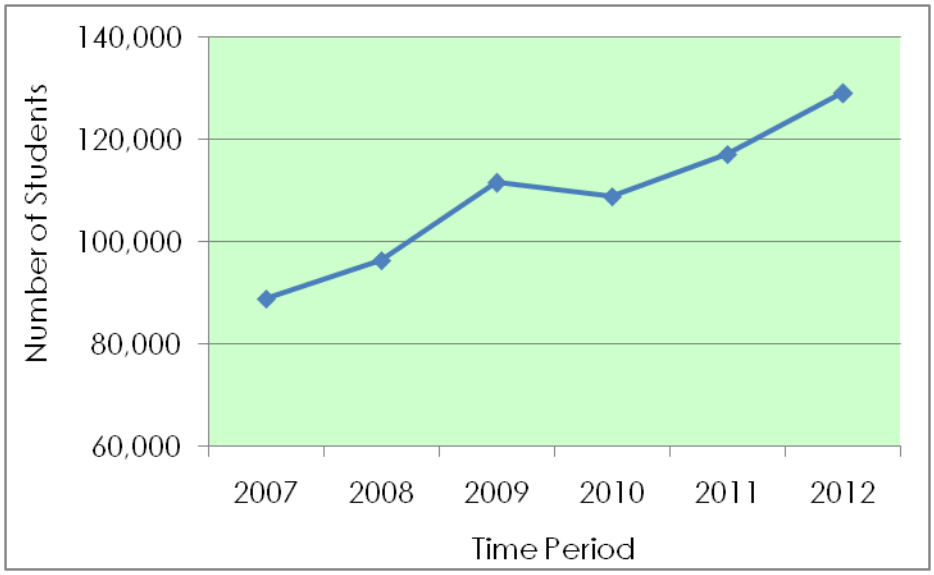
Secondary schools grew by 4.4% from 2007 whereas primary schools grew by 2.9% and the elementary schools by 17.8%. Even though the growth of secondary schools seemed higher than the growth of primary schools, in real terms the number of secondary schools (9 schools) established between 2007 and 2012 was relatively small compared to the number of primary schools (105 schools) established in the same period. This data indicates that in spite of the increase in the number of secondary schools between 2007 and 2009, there was still a serious shortage of absorptive capacity at the secondary school level to cater for students transiting from primary education. This problem will persist and continue to deny school age children access to secondary education.

The deliberate policy of focusing on the expansion of the basic education sector (elementary and primary education combined) has in a way made significant progress in increasing capacity and enabling a more equitable access to basic education for all, particularly for boys and girls, but it has created a massive blockage at the secondary education level. This blockage must be addressed as a matter of priority to make it possible for more children to enroll.

Number of Students

Data on student enrolment was collected to understand the extent of school age children's participation at the secondary school level and to measure progress towards the achievement of student enrolment targets prescribed in especially the NEP 2005 – 2014. Student enrolment data for the period 2007 – 2012 is given in figure 31.

Figure 31: Number of students, secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

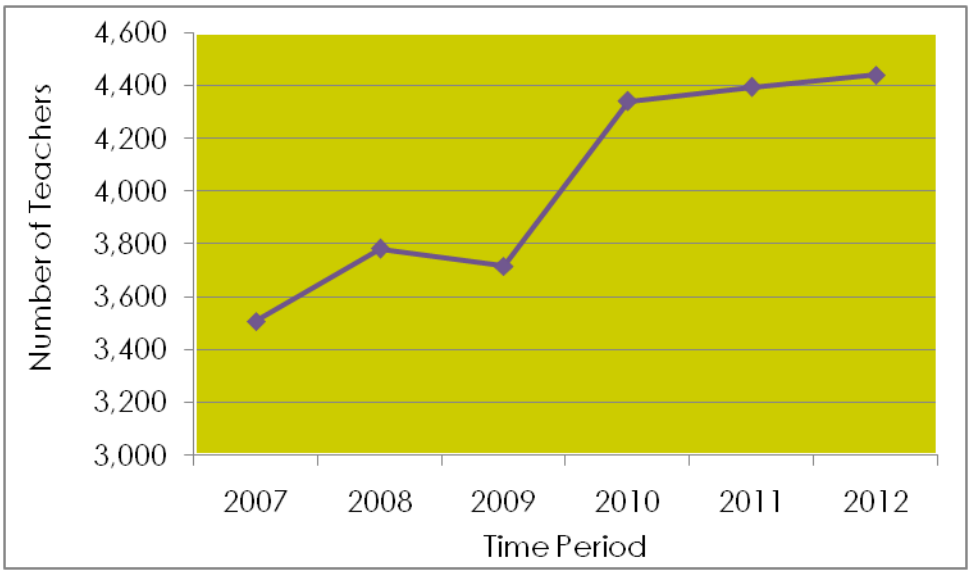
In general, student enrolment increased between 2007 and 2012. It experienced a steady growth from 88,963 students in 2007 to 111,591 students in 2009 before experiencing a small drop in 2010. Student enrollment increased again in 2011 and peaked at 129,079 students in 2012. Student enrolment increased by 40,115 students or 31% in this period. This was probably due to the establishment of 9 additional secondary schools or due to the inflation of student enrolment data (see Kukari, 2010). Student enrolment in primary education increased by an equal number of percentage points but with progressively more students (284,925) enrolled in the same period. This data reveals a growing shortage of absorptive capacity at the secondary education level owing to poor secondary education coverage.

There is some growth in student enrolment however this growth is negligible and totally inadequate to meet the demand for education at this level. The introduction of TFFE has effectively removed a critical barrier to education and will see an increase in the demand for secondary education. Years of suppressed expansion of the sector through a problematic gradual and piece meal expansionist policy has severely affected its growth and denied masses of school age children participation at this level of education. Serious efforts must now be made at all levels to expand this level of education to permit all school age children to enroll and attain this level of education.

Number of Teachers

The education and training of an adequate number of quality teachers (Avalos, 1991, Kukari, 2004) will ensure that there are qualified teachers in school and also that all schools are fully staffed. Data on teachers is important for understanding these variables. What's more, it is important for identifying the contributing factors and the results of teacher capacity shortage at the school level. Data on the trend of teachers deployed for the period 2007 – 2012 is given in figure 32.

Figure 32: Number of teachers, secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

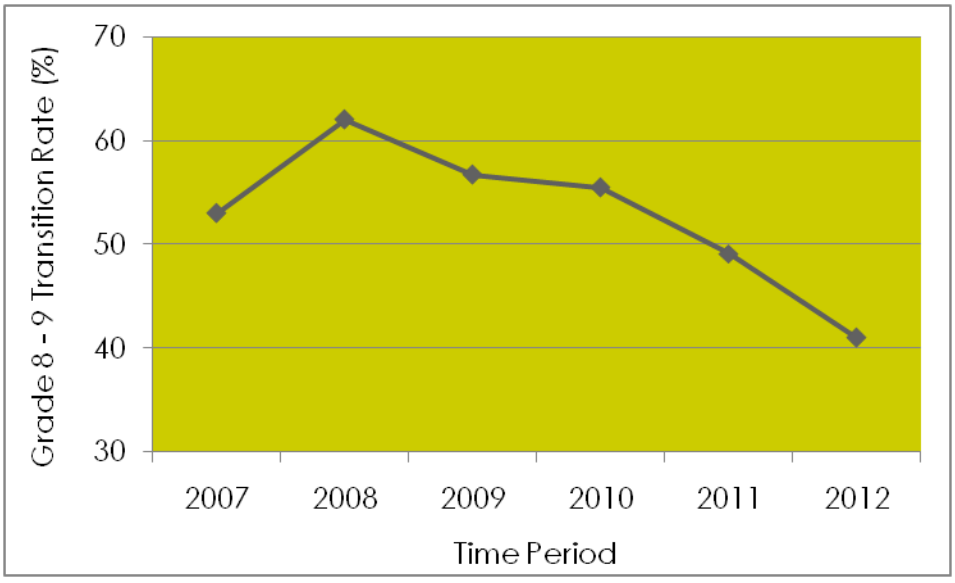
Teacher deployment trend show that the number of teachers teaching in secondary schools improved from 3,508 teachers in 2007 to 3,782 teachers in 2008 before deteriorating in 2009 to reach a low of 3,716 teachers. The number of teachers increased again in 2010 to 4,341 teachers and experienced a gradual but a steady growth thereafter to climax at 4,440 teachers in 2012. The number of teachers in the secondary education system grew by an additional 935 teachers or 21.1% between 2007 and 2012. This was lower than growth of student enrolment (40, 115 students or 31%) in the corresponding period. This data seemed to reveal a shortage in the supply of teachers created by an increase in the demand for secondary education. However, if teachers were equitably deployed, which is not normally the case, a PTR of 29:1 was achieved in 2012. This PTR was slightly higher than the nationally targeted PTR of 26:1(NEP 2005-2014),

reinforcing the need for additional teachers. Strategies should be developed to permit more teachers to be educated and trained to meet the teacher needs of secondary education.

Grade 8 to 9 Transition Rate

Grade 8 to 9 transition rate measures the extent to which students completing grade 8 at the primary education level are able to be absorbed into grade 9 at the secondary school level. Moreover, it can be used to measure the availability of space and permit an understanding of the access and coverage gaps at the secondary level of education. The national grade 8 to 9 transition rate target to be achieved by 2014 is 50% (NEP 2005 – 2014). Grade 8 to 9 transition rate data for 2007 – 2012 is presented in figure 33.

Figure 33: Grade 8 to 9 transition rate, secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

Data from figure 33 shows that grade 8 to 9 transition rose from 53% to peak at 62% in 2008 and deteriorated rapidly between 2009 and 2014. By 2014 the transition rate was at 41%, a decline of 9% since 2008. This data indicates that thousands of students completing grade 8 at the primary school level missed out on a grade 9 placing between especially 2009 and 2012. There is no hope of these children ever attaining a secondary education unless they explore and use alternative pathways such as FODE and TVET.

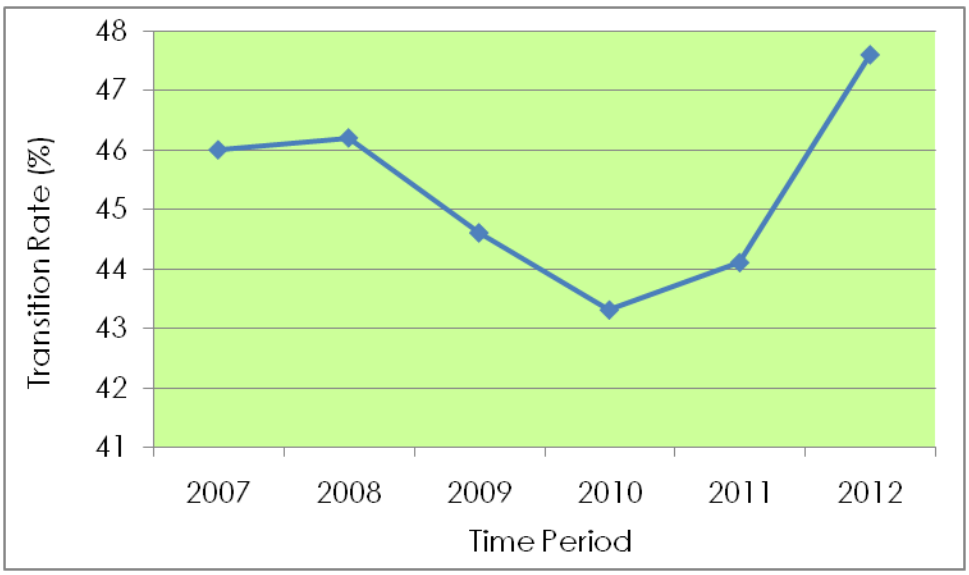
This downward trend student transition from grade 8 to grade 9 is more likely to continue unless consorted effort is made by stakeholders, particularly governments, at the national and decentralized levels to reverse it.

Lack of absorptive capacity and coverage at the secondary school level alluded to earlier are the main contributing factors to the deteriorating grade 8 to 9 transition rate. This is a result of a poor policy choice and a legacy of incremental expansionist philosophy. A lot of catching up will have to be done to provide the required space at the secondary school level to allow for more students to access secondary education. Otherwise, secondary education will only serve the educational needs of a relatively privileged few while the majority of the children remain on the margins and the periphery of the secondary education system.

Grade 10 to 11 Transition Rate

Grade 10 to 11 transition rate measures the transition of grade 10 students to grade 11. This data is also useful for ascertaining the absorptive capacity and coverage at the upper secondary level. The national grade 10 to 11 transition rate target to be achieved by 2014 is 28.8% (NEP 2005 – 2014). Grade 10 to 11 transition rate data for 2007 – 2012 is presented in figure 34.

Figure 34: Grade 10 to 11 transition rate, secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The grade 10 to 11 transition rate increased by 0.2% from 2007 to 2008 and deteriorated significantly between 2008 and 2010. It assumed an upward trend from 2011, increasing dramatically from then on to peak at 47.6% in 2012. Notwithstanding this transition rate surpassing the national target of 28.8%, the overall grade 10 to 11 transition rate improved by a mere 1.6% since 2007. This is a very poor result by any standard. Data seemed to reveal that there was a very small variation in the proportion of students transiting from grade 10 to 11 between 2007 and 2012. This means that the number of students transiting from grade 10 to 11 in that period remained very much the same. This resulted in more students being denied access to grade 11. Although there was an upward trend in the transition of grade 10 students to grade 11, the rate of increase was insignificant to cater for the increasing demand for grade 11 places in secondary education.

The national grade 10 to 11 transition rate target embodies the deliberate strategy that was employed to restrict the number of students transiting from grade 10 to grade 11. It was a strategy designed to exclude the majority of students from having access to upper secondary education and an opportunity to complete the full secondary education cycle. Furthermore, this strategy created a massive shortage of absorptive capacity and shrinking education coverage at this level of education. This is another legacy of the incremental expansionist philosophy.

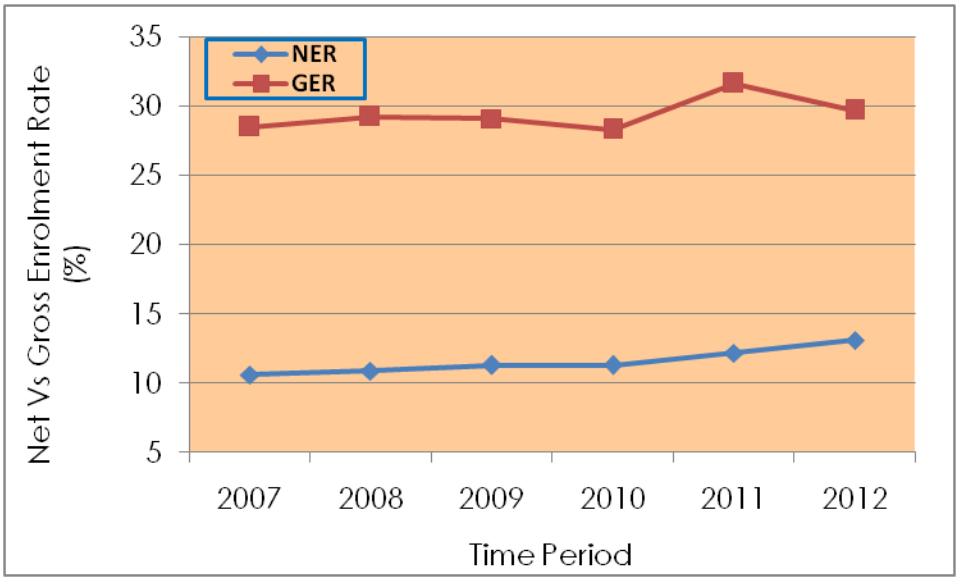
Participation Indicators

The extent of school age children's participation in secondary education is measured using NER and GER. NER measures the number of 15 – 18 year olds enrolled in secondary education. Conversely, GER measures all children enrolled in secondary education regardless of their age.

Net and Gross Enrolment Rates

NER and GER are presented together to compare their trend and to identify participation gaps. NER and GER data for 2007 to 2012 period are presented in figure 35.

Figure 35: Net and gross enrolment rates, secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

Data from figure 35 shows a very visible participation gap between the children of the school age related population (15 – 18 year olds) and overage and underage children. This gap seems to be widening rather than closing. The proportion of 15 – 18 year olds enrolled in secondary education was very small. NER increased by 0.7% from 2007 to 2012 and by 9% from 2011 to 2012. Overall, NER increased by just 2.5% between 2007 and 2012. The NER of 13.1% achieved in 2012 was lower than the targeted NER of 25.5% for lower secondary and higher than the targeted NER of 6.6% for upper secondary. However, what is salient is that a massive proportion of 15 – 18 year olds were not enrolled in secondary education.

Many of these children most likely dropped out of school at the end of grade 8 and grade 10 due to lack of space at the secondary school level. Comparatively, there were more overage and underage children enrolled in secondary education than there were 15 – 18 year olds. The proportion of overage and underage children increased from 28.5% in 2007 to 29.2% in 2008 and then declined from 2009 to 2010 before increasing to peak at 31.6% in 2011 but declined again in 2012 to be at 29.7%. Overall, the GER grew by 3.1% between 2007 and 2012, which was higher than the increase in the NER in the same period. This data shows that while there was a small increase in the enrolment of 15 – 18 year olds and overage and underage children, the enrolment of the latter

group was more than the former group of students. This means that space that could have been occupied by children from the school age related population was occupied by children outside of this population.

The data also point to a serious lack of absorptive capacity and education coverage at the secondary school level. The denial of participation by children in secondary education is mainly caused by these two factors. This situation was by design and not by default. Those who constructed it knew what they were advocating and were very much conscious of the consequences. The NEP 2005 – 2014 was the platform they used to suppress and alienate children from receiving a quality secondary education. These problems are more likely to persist and continue to marginalize children from receiving a secondary education unless effective strategies are implemented and closely monitored to expand the secondary education system to enable more children to enroll.

Secondary Education System Efficiency

Secondary education suffers from poor coverage and is severely constrained by poor absorptive capacity owing to years of suppression and lack of expansion to cater for the massive numbers of students completing primary education. Many children who complete grade 8 are unable to progress to grade 9 due to limited space. The same is also true for children completing grade 10. Quite a number of children drop out of secondary school before reaching grade 10 or grade grad 12. Apart from poor coverage and absorptive capacity, poor self-esteem, competence beliefs, influence of the family environment, changes in the education environment, and lack of motivation were factors that cause children to leave school before completing the full cycle of secondary education (Ope, 2003; Seta, 1993). Barriers such as these should be identified and addressed to allow all children to complete the full cycle of secondary education.

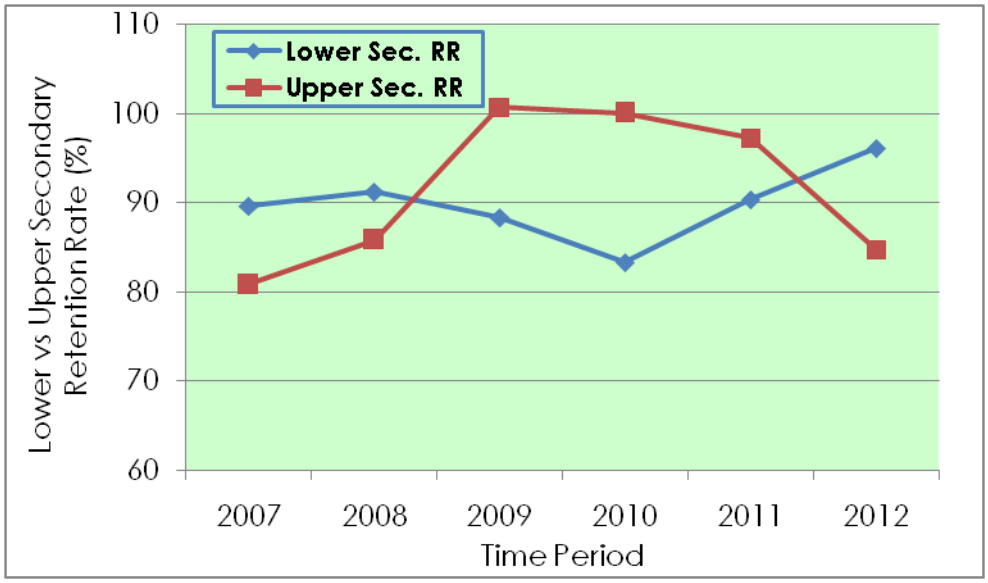
Efficiency Indicators

The efficiency of the secondary education system like the elementary and the primary education systems is measured using RR and CR. These indicators are important for understanding the extent of leakages and wastage in the secondary education system.

Retention Rate

RR measures the extent in which secondary education students are retained without dropping out from school. Data for student retention in both the lower and upper secondary education is given in figure 36.

Figure 36: Retention rate, lower and upper secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

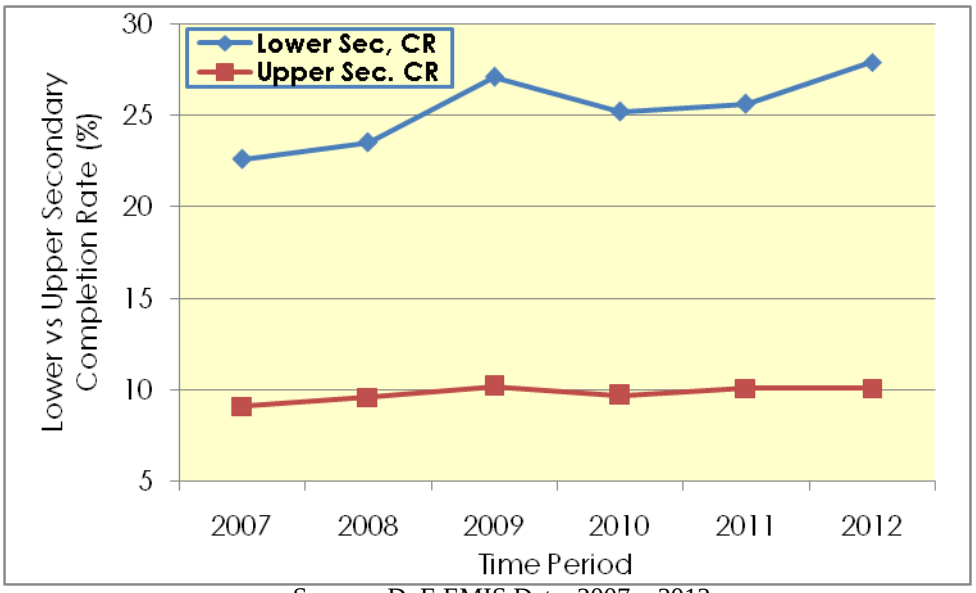
The RR trends for both the lower and the upper secondary levels were inconsistent between 2007 and 2012. The data show that RRs for both levels of secondary education were heading in the opposite direction. The lower secondary RR experienced a small increase between 2007 and 2008 and then deteriorated rapidly to a low of 83.3% in 2010. The RR rose quite rapidly between 2010 and 2012 to reach a high of 96.1%. Overall, lower secondary RR increased by 12.8% in the period between 2007 and 2012. This increase was more likely to continue as barriers to participation such as school fees are removed. The upper secondary level RR exhibited a reversed trend to that of lower secondary. RR grew rapidly from 80.8% in 2007 to peak at 100.7% in 2010 before deteriorating rapidly to reach a low of 84.7% in 2012. Overall, the upper secondary RR declined by 16% since 2009. This downward trend should be addressed as a matter of priority to enable all children to complete grades 11 and 12 without leaving school.

The RR data from figure 35 shows that there were more students retained in the lower secondary level than there were students at the upper secondary school level. More students, and this number was more likely to increase further, were leaving school at the upper secondary level compared to the lower secondary school level. This could be caused by poor school organizational and learning climates (Kukari, 1990), school related violence and bullying (DoE, 2009c), and boredom (Seta, 1993). These and other related factors should be targeted and effectively mitigated to make the school and learning environments conducive for children to continue their secondary education.

Completion Rate

CR for lower and upper secondary levels of education are presented together to enable their trends to be compared and help to highlight the progress made since 2007. Data on 2007 – 2012 lower and upper secondary education CRs is presented in figure 37.

Figure 37: Completion rate, lower and upper secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The CRs for both the lower and the upper secondary education are really poor. This is despite the data showing more students completing grade 10 between 2007 and 2012 than the number of students completing grade 12. Data from figure 36 reveals that over two thirds of students who enrolled in secondary education never completed grade 10 and grade 12 between 2007 and 2012. Although there was some improvement in the number

of students completing grade 10, this was a very small proportion of students compared to the proportion of students who failed to complete the same grade. Comparatively, there was hardly any improvement in the number of students completing grade 12 between 2007 and 2012. This data correlates with the deterioration in the RR over the same period (see figure 36). This data indicates that PNG has been providing a massively inefficient secondary school education system underpinned by very high student attrition.

The deterioration and stagnation in the output of the secondary education system could be attributed to, amongst other factors, its lack of prioritization by the government, poor policy choices, lack of or ineffective interventions, and neglect by stakeholders, particularly governments at all levels to support it with adequate resources.

Quality of Education

The ESR (1991) reviewed the quality of secondary education as well, particularly its curriculum and the provision of relevant teaching and learning resources. With regards to the curriculum, it was proposed that an integrated academic and vocational curriculum should be studied by students. It was also proposed that secondary school courses "commence from the base of real competence of the students, and proceed at a pace and over a range of work that will facilitate rather than hinder genuine cognitive development; and introduction of advance courses for the small number of more able students, who, like those of any other nation in the world, have the ability to perform at top international standards" (p.186). These sets of proposals were never taken on board by DoE, opting instead to embrace the implementation of Outcomes-Based Curriculum (OBC).

OBC has not contributed to the education of a caliber of students who can compete internationally nor has it adequately prepared students to competently handle post secondary education courses. Its failures in equipping students with essential but fundamental knowledge, skills, and values have been widely documented. Students who continue to complete the final grade of secondary education often leave school without being fully competent in literacy, numeracy, the sciences, and the social sciences. An analysis of students' performance on the national grade 10 examinations since 2007 show that the majority of students consistently perform below the pass mark (see figure 38).

Furthermore, a literacy assessment of grade 12 students in five provinces carried out by ASPABAE and PEAN (2011) show that of the secondary school students who were in school at the time of the literacy assessment less than 20% were classified as literate. These results are alarming but consistent with anecdotal evidence from a wide section of PNG citizens.

The reasons for poor literacy rates amongst grade 12 students and poor performance by grade 10 students were identified by a study carried out by Francis So on the implementation of OBC in selected secondary schools in the Western Highlands Province in 2009. He found from his study that implementation of OBC at the secondary school level was constrained by a lack of teaching and learning resources, inadequate professional development for teachers, teachers' poor understanding of OBC, and conservatism and withdrawal by teachers from teaching OBC. These findings are not only consistent with similar findings by Kukari, Paraide and Kippel (2009) and Agigo (2010), they are also supported by global research on teachers' implementation of curriculum reforms.

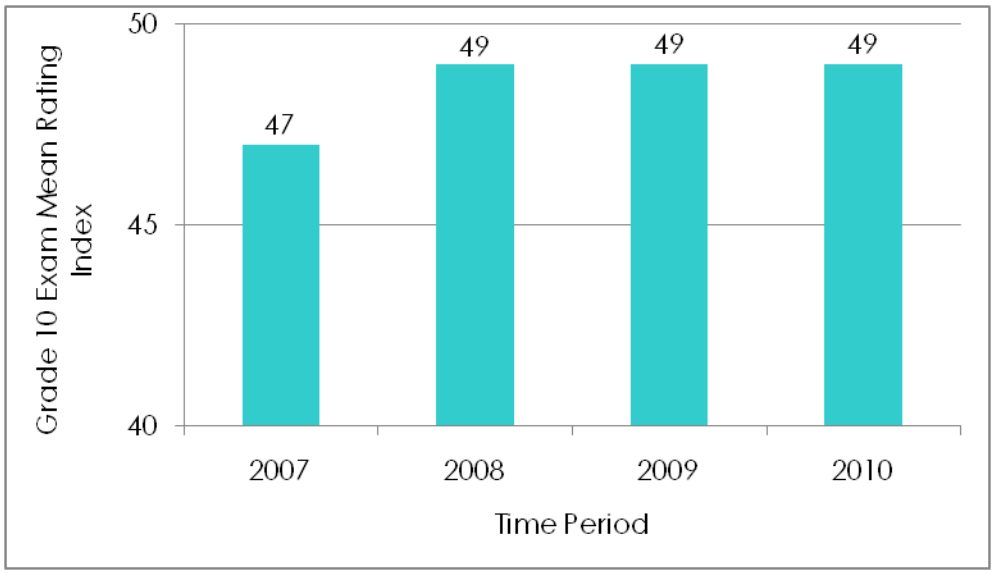
Quality of Education Indicators

Quality of learning at the secondary school level is measured using Pass Mark (PM) and PTR. PTR is a proxy measure of quality.

Pass Mark

Pass Mark measures the performance of students in national examinations and other measures of quality education. In this case, students' performance in the national Grade 10 Certificate Examination is used to measure the quality of student learning. Data on students' performances on this examination between 2007 and 2012 is presented in figure 38.

Figure 38: Pass mark, secondary education, 2007 – 2012



Source: DoE CDAD Data, 2007 – 2012

Data from figure 38 shows that on average most grade 10 students consistently perform below the pass mark since 2007. Generally, students' performances on the grade 10 national examination have not improved since 2008 and this trend is more likely to continue. This data indicates that the quality of education was deteriorating and, if not urgently addressed, this poor trend will continue to persist and undermine all efforts that have been invested to date to ensure that all children have access to a quality secondary education.

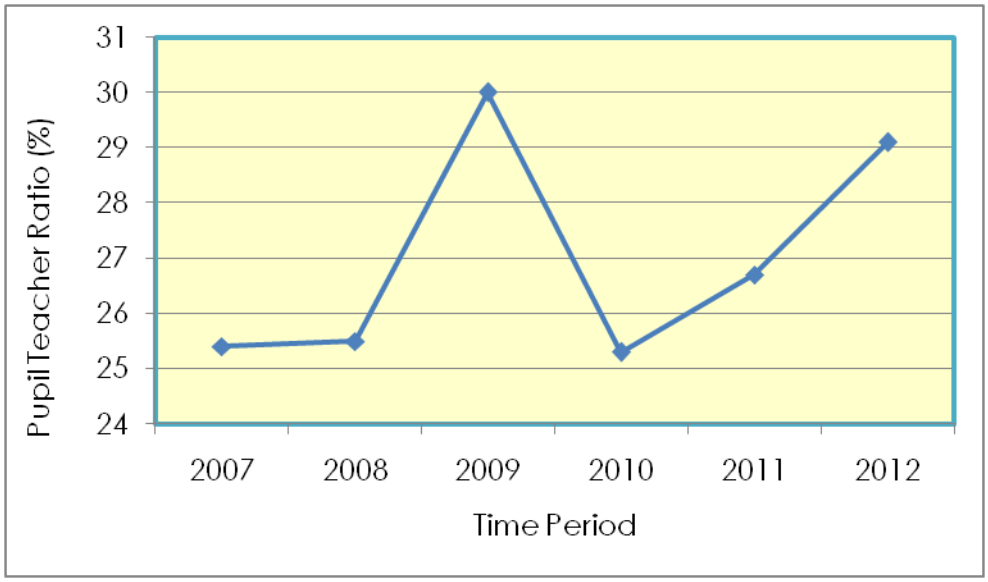
The deterioration in the quality of secondary education could be attributed to, amongst many other factors, poor teacher education and training, ineffective classroom practice, lack of teacher professional learning opportunities, poor parental and community attitudes towards the education of children, and closed school organizational climates. Causal factors of poor education quality should be ascertained and effectively addressed to enable the quality of education to be improved.

Pupil to Teacher Ratio

PTR is important to the achievement of quality student learning outcomes because it can either contribute to improving student achievement or hindering students' learning. The

national target for primary education PTR is 26 students to 1 teacher. PTR data for secondary education is presented in figure 39.

Figure 39: Pupil to teacher ratio, secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

Secondary education PTR increased from 25.4 in 2007 reaching a high of 30.0 in 2009 and then dropped to 25.3 in 2010 before assuming an upward trend from 2011 peaking just under the 2009 rate at 29.1 in 2012. Overall, PTR increased by 4.7 between 2007 and 2012. This PTR of 29.1 achieved in 2012 was slightly higher than the national target of 26.0. Nonetheless, PTR of 29.1 was still conducive for students to be effectively taught by their teachers and for quality learning outcomes to be achieved. This data indicates that progress is being made towards the provision of classroom environments that are conducive for all students. Efforts should be made to foster these learning environments to allow all students to do well academically and reach their full potential.

Data indicates that PTR at the secondary education level favours quality teaching and learning. Yet, this did not translate into high student performance by students in the national Grade 10 Examination between 2007 and 2012. The relatively poor performance by students in this examination could not be attributed to PTR.

Equity

The NEP 2005 – 2014 aimed to provide equitable opportunities for all children to have access to, and participate in, receiving a secondary education. To achieve this aim, 48% of places in lower secondary and 45% in upper secondary will be occupied by girls. These are the equity targets that the plan aimed to achieve between 2005 and 2014. Yet, these targets will not help in achieving the goal of gender parity. These targets are not only discriminatory, they are designed to deny girls access and participation at this level of education. ASPABAE and PEAN (2011), for example, found from their survey of education experience of adults and youth in 5 provinces of PNG that less females in 3 of the provinces reached secondary education despite increases in female participation in school. They concluded by pointing out that the gender gap has actually widened to almost 20%.

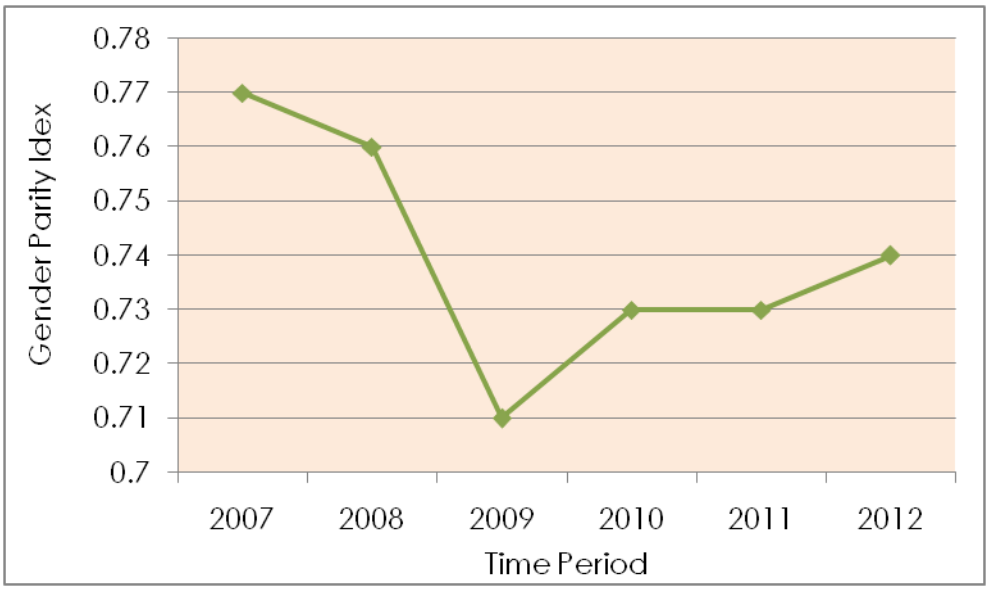
Equity Indicators

GPI, NER, GER, RR, and CR are used here to measure progress as well as the performance of the NES towards the attainment of national parity goals and targets.

Gender Parity Index

GPI in this report measures the extent to which boys and girls have access to, and participation in, receiving a secondary education, with an emphasis on the access and participation of girls. Data on the GPI in secondary education is presented in figure 40.

Figure 40: Gender parity index, secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

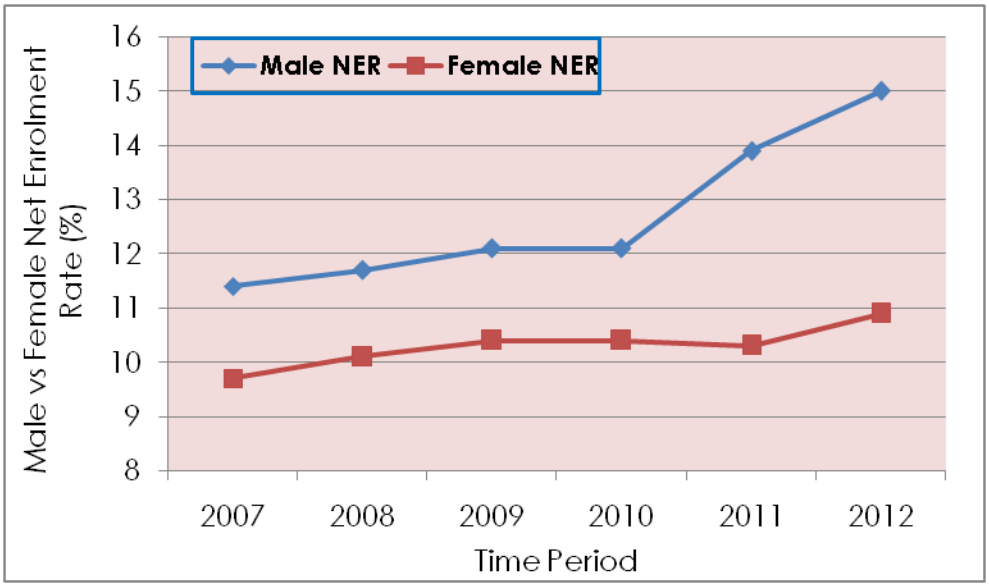
As can be seen from figure 40, there was a considerable deterioration in the GPI index from 0.77% in 2007 to 0.71% in 2009. It recovered and improved to 0.73% in 2010 before steadying in 2011 and then increasing by a further 0.1% to reach 0.74% in 2012. In total, GPI fell by 3 % between 2007 and 2012. This data indicates a significant decline in the participation of girls in secondary education and a gradual increase in the enrolment of boys since 2007. Moreover, it shows that there was significantly more boys enrolled in secondary education than there were girls. There is a visible and expanding gender parity gap between the boys and the girls at the secondary school level. Girls are seriously disadvantaged and require immediate intervention to improve their chances of receiving a secondary education.

The above situation could be attributed to one or more of the causal factors alluded to elsewhere in this analysis. It is imperative that evidence-based strategies targeting the enrolment of girls in secondary education are developed, implemented, and closely monitored to mitigate the causal factors and enable more girls to enroll in secondary schools.

Male and Female Net Enrolment Rates

Male and female NER measure the participation of 15 – 18 year old boys and girls in secondary education. Male and Female NER are presented together to allow for comparisons to be made and for gender parity gaps to be identified. Male and female NER for 2007 – 2012 are presented in figure 41.

Figure 41: Male and female net enrolment rates, secondary education, 2007 - 2012



Source: DoE EMIS Data, 2007 – 2012

The 2007 - 2012 NER patterns for both the males and the females were quite similar except that the male NER was higher than the female NER. In addition, female NER was growing at a slow pace, especially between 2010 and 2012. The male NER grew from 11.4% in 2007 to 11.7% in 2008 but leveled off between 2009 and 2010 with 12.1% before experiencing a gradual increase from 2011 to 2012 climaxing at 15%. In total, male NER increased 3.6% between 2007 and 2012. On the other hand, the female NER stagnated. It increased from 9.7% in 2007 to 10.1% in 2008 but experienced no growth between 2009 and 2010. It dipped in 2011 before improving to peak at 10.9% in 2012. In sum, female NER expanded by 1.2% in that period.

Data shows that there were more 15 – 18 year old males enrolled in secondary education than there were girls between 2007 and 2012. Furthermore, data reveals an expanding gender parity gap between males and females. Although there is some indication that the female NER was increasing, this increase was in adequate to keep pace with growth in

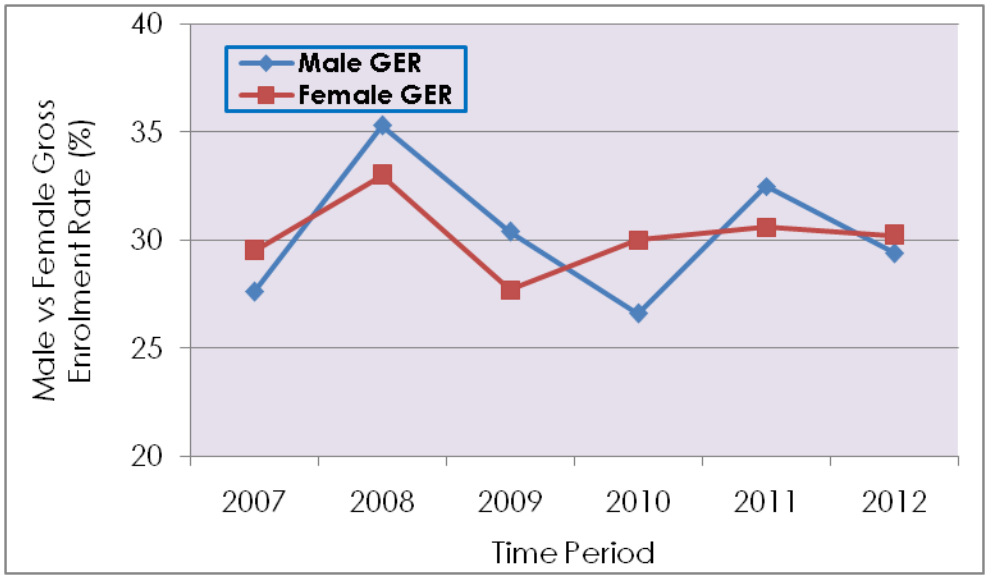
the male NER and gradually close the gender parity gap. The enrolment of girls from the above age cohort has deteriorated, pushing them to the margins of secondary education. This state of affairs more likely resulted from poor absorptive capacity and inadequate education coverage at the secondary school level (Kukari, Reta & Michael, 2014), poor policy choice relating to the participation of girls (NEP 2005 – 2014) restricted the participation of girls), high attrition of girls at the end of grade 10, poor implementation and monitoring of education plans and policies at all levels, and one or a combination of factors discussed earlier in this analysis.

The enrolment of girls from the school age related population in secondary education will continue to deteriorate and further push an increasing number of girls to the periphery of the secondary education system unless increased equitable and more inclusive opportunities are provided for them to meaningfully participate. Immediate steps must be taken to expand the absorptive capacity and education coverage at the secondary school level, mitigate the high attrition rate amongst especially girls, and effectively implement, monitor, and measure progress towards the achievement of gender parity goals and targets captured in various policy and planning frameworks.

Male and Female Gross Enrolment Rates

The enrolment of overage and underage girls and boys was and continues to be a major challenge for the NES. GER measures the extent to which all males and females participate in secondary education without making reference to their age. Both Male and female net enrolment rates for 2007 – 2012 are provided in figure 42.

Figure 42: Male and female gross enrolment rates, secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The male and female GER trends fluctuated between 2007 and 2012. Female enrolment outpaced male enrolment on at least three different occasions. Even though there were more females enrolled than there were males in 2007, the enrolment of boys surge past the enrolment of girls in 2008 despite the female GER increasing simultaneously in the same year. GER for both sexes deteriorated dramatically between in 2008 and 2009. The male GER fell further between 2009 and 2010 whereas the female GER began improving after a decline between 2008 and 2009 in that period to outpace the enrolment of males. This shift was reversed between 2010 and 2011 where male GER increased from a two year decline to overtake the enrolment of females. However, male GER experienced a second fall, although much smaller than the first one, in 2012 whereas the female GER increased by a very small margin in the same year. By 2012, female GER was at 30.2% and the male GER was at 29.4%. Comparatively, female GER increased by 2.5% whereas the male GER declined by 5.9% in the same period.

The above data suggest that the enrolment of girls in secondary education was increasing and outpacing the enrolment of boys. The enrolment of boys declined between 2007 and 2012. There were more girls than there were boys enrolled in secondary education than there were boys. This signifies a significant change in the enrolment trend at the secondary school level. This change could be attributed to, amongst other factors, a

change in parental education status, a change in community attitudes towards girls' education, increased levels of awareness and action towards the promotion of the girl child's right to education, improved academic performance of girls at the lower secondary school level, and the removal of school fees. Nonetheless, data also point to an increase in the enrolment of overage and underage children, particularly girls. The challenge for the NES is to make permanent the gains made and to improve the enrolment of 15 – 18 year old girls.

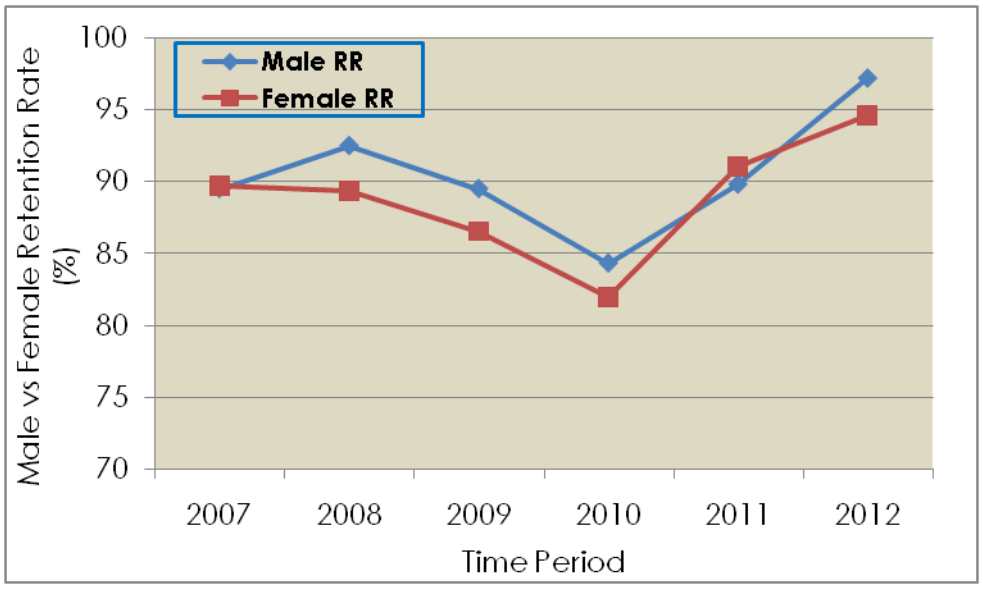
Male and Female Retention Rates

Male and female RRs for secondary education are presented here to compare the trend of retention of both sexes and identify retention gaps. Data on the RR for lower and upper secondary education for the period 2007 – 2012 are shown in figures 43 and 44.

Male and Female Lower Secondary Education Retention Rates

Lower secondary education male and female 2007 - 2012 RR trends are presented in figure 43.

Figure 43: Male and female retention rates, lower secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The 2007 – 2012 male and female RR trends were quite similar. Moreover, there was parity in the male and female RR in 2007 before the male RR increased in 2008 and

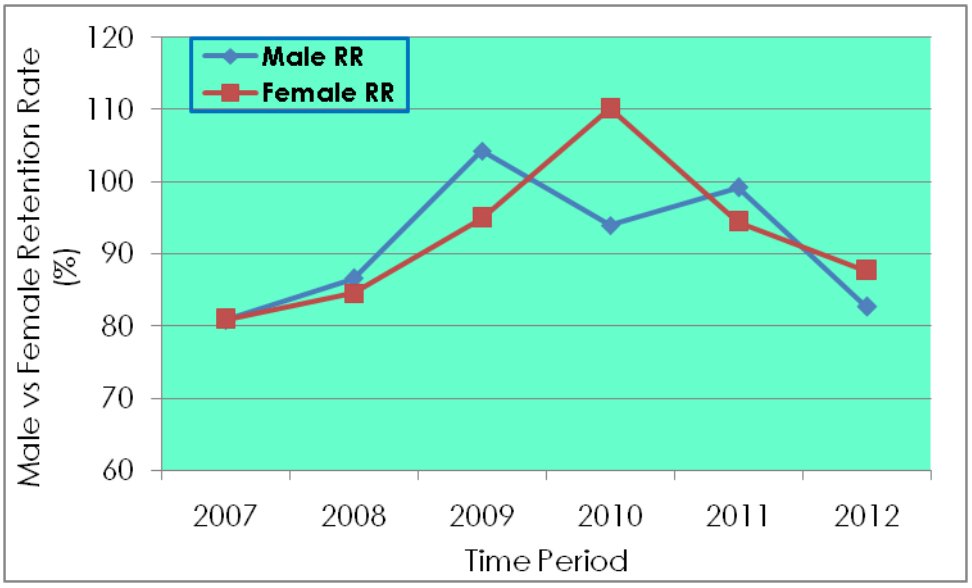
descended rapidly between 2008 and 2010 reaching a low of 84.3% in that year. It picked up in 2011 reaching a high of 97.2% in 2012. In contrast, the female RR deteriorated over a period of 3 years since 2007 and dipped to 81.9% in 2010 before assuming an upward trend peaking at 94.6% in 2012. Overall, the male RR grew by 12.9% whereas the female RR increased about an equal percentage points (12.7%). Even though the expansion of the female RR was about the same as the expansion in the male RR between 2007 and 2012, this was not enough to breach the RR gap between themselves and their male counterparts.

Data from figure 43 seems to suggest that more males than there were females being retained in the lower secondary level. However, the number of females retained at this level of education was increasing. This is a positive sign and additional effort and resources need to be invested to boost the retention of females and give them an increased opportunity to complete the lower secondary education cycle.

Male and Female Upper Secondary Education Retention Rates

Upper secondary education male and female 2007 - 2012 RR trends are presented in figure 44.

Figure 44: Male and female retention rates, upper secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The male RR trend fluctuated more than the female RR between 2007 and 2012. The female RR increased from a low of 80.9% in 2007 to climax at 110.1% in 2010 before deteriorating between 2011 and 2012 to end up at 87.6%. On the one hand, the male RR grew from 80.8% in 2007 to peak at 104.3%. RR dipped to 94% in 2010 and increased to 99.2% in 2011 before experiencing another drop in 2012. Comparatively, female RR increased by 29.2% whereas the male RR grew by 23.5%. Even though the RR of both sexes expanded between 2007 and 2012, male RR expended more than the female RR.

The above data indicates that even though the number of girls and boys retained in upper secondary education increased between 2007 and 2012, this number declined since 2011 and is more likely to continue to decline unless effective measures are devised, implemented, and closely monitored for improved results.

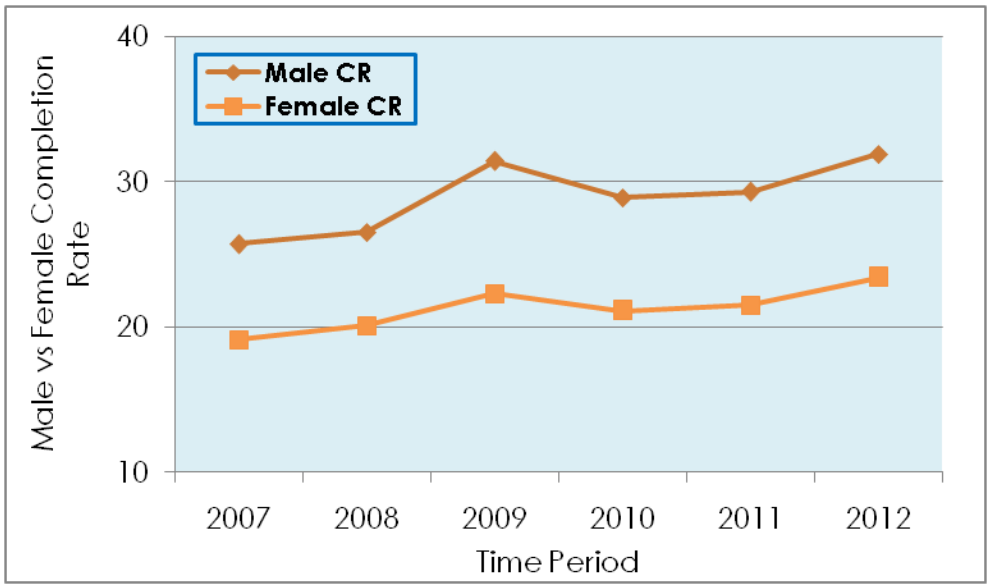
Male and Female Completion Rates

Lower and upper secondary education male and female CRs are presented here to ascertain the male and female grade 10 and 12 completion trends, highlight the contributing factors, and identify completion gaps. Data on lower and upper secondary male and female CRs for 2007 – 2012 are shown in figures 45 and 46.

Male and Female Lower Secondary Education Completion Rates

Lower secondary education male and female 2007 - 2012 CR trends are presented in figure 45.

Figure 45: Male and female completion rates, lower secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The 2007 – 2012 CR trends for male and female students were quite similar. The proportion of both males and females completing the lower secondary education cycle increased from 2007 to 2009 but dropped in 2010 and increased again from 2011 reaching their highest points in 2012.

The male CR improved from 25.7% in 2007 to 31.4% in 2009. It dipped to a low of 28.9% in 2010 before recommencing an upward trend to climax at 31.9% in 2012. Conversely, the female CR increased from 19.1% in 2007 to 22.3 % in 2009 but regressed in 2010 to 21.1% before increasing again in 2011 to max out at 23.4% in 2012. Comparatively, male CR increased by 6.2% while the female CR increased by 4.3% between 2007 and 2012. However, the increase in the CR of females was insufficient to make any inroads into the completion gap that existed between themselves and the male students.

Nevertheless, the above data shows that proportionately fewer females than males completed the lower secondary education cycle between 2007 and 2012. Yet, this proportion was much less than the proportion of males and females that failed to complete grade 10. The proportion of females not completing grade 10 was much higher than the proportion of males. Data also reveals a visibly increasing completion gap between the males and the females. This means that females were still lagging behind the

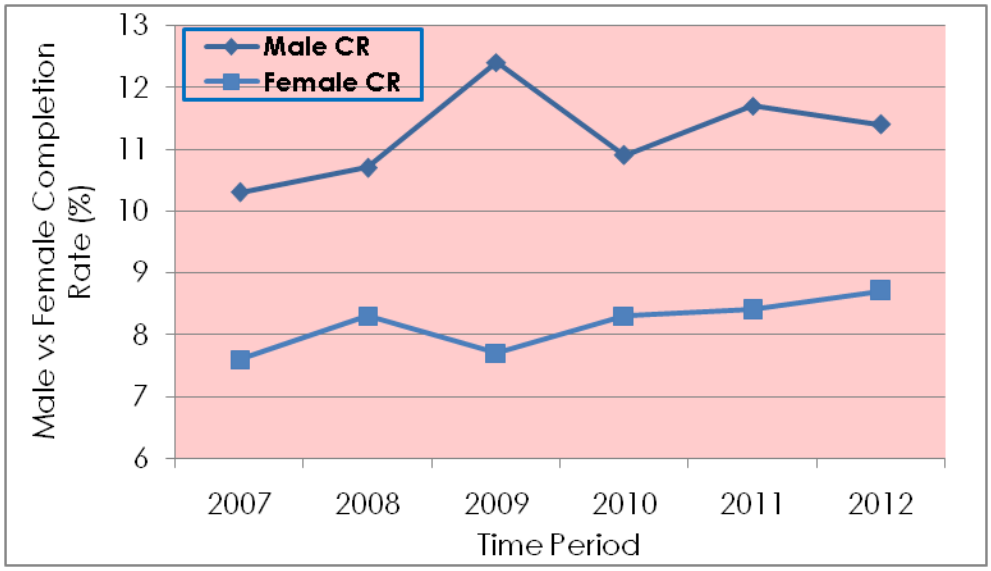
males on this indicator. Poor female completion rates could be attributed to, inter alia, cultural barriers (Palmer, 1978), male centered curriculum and classroom interaction patterns (Forova & Dyer, 2003), boredom (Seta, 1983), and non inclusive school environments (Knox, 2013; Kukari, 2009c).

Female completion rate could be boosted through relevant inclusive and equitable education interventions such as the provision of appropriate infrastructure that caters for the specific needs of girls, cultivation and fostering of inclusive, open, and supportive home, school, and classroom environments, and the employment of gender sensitive teaching strategies by teachers. Parental and community awareness and engagement are critical to any efforts to accelerate female students' participation and successfully completion of their education. These must be factored into designing, implementation, and monitoring of interventions targeted at increasing equitable educational opportunities for girls.

Male and Female Upper Secondary Education Completion Rates

Upper secondary education male and female 2007 - 2012 CR trends are presented in figure 46.

Figure 46: Male and female completion rates, upper secondary education, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

The male and female upper secondary CR trend was inconsistent between 2007 and 2012. Nevertheless, what was consistent in that period was the growing completion gap between males and females, with females being continuously under represented since 2007.

The female CR was consistently lower than the male CR between 2007 and 2012. It increased from a low of 7.6% in 2007 to 8.3% in 2008 but declined in 2009. It expanded slightly from 2010 to reach a high of 8.7% in 2012. On the other hand, the male CR grew from a low of 10.3% in 2007 to climax at 12.4% in 2009 before deteriorating between 2010 and 2012. By 2012, the male CR was 11.4%. Overall, male CR increased by 2.1% whereas 1.1% for females in the same period.

The above data shows that proportionately fewer females than males completed the upper secondary education cycle between 2007 and 2012. Yet, this proportion was much less than the proportion of males and females that failed to complete grade 10. The proportion of females not completing grade 10 was much higher than the proportion of males. Data also reveals a visibly increasing completion gap between the males and the females. This means that females were still lagging behind the males on this indicator. Poor female completion rates could be attributed to one or more factors alluded to under lower secondary completion rates and elsewhere in this analysis.

Upper secondary male and female CR trend was very similar to the lower secondary CR trend. Both CR trends indicate that a greater proportion of boys and girls across secondary education dropped out of school before completing a full secondary education cycle. This data points to a totally inefficient and dysfunctional secondary education system, characterized by considerable wastage and leakage in the system.

Management

Evidence from this analysis shows that the secondary education system is poorly managed, highly inefficient, discriminatory, and of relatively poor quality. The system is characterized by poor access, participation, and quality indicators. These indicators are a result of a deliberately designed education system to cater for the education needs of a

privileged few while marginalizing the majority of children, especially girls and other disadvantaged children.

Provision of Inclusive and Equitable Educational Opportunities

Proportionately, more children miss out on receiving a secondary school education than children who are privileged to do so. The exclusion of a large proportion of school age children from receiving a secondary education is neither in their best interests nor in the best interest of PNG. What is more, it is contrary to the National Goals and Directive Principles enshrined in the National Constitution, especially goals number 1 and 2, the objectives of the structural and curriculum reforms recommended by the ESR (1991) and implemented since the early 1990s, philosophy of 'Integral Human Development' articulated in the Matane Report (1986) which underpins much of the education thinking and action over the last 3 decades, and other relevant national and international legal and policy frameworks, and conventions on the rights of the child.

The above frameworks should be used to guide the development, implementation, and monitoring of education plans, policies, and programs to make secondary education more widely available and for inclusive and equitable opportunities to be provided to all school age children to complete a full cycle of secondary education. The strategy of restricting access and suppressing increased participation of children, especially girls, advocated in the NEP 2005 – 2014 should be immediately reviewed to allow for all children to have an equal opportunity to access this level of education.

Expansion of Education Coverage

Poor secondary education coverage has been and continues to be a major barrier to school age children's access to, and participation in, secondary education. Proportionately, more children, particularly 15 – 18 year olds, were denied access and meaningful participation at the secondary school level. This result from poor absorptive capacity created and perpetuated by a lack of foresight by those responsible for managing the education system. DoE (2004) justified its decision to curtail the expansion of secondary education on the problems that were likely to be created if it was expanded. These problems are mainly supply related, which include the supply of teachers, textbooks, and infrastructure,

and lack of financial capacity. Unfortunately, this highlights more the prevailing management weaknesses than anything else.

Demand for secondary level education has increased dramatically over the last two decades and will continue to increase as barriers such as school fees are removed. DoE, provincial and district education divisions, and relevant stakeholders must now take immediate and progressive steps to increase secondary education coverage so that all children progressing from the lower grades are able to continue and complete the secondary education cycle. Some initial thinking and dialogue has taken place but more concrete steps are now required to expand the secondary education system so that all school age children can have access to a secondary education of good quality. This will encompass the construction of additional schools in each province and district, building of new classrooms, conversion of existing educational institutions into secondary schools, or upgrading of all high schools to secondary schools. Alternative approaches could include the use of the Information and Communications Technology such as e-learning, television, radio networks, mobile phones, and home schooling.

Managing Education Quality

Quality of secondary education is a major concern. Data shows that all students who sat for the Grade 10 National Examinations between 2007 and 2012 scored below the national mean score of 50. This literacy means that no student passed the exams in that period. Moreover, even though the Grade 12 National Examination data was not available for analysis, anecdotal evidence suggest that students who completed grade 12 were incompetent in most, if not all, subjects they were expected to learn, especially English, Mathematics, and the Sciences (see GoPNG, 2013; Koisen, 2014; Philip, 2014). The knowledge gap created in grade 12 becomes a barrier to student learning in subsequent education levels, particularly in post secondary education institutions such as the universities. It also becomes a barrier for students when seeking employment or alternative ways of making an honest living.

Poor achievement by secondary school students have been attributed to, amongst other factors, poor implementation of Outcomes-Based Curriculum, poor teacher education and training, a lack of teacher professional learning opportunities, inadequate teaching and

learning resources, and overcrowded classrooms. There is no doubt that much focus was and is on increasing access. This strategy has seen a massive increase in student enrolment, particularly at the lower levels of education. However, quality of education was severely undermined and eroded as a result of emphasis being on access.

The focus going forward must be on improving the quality of teaching and learning through the mitigation of the contributing factors and closer monitoring of the performance of enabling frameworks to ensure that positive and meaningful progress is being made towards the attainment of education quality targets. Having quality teachers with the right mindset and attitudes, who are well resourced and well supported with sustainable professional learning programs, is the key to boosting student achievement.

Teacher education and training should be carefully planned so that an adequate number of teachers in each school subject are supplied each year. Education and training of teachers should be benchmarked on best practice. Secondary education teacher educators must be held accountable for the quality of teachers they prepare. Proper teacher preparation standards must be devised, implemented, and monitored in collaboration with teacher education providers, the Teaching Service Commission, DoE, provincial and district education divisions, church agencies, and all other stakeholders to enable quality teachers to be prepared for the NES.

Curriculum is at the heart of the education system. A relevant and affordable curriculum should be developed, implemented, and monitored for results on a regular basis. This was not done or, if it was done, it was not effectively executed. Lessons learnt in PNG and elsewhere should be used to inform the curriculum strategy to be used. Even though much criticism was labeled at the Outcomes-Based Curriculum (OBE) for the state of paralysis with regards to the quality of education, much of it was misinformed and propagated by individuals and groups with superficial understanding of both theory and practice of curriculum.

The government has approved the replacement of OBE with a Standards-Based Curriculum (SBC). This type of curriculum is not different to OBE. It is in fact another version of OBE masked using the concept ‘standards” rather than “outcomes”. OBE and

SBC are twins borne by the same philosophy and nurtured by the same underlying beliefs about knowledge, reality, and student learning. Nevertheless, the implementation of SBC should be well managed and follow approved curriculum development processes. Stakeholders should be engaged at every stage so that they understand what SBC is and take ownership of it. This will help in addressing misconceptions that are beginning to emerge amongst, sad to say, those who are suppose to understand what it is in order to educate others. A massive realignment of education management thinking and practice, education divisions, teacher education philosophy and practice, and standard monitoring with SBC will have to be done to create a conducive environment for the development, implementation, and monitoring of SBC.

Secondary Education Roles and Responsibilities

Roles and responsibilities for secondary education are defined in the Education Act, 1995, the Organic Law on Provincial and Local Level Governments, and the Determination Assigning Service Delivery Functions and Responsibilities to Provincial and Local Level Governments. In terms of secondary schools, the Determination Assigning Service Delivery Functions and Responsibilities to Provincial and Local Level Government (2009) spelt out the following as the roles and responsibilities of Provincial and Local Level Governments (LLG).

- provision of logistic support for province-based education committees;
- recommendation (LLG responsibility) and approval of Boards of Governors (Provincial Government responsibility);
- development, implementation, and monitoring of provincial education policies and plans;
- approval, establishment, and advise on the change of status of schools;
- preparation and implementation of an annual maintenance plan,
- appointment, deployment, and redeployment of teachers in provincial education institutions,
- procurement and arrangement for teachers' leave fares,
- repatriation of teachers upon retirement, death, or retrenchment,
- administration of the teacher payroll, and
- co-ordinate and manage teacher professional learning activities.

At the school level, the roles and responsibilities of the Boards of Governors are stipulated in the Board of Governors Handbook.

The above roles and responsibilities are known as decentralized education functions. Under the ambit of the decentralized government framework, the provinces and the LLGs are expected to effectively, efficiently, and prudently perform these roles and responsibilities to permit the achievement of educational aspirations at their levels. However, the decentralization of these education functions has, according to the NEP 2005-2014 weakened the interface between DoE and the decentralized levels of education. DoE has no oversight or quality assurance role over decentralized roles and responsibilities. This leaves a space for poor implementation of national plans and policies and, therefore, poor progress being made towards the achievement of desired education goals and targets. Relevant provisions in the above legal frameworks that prevent coordination and oversight by DoE should be revised to permit it to have a direct monitoring role of education programs implemented at the sub-national levels.

FLEXIBLE, OPEN AND DISTANCE EDUCATION

Introduction

Flexible, Open, and Distance Education (FODE) provides an alternative pathway for students who are unable to continue their education in the mainstream education system owing to poor academic performance and for students who have dropped out of school at various stages of the NES to continue their formal education. It provides these categories of students an expanded opportunity to pursue their academic, as well as their TVET goals, by upgrading their marks and complete the grades they had missed out on. If they do well, they can re-enter the academic or TVET pathways, and work towards attaining a higher academic or a TVET qualification. FODE has the potential of reaching and having a positive impact on the lives of more people and at a relatively low cost, compared to the convention systems of education.

This section provides an analysis of the performance of FODE in the domains of access, retention, quality, equity, and management. Analysis is predominantly qualitative owing to a lack of student enrolment and other data. It will draw mainly from a literature review of FODE and from interviews conducted with FODE management.

Access to, and Participation in, Flexible, Open and Distance Education

According to the Japan International Corporation Agency (JICA) (2001), "distance education may be the only alternative cost effective way of increasing access to education in PNG. Distance education, coupled with flexible delivery methods and information technology, are an important way to increase access to secondary education, further and higher education" (p.36). However, the extent of students' access to this form of education is unclear at this stage as student enrolment data is not available. Nevertheless, DoE (2008) claimed that there is a huge demand for FODE. Yet, there is no real evidence to support this claim due to lack of student enrolment and school leaver data. However, given that large numbers of students completing the basic education and the secondary education cycles each year are unable to secure places at subsequent levels of education, FODE presents them a more and cost effective opportunity to continue with their education. This mode of education is also available to the large numbers of students who

dropped out of school at various stages of the NES. If all these children are made to access FODE to further their education, FODE could become the biggest provider of formal education not only to those wanting to completing grade 7 – 12 but also for those wanting to gain a higher level academic qualification. The latter will require the development of additional curriculum to cater for students' needs.

Access and participation in FODE depends also on its availability and location. Currently, FODE is provided mainly by FODE centers established in the 20 provinces of PNG, in community colleges and development centers, in some vocational centers and schools, and in places where there is a need for such an education like in resource enclaves (see DoE, 2004; JICA, 2001; Kukari, Paraide, & Kippel, 2009). Many school leavers and potential students do not have a FODE center nearby so they had to either enroll and study by distance or travel and live closer to one in order to enroll and do their studies.

Currently, FODE mainly enrolls students who want to upgrade their grades and those who would like to complete their grades 7 – 10 because for one reason or another did not complete these grades. Nevertheless, according to DoE (2008), there is a big demand for this form of education, especially for "grade 9 and 10 places and for grade 10 leavers wanting to upgrade their grades" (p.38). A few students are enrolled to upgrade their grade 11 and 12 grades.

FODE is constrained by inadequate coverage, a shortage of both absorptive and human resource capacities, and inadequate funding to expand its programs as well as enroll more students. Its problems are compounded by its lack of prioritization and procrastination by DoE and relevant authorities in implementing the recommendations of the FODE Review Report. These factors were acknowledged by DoE (2008) in its State of Education in Papua New Guinea Report as some of the main contributing factors to FODE's inability to effectively deliver its programs. It stated: "It is unfortunate that the Department made distance education such a relatively low priority for 2007 so that it was unable to attract support from the Education Capacity Building Program" (p.38). There must now be a shift both in the prioritization, perspective, and whole of NES approach to

FODE as well as the critical role it can play in providing education and TVET to the masses.

Massive numbers of students are not in school and, of those enrolled, an increasing number of them are either dropping out of school or could not continue to complete the primary and the secondary cycles of education. Proportionately more girls than boys drop out of school before completing the final grade of primary or secondary education and, if they do survive, only few complete the primary or secondary education cycle (ASPBAE & PEAN, 2011). FODE could be used to mitigate the exclusion and the marginalization of children from the conventional education system. Furthermore, it could be used as a pathway to provide basic education to children up to grade 12. It could also be used to provide an avenue for prospective students to enroll and complete a part of their certificate, diploma or a degree programs before transferring to the conventional system to complete the remaining subjects and graduate with their qualifications. This concept is being worked on by FODE in collaboration with NCD schools to provide more inclusive and equitable educational opportunities by mitigating the contributing factors. Efforts are being made to align the FODE and the conventional school curriculum so that students can move freely between main stream education and FODE. Curriculum alignment is targeted for completion by 2016 to allow all students to sit for the same national examinations and receive the same certification (*Interview with Principal, FODE*).

The scope of academic programs provided by FODE could be expanded in the future to include other academic and TVET programs. However, this will require a further expansion of FODE capacity. This will require, inter alia, the injection of additional resources including the provision of relevant infrastructure, Information Communication Technology (ICT) facilities, quality staff, and a sustainable level of funding.

Number of FODE Institutions

The number of FODE centers and FODE offering institutions throughout PNG has not expanded to meet the demand for distance and continuing education. There are now 20 provincial centers, 50 registered study centers, and 42 correspondence study centers. Registered study centers provide face-to-face teaching with College of Distance

Education courses being offered, whereas correspondence study centers only coordinate and supervise students' studies (DoE, 2004).

Number of Students

The total student enrolment now is about 23,000 students. Of these, almost 50% are females. Subject based enrolment is about 55,000 students across all subjects. Many students are registering for more than one subject (*Interview with Principal, FODE*).

Number of Tutors

FODE has very few tutors who are expected to provide tutorial support to students and examine students' assessable tasks. The provision of these services to 23,000 students is a massive task. There is a serious shortage of tutors. Recruitment of additional tutors continues to be a major challenge for FODE. Moreover, tutors have not been supported to build and enhance their capacities, especially soft capacities, to empower and enable them to effectively do their work. Tutors need to be supported with sustainable professional learning programs and activities so that they can be better positioned to carry out their roles and responsibilities.

Quality of Education

Curriculum must be relevant, targeting the capacity needs of its beneficiaries and provides a core set of knowledge and skills required for one to advance oneself and, at the same time, increase one's life choices. This is also true for the development of FODE curriculum. FODE curriculum is written up by curriculum writers employed or engaged by FODE managers. This is then made available to students who enroll to study each subject. Students' subject placements are determined based on students' performances on a placement test that is usually given to all new students.

Students, upon paying a subject registration fee, are provided with subject units that comprise of reading material, self learning materials, and short assignments. Students are given adequate time to complete to work through each unit, completing all activities and given assessable tasks. The assessable tasks are then given in to be marked by tutors or markers engaged by the FODE management. In centers where tutors were available,

tutorial classes were conducted to help students with the learning difficulties. However, tutorial classes were held 2 or 3 times in a year (*Consultation with NCD FODE Coordinator*).

Because students are required to work on their own, depending on their prior learning and academic achievement, students progress varied. Majority of the students struggled to understand the subject content and therefore could not complete their assessable tasks. Moreover, assessable tasks are often poor owing to students' difficulty in understanding and reading in English, poor writing skills, and poor research and analytical skills. Additional resources such as library books, computers, tutors, and relevant learning enhancing materials were not often available. If these are available, the majority of students do not know how to use them to enhance their learning. Lack of additional learning resources, poor support of students' learning at home and at the FODE centers, and poor research and analytical skills results in poor quality of learning.

Adequate learning resources and support mechanisms should be provided to enable students to engage in critical learning by utilizing higher order cognitive skills to prepare them for subsequent levels of education, for employment, or to make an honest living. Provision of libraries, e-learning facilities, and the use of other ways of learning from distance such as televisions, mobile phones, and radios could help students to grasp what they are learning and, simultaneously, improve the quality of their learning.

DoE has in place the EQTV program that it uses to disseminate the teaching and learning of lessons on selected subjects and units to participating schools throughout PNG. FODE could tap into this program to provide its students with a set of lessons on each topic and units from its curriculum to students throughout the country to assist them with their learning of the subject content and in doing their assessable tasks. Interactive and wireless technologies are now available and FODE should explore the possibility of making these available especially to its provincial centers to help improve the quality of FODE education in the country.

FODE is situated in the progressive, constructivist paradigm of education therefore its thinking, policy, and practice must be aligned with this pattern of thought. It's current

perspectives and practices are, in most part, inconsistent with this philosophy. This mismatch creates a system and an environment that is not conducive for independent, lifelong quality learning.

Equity

Interview with the Principal of FODE revealed that currently student enrolment comprised 50% girls and 50% boys. This data suggests that there is gender parity in the enrolment of males and females. This data indicates that an increasing number of girls are accessing FODE to further their education. This is a positive achievement and a significant milestone in making FODE more widely available for all to access. The challenge, of course, is to sustain and build on these gains. Nonetheless, proper data on access and participation of disadvantage groups, including girls and women, must be collected on an annual basis. This data is important for measuring performance of gender equity indicators and allow for the FODE situation on females to be highlighted and reported on an annual basis.

Analysis of 2007 – 2012 data show that proportionately more girls than boys dropped out of school at different stages and levels of education, and even fewer girls failed to complete the basic and secondary levels of education. These girls should be encouraged and given an opportunity to continue with their education with FODE. However, in order to get more girls as well as other disadvantaged people to enroll, a conducive learning environment should be created and fostered to enable them to not only participate but to also excel in their learning.

Management

The provision of a broad based, inclusive, and equitable FODE will depend, to a greater extent, on how it is perceived and valued, and on how it is governed and managed. Its role and potential contributions to human resource development in PNG and the opportunities it presents in enabling a literate, wise, prosperous, and wealthy PNG citizenry have not been fully understood and embraced by the GoPNG and bureaucrats alike. Hence, it's low prioritization and a lack of commitment to its development. The

following are some of its management challenges (*based on interviews conducted with the Principal, FODE*)

Infrastructure

Adequate infrastructure, including ICT infrastructure, is needed to properly house staff, ensure effective and efficient delivery of programs, boost student enrolment, and improve the quality of learning. Existing infrastructure is either inadequate or in a state of disrepair requiring urgent renovation to bring these up to a useable state. Shortage of office space, classrooms, printing space, staff houses, and computer rooms restrict the management from enrolling more students, expanding its programs to allow more people to enroll, and recruiting and retaining quality staff.

In addition, ICT infrastructure is desperately needed to effectively and efficiently deliver academic programs to students. The establishment of this infrastructure will enhance the capacity of FODE to deliver a quality distance education and, most importantly, enable more people to access this form of education than is currently the case. It will increase connectivity between FODE centers and hence improve the interface and the flow of information between the managers, tutors, students, and other stakeholders. Embedding of ICT capacity in FODE, will substantially increase distance education coverage and permit universal access to this mode of education. This will result in improved literacy levels, alleviation of poverty, and improved standards of living for all.

Funding of FODE

Even though funds have been provided on an annual basis to meet the costs of managing and implementing FODE activities, these funds have been woefully inadequate to fully meet the costs of operating and sustaining such a massive education system. About K500, 000.00 has been allocated on a yearly basis to FODE. This allocation was used to meet the cost of its operations. No development funds were allocated to enable FODE to address its ongoing capacity issues. More money will be required to effectively address the demand for distance education as well as provide a quality education.

TFF funds appropriated to FODE have been totally inadequate to meet its operational costs. Funds disbursed were calculated based on the number of subjects that each student

will enroll for, which is K110 per subject. This is slightly lower than the projected figure of K120 per subject. This funding formula does not take into account all the related costs of offering a subject. These costs include the cost of writing of subject units, editing of subject content, printing and collating of subject materials, tutoring of students, marking of assessable tasks, and the overall management of the subject. The calculation of TFF for FODE should be based on the unit cost of delivering and managing each subject rather than based on subject demand. A unit cost study should be undertaken to ascertain the true costs of implementing and managing FODE so that adequate funding is appropriated on an annual basis.

Capacity Building of FODE Staff

FODE management and staff have raised serious concern about the lack of professional learning opportunities to upgrade their qualifications as well as learn more about distance education. Quality of staff is critical to the implementation of programs and the achievement of desired outcomes. For FODE to provide a world class distance education it must have both soft and hard capacities. Professional development of staff is critical to the achievement of FODE's goals. Therefore, it is vital that staff members are provided opportunities to further their own education and engage in a process of sustainable professional learning.

TECHNICAL VOCATIONAL EDUCATION AND TRAINING

Introduction

Technical Vocation Education and training (TVET) provides a post-secondary education pathway for students to pursue education and training in a skill or a trade-related discipline. This pathway is provided mainly for students who are academically unable to proceed to a post-secondary education institution or to grade 9 and 11 in the lower and upper secondary levels of education. Although Vocational Education and Training (VET) is targeted at grade 8 school leavers, grade 10 leavers are increasingly accessing this form of education and training due mainly to changes to the enrolment policy on the enrolment of students in Technical and polytechnic institutions from grade 10 to grade 12. Formal TVET is available only to grade 12 students who meet the enrolment criteria.

This chapter provides mainly qualitative situational analysis of TVET in PNG using the pillars of access, quality, equity and management. Analysis is constrained by the availability of relevant literature on TVET in PNG and student enrolment data.

Access to, and Participation in, Technical Vocational Education and Training

There is an increasing demand for both technical education and training and vocational education and training from school leavers and non school leavers. Vocational education and training has experienced a massive increase in the number of students undertaking its programs. The demand for this type of education will increase as more and more students drop out of school in grade 8 and more non school leavers reenter the school system to further their education and training. Even though student access to technical education and training vary, more students are likely to access its programs as barriers to demand for this education, particularly school fees, are removed.

The challenge for TVET will be to expand its coverage and absorptive capacity to allow all eligible students to complete a full cycle of TVET and attain a qualification they can leverage to secure gainful employment or contribute to national and community development. More colleges and centers will have to be built in the provinces and the districts to provide a more inclusive and equitable TVET.

TVET sector in PNG has been, to a large extent, neglected over the years owing to, amongst other factors, its perceived low status (DoE, 2008) and low prioritization (MTDP, 2011 - 2015). As a result the sector has and continues to be underfunded and poorly governed and managed. This has contributed to poor and rundown infrastructure, fragmented and irrelevant curriculum, and poor staff and resource capacity. These problems are omnipresent and continue to undermine its ability to effectively prepare a highly knowledgeable and skilled workforce for the industrial and the rapidly growing extractive industry in PNG. This has resulted in a serious lack of highly qualified and skilled human capital to meet the growing needs of the private sector. This reality was brought to light at the commencement of PNG Liquefied Natural Gas (PNG LNG) Project. Owing to this critical shortage of qualified and highly skilled labour, required workers were recruited from overseas and brought in to work on the project. This glaring human resource gap will persist and continue to grow unless urgent actions are taken to ameliorate it.

There is no doubt that many citizens, particularly those leaving school at grades 8, 10 and 12, do not have access to TVET. This is largely due to a lack of vocational and technical schools in many parts of PNG, particularly in the very remote and isolated places. Although community colleges have been introduced and trialed in some parts of PNG, the effectiveness of this concept has not been ascertained. More needs to be done in order to adequately and meaningfully respond to the varying TVET needs of PNG citizens.

There is a need to localize vocational and technical education at the district level to allow for more citizens to receive a vocational and technical education. To this end, it is worth investing the construction of additional vocational and technical schools, especially in areas where there is a lack of such institutions. These schools will serve a variety of TVET purposes. These purposes will be determined by the national and local level manpower needs. They will also be determined by the socio-economic, cultural and environmental circumstances at the national and sub-national levels.

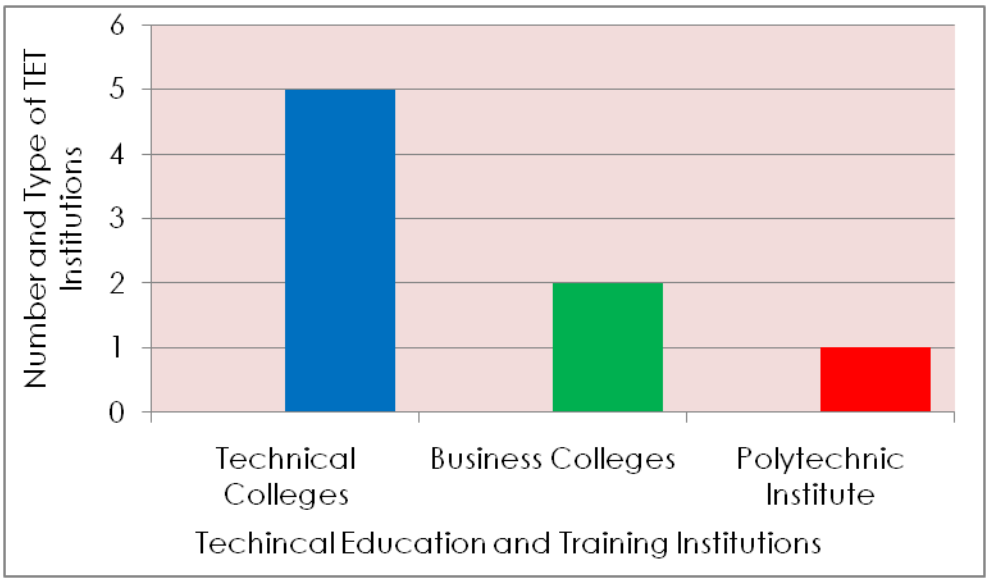
This initiative will permit more citizens to have access to, and participate in, TVET. The consequence of this will be the education and training of a critical mass of highly educated and trained citizens who will make a positive contribution towards the

development of both the local and the national economies, and the creation of much needed wealth. This will consequently lead to improved standards of living and better livelihoods for all.

Number of Technical Education and Training Institutions

The number of Technical Education and Training (TET) institutions has hardly expanded to meet the high demand for TET programs. This is one of the main contributing factors to the critical shortage of technically skilled and highly competent workers in the country. Data on the type and number of TET institutions is presented in figure 47.

Figure 47: Type and number of institutions, technical education and training, 2013



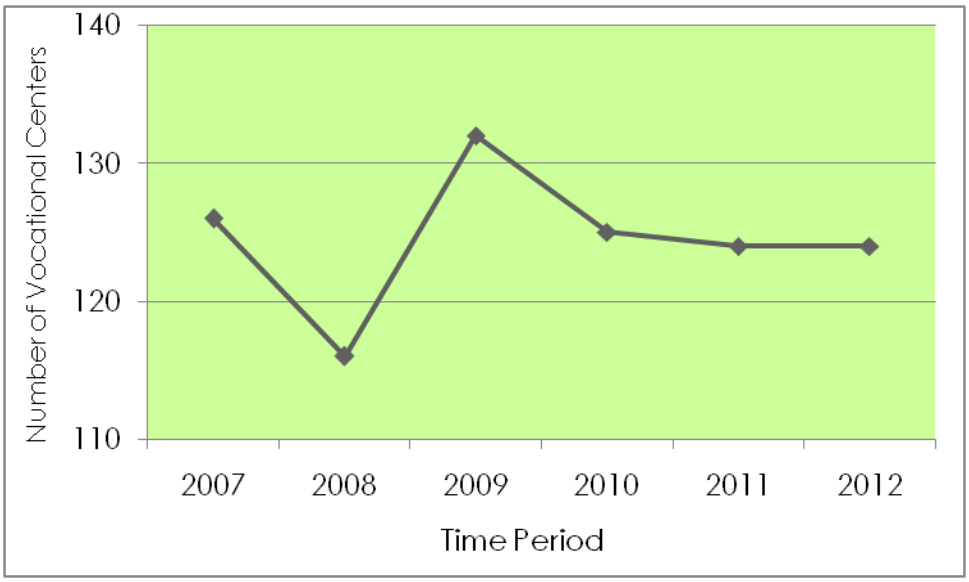
Source: DoE TVET Division Data, 2013

As can be seen from figure 47, currently, there are five technical colleges, two business colleges, and one polytechnic. This excludes privately operated TET institutions, and technical high schools. This data indicates a critical shortage of capacity at the national and decentralized levels to provide a broad based TET to meet the technical and skilled manpower needs of PNG. Furthermore, poor coverage and absorptive capacity will mean that DoE and its partners will struggle to achieve its vision of "providing a demand driven broad based TVET that meets the National Competency Standards and the needs of the community, government, and commerce and industry" (JICA, 2001, p.32).

Number of Vocational Education and Training Institutions

Access to, and participation in, vocational education and training (VET) will depend on, to a greater extent, the availability of VET institutions. Data on the number of VET institutions is presented in figure 48.

Figure 48: Number of institutions, vocational education and training, 2007 – 2012



Source: DoE EMIS Data, 2007 - 2012

Data from figure 48 shows that the number of VET centers decreased from 126 in 2007 to 116 centers in 2008. The number of centers expanded to peak at 132 in 2009 before declining in 2010 and remaining constant between 2011 and 2012. There was decrease of 8 vocational centers between 2009 and 2012. The decline in the number of vocational centers could be due to the upgrading and conversion into technical colleges (DoE, 2010) and closing down of centers due to poor infrastructure and lack of sustained support from the Provincial Governments and LLGs, and communities in which they are located. A decrease in the number of centers means a decrease in the absorptive capacity of the VET sector to adequately meet the demand for education and training.

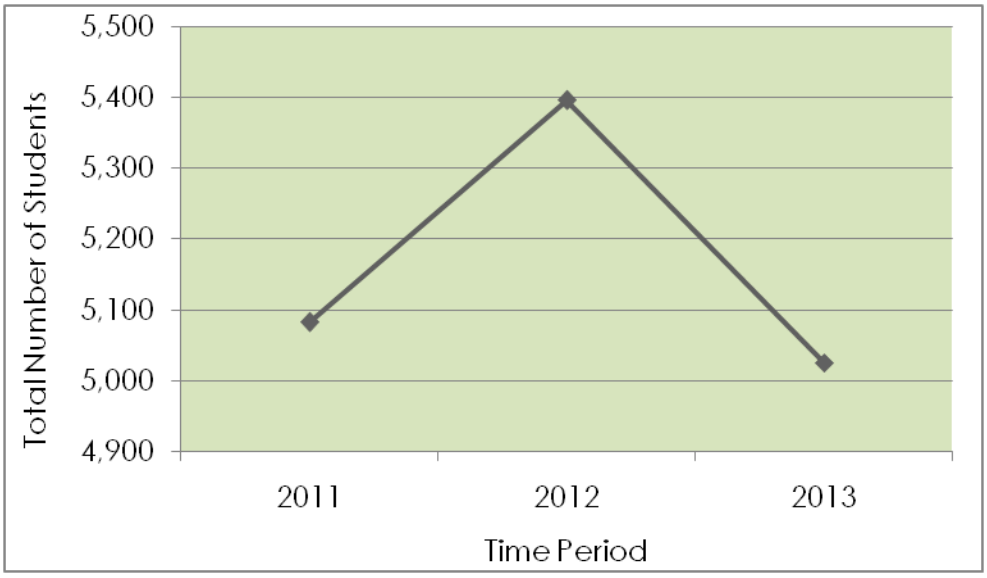
Demand for VET will increase as more and more school age children leave school at the end of grade 8 and 10. It is important to provide a viable, cost effective alternative pathway for these children to continue with their education and build their technical skills

capacities to enable them to seek employment or start up and operate their own medium to small scale businesses.

Number of Technical Education and Training Students

The total number of students enrolled in the TET institutions is a good indicator of education coverage and the absorptive capacity of this post secondary level of education. TET student enrolment data for the period 2011 – 2013 is presented in figure 49. The total student enrolment data includes data on part-time enrolment, PETT/TTC enrolment, non credit courses, extensions/apprentices, and diploma students.

Figure 49: Number of students, technical education and training, 2011 – 2013



Source: DoE TVET Division Data, 2013

Data from figure 49 shows that student enrolment in TET institutions increased rapidly between 2012 and 2013, peaking at 5,396 students but then deteriorated between 2012 and 2013 to reach a low of 5,025 students. Overall, student enrollment decreased by 371 students between 2011 and 2013. The big variation in student enrolments between 2011 and 2013 could be attributed to the type of courses offered and the frequency of student intake to undertake these courses, particularly Non Credit Courses (20 weeks), Extension Apprentices (10 weeks), and Short Courses (duration of these courses vary).

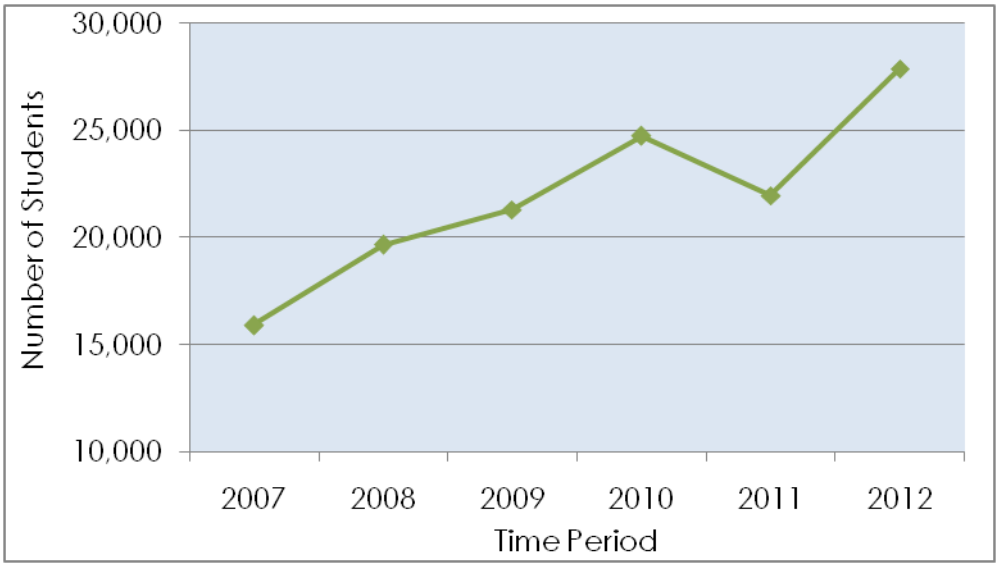
Proportionately, fewer students have access to, and participate in, receiving a TET than the number of school leavers leaving secondary education each year. This indicates both

a blockage and a critical shortage of absorptive capacity at the TET level. There is an urgent need to expand coverage at this level of education to enable more school and non school leavers to undertake education and technical programs offered.

Number of Vocational Education and Training Students

The total number of students enrolled in the VET institutions is also a good indicator of education coverage and the absorptive capacity of VET. VET student enrolment data for the period 2007 – 2012 is presented in figure 50.

Figure 50: Number of students, vocational education and training, 2007 – 2012



Source: DoE EMIS Data, 2007 – 2012

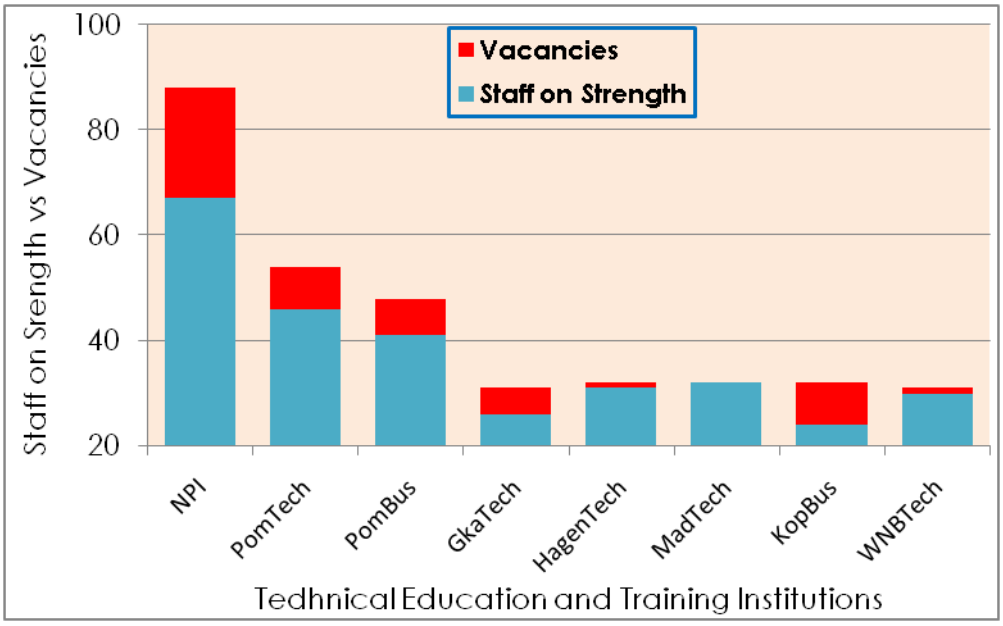
VET student enrollment expanded substantially from 15,917 students in 2007 to peak at 24,731 students in 2010. Student enrolment dipped in 2011 to 21,962 students and then increased in 2012 to reach a high of 27,874 students. In total, student enrolment increased by 11,957 students between 2007 and 2012. This massive increase in student enrolment could be attributed to an increase in the demand for VET due to the subsidization of school fees and accessibility.VET, apart from FODE, provide an attractive and a relatively cheap option for school and non school leavers to continue their education and, at the same time, attain a trade certificate, which they can use to seek gainful employment or create their own employment.

Comparatively, there were more students enrolled in the VET sector than there were in the TET sector. This may be because school and non school leavers have easy access to these institutions because these are often located where they could be easily accessed. Moreover, the criteria for enrolling in these institutions were often lower than that required for the TET institutions. As such, many people are able to enroll to undertake VET.

Number of Technical Education and Training Lecturers

Education and training of an adequate number of qualified lecturers and the appointment of lecturers to positions in TET institutions continue to be major challenges facing the TET sector. The private sector provides better terms and conditions and competes in recruiting its prospective employees from the same pool as TET institutions and, often than not, succeed in attracting staff to work for them. As a consequence, TET does not fill all its teaching positions. Data on TET staffing for 2013 is shown in figure 51.

Figure 51: Number of lecturers, technical education and training, 2013



Source: DoE TVET Division Data, 2013

The approved total number of positions for TET institutions for 2013 was 348. Of these, 297 (85.3%) positions were filled whereas the remaining 51 (14.7%) positions were not filled. Institution wise, the national Polytechnic had 21 (23.8%) unfilled positions in 2013. The rest of the institutions had between 1 and 8 unfilled positions. Madang

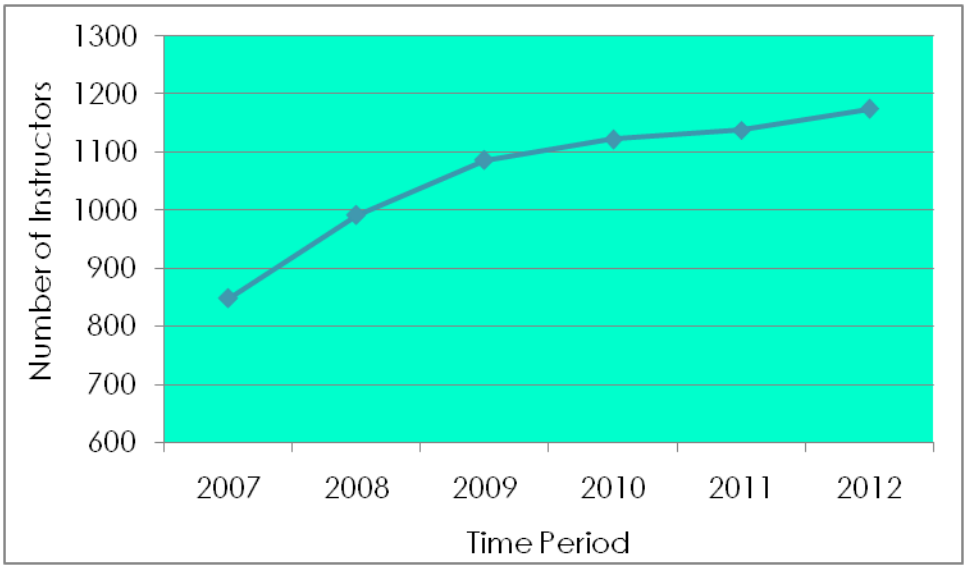
Technical College was the only TET institution fully staffed in that year. This indicates a general shortage of teaching staff in the TET sector. There was a possibility that some courses were not offered or, if these were offered, they were probably taught by only one lecturer. This could have undermined the quality of teaching and student learning.

It is essential that all colleges are fully staffed with well qualified and experienced staff to teach all courses. This will ensure that TET courses are offered to all students who meet the selection criteria and effectively taught the necessary knowledge and trade competencies. Lecturers' employment terms and conditions should be reviewed as a matter of priority to breach the private sector and teaching salaries and other benefits to attract more qualified lecturers to join the sector.

Number of Vocational Education and Training Instructors

Staffing levels at VET centers are higher than those at the TET sector. However, it is not known whether or not all established positions were fully occupied. Poor instructor deployment and poor quality of instructors can contribute to poor access and participation, and poor learning outcomes. Data on VET staffing for 2007 - 2012 is shown in figure 52.

Figure 52: Number of instructors, vocational education and training, 2013



Source: DoE EMIS Division Data, 2007 - 2012

There was a gradual increase in the number of vocational center instructors from 2007 to 2012. The number of instructors expanded from 848 in 2007 to 991 in 2008 before reaching 1,086 instructors in 2009. It grew further to 1,122 instructors in 2010, 1,138 instructors in 2011 before climaxing at 1,174 instructors in 2012. Overall, the number of instructors increased by 326 between 2007 and 2012. Nonetheless, more instructors are still needed to achieve a PTR target of 18 students to 1 instructor (DoE, 2014). Recruitment of qualified instructors to teach in the vocational centers is also important. This will ensure not only that students are effectively taught but also that they are equipped with relevant knowledge and job related competencies to prepare them to be gainfully employed and contribute to national and community development.

Quality of TVET

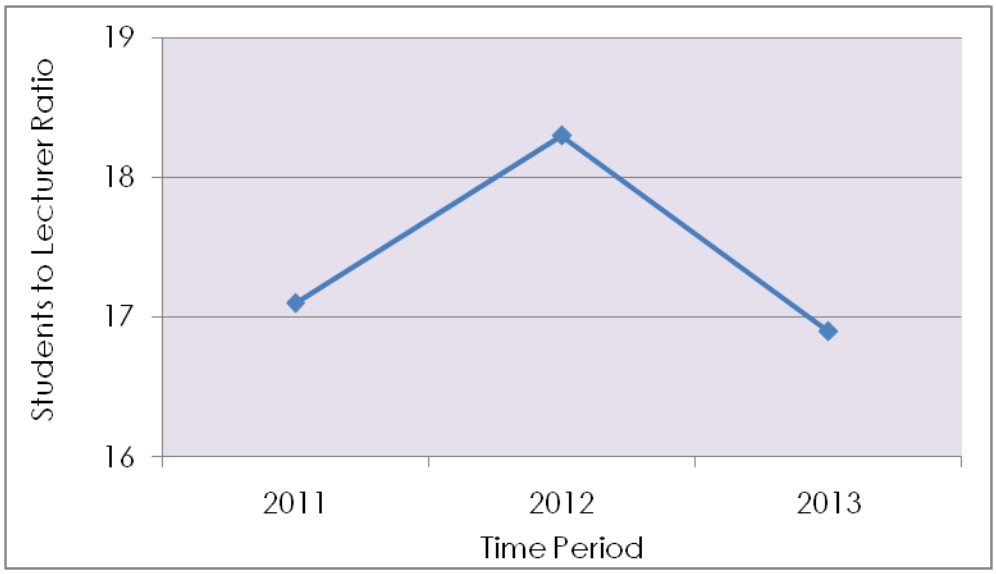
Private sector requires well trained and highly competent workers. It prefers workers who are employment ready and not workers who are not ready to competently do the work required of them. Private sector is not prepared to retrain people who graduate from TVET institutions because it is not cost effective for them to do so. Thus, it is important that TVET focuses on educating and training the cadre of workers required by the private sector. This is critical because the quality of TVET programs is also measured based on employer satisfaction of TVET graduates. This is an important benchmark that all TVET institutions should measure their performance and results against. In addition, TVET institutions should also develop and offer short and long term courses that are demand driven in order to contribute towards the creation of a critical mass of highly educated and skilled workers for community and nation building. Moreover, individuals and groups should be equipped with relevant entrepreneurial knowledge and skills informed by, and grounded on, best practice to empower them to create their own employment.

Quality of TVET education is measured using a number of core indicators, including student teacher ratio, level of student competency, qualified teachers, and employer satisfaction of graduates. However, data on most indicators has not been collected on a consistent basis. For this analysis, student teacher ratio will be used as a measure of quality.

Technical Education and Training Student Lecturer Ratio

Student Lecturer Ratio (SLR) is a proxy measure of quality. It measures the number of students to a lecturer. SLR is important for understanding access to textbooks and equipment, teacher deployment, and TET coverage in terms of the relationship between the demand and the supply of TET. SLR data for TET for the period 2011 – 2013 is presented in figure 53.

Figure 53: Student to lecturer ratio, technical education and training, 2011 - 2013



Source: DoE TVET Division Data, 2013

SLR in TET is influenced by variations in student enrolment and the trends are likely to be quite similar to the student enrolment trends. Data from figure 53 shows a SLR of 17.1 students to a lecturer in 2011. SLR increased in 2012 to climax at 18.3 students to a lecturer but dipped in 2013 to reach a low of 16.9 students to a lecturer. Overall, SLR increased by 1.4% between 2011 and 2013.

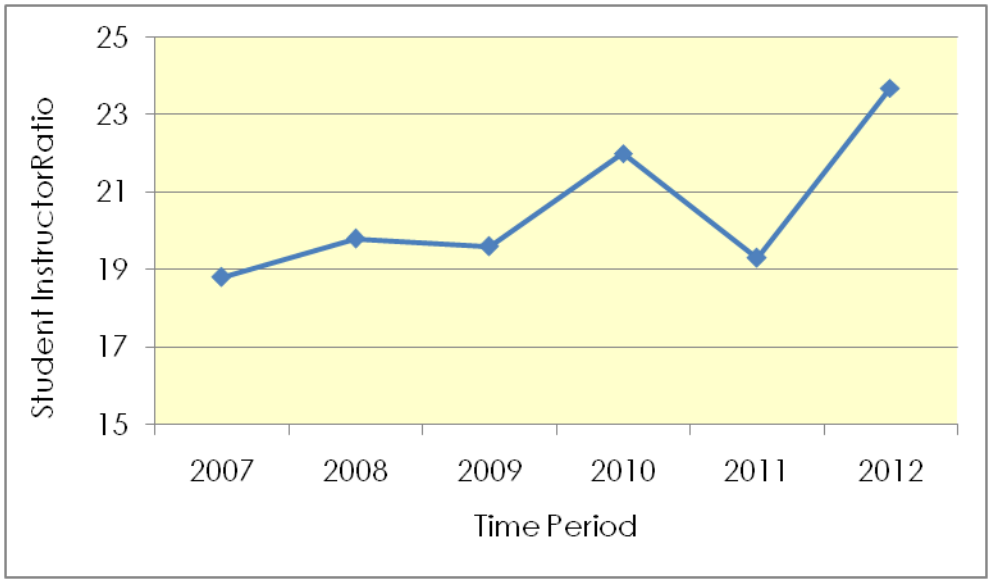
SLRs were quite high compared to the national target of 15 students to a lecturer (DoE, 2004). High SLR is more likely to impact negatively on the quality of teaching and the quality of student learning. Sustaining an acceptable SLR is important in the education and training of prospective employees and entrepreneurs. This is more critical in a teaching and learning environment where there is a shortage of essential teaching and

learning resources, shortage of teaching staff, and a shortage of appropriate infrastructure, including classrooms and computer laboratories.

Vocational Education and Training Pupil Teacher Ratio

VET Student to Instructor Ratio (SIR) measures the number of students to an instructor. SIR does impact on the quality of teaching and learning although it is only a proxy measure of quality. SIR data for VET for the period 2007 – 2012 is presented in figure 54.

Figure 54: Student to instructor ratio, vocational education and training, 2007 - 2012



Source: DoE EMIS Data, 2007 - 2012

As can be seen from figure 54 SIR increased from 18.8 students to an instructor in 2007 to peak at 22 students to an instructor in 2010 before declining to a SIR of 19.3 students to an instructor in 2011. SIR increased again in 2012 to reach a high of 23.7 students to an instructor. SIR increased by 4.9% between 2007 and 2012. SIRs for the period 2007 - 2012 were much higher than the national target of 18 students to an instructor (DoE, 2004). This trend is more likely to continue when the school fee barrier is removed creating an increase in demand for VET. It is therefore important to educate and train more vocational center instructors to help reduce to SIR to acceptable levels. High SIRs will no doubt affect the quality of teaching and learning. Furthermore, VET centers do not have teaching and learning resource capacity to ensure that all students acquire the

essential knowledge and competencies (Hind, Larsen, Week & Peni, 2011). Thus, it is necessary to have small class sizes and SIRs to make it more conducive for effective teaching and quality learning.

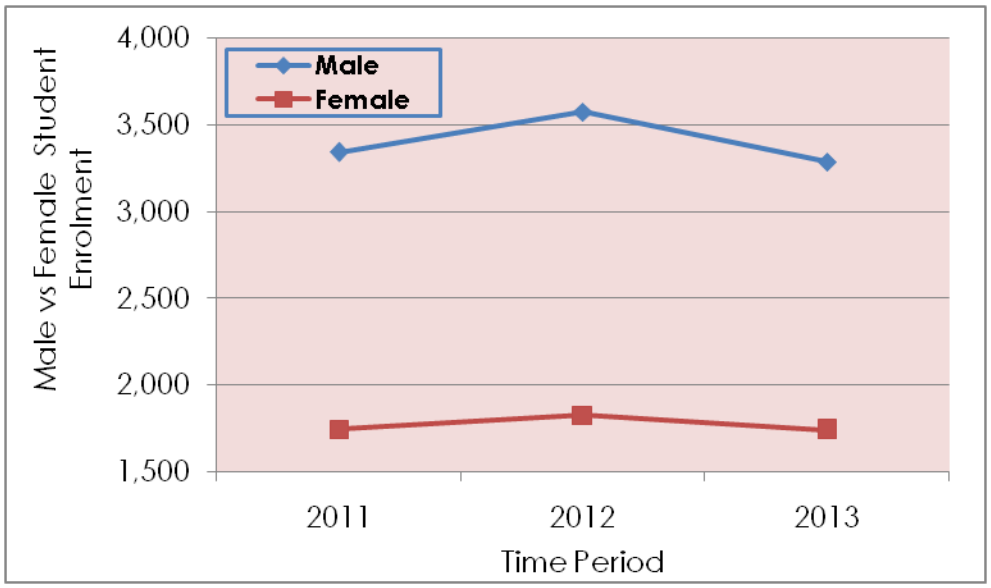
Development, Implementation, and Monitoring of a Relevant Curriculum

The current curriculum of vocational and technical schools must be reviewed to ascertain if it is focused on meeting the different needs of students and the community as well as the manpower needs of PNG. If it does not then it should be reformed to make it more relevant to the modern development needs of PNG. There is an urgent need for well qualified and highly competent graduates to work in a variety of skill oriented positions in the private sector, more so in the emerging and fast growing extractive industry. In addition, PNG citizens needed to be provided with appropriate knowledge and skills to create their own employment by owning and managing small to medium size businesses. So the curriculum must serve the purposes of providing the required manpower to meet the national demand for skilled labour and building the entrepreneurial capacity of PNG citizens to own and operate their own businesses.

Equity

TVET is supposed to provide inclusive and equitable opportunities for all people, regardless of their backgrounds to enroll and undertake programs and courses offered. Yet, the reality is many people, particularly girls and people from other disadvantaged and underrepresented groups, continue to be denied access and participation at this level of education. JICA (2010) reported in its 'Country Gender Profile' report that of the 6,596 TVET students enrolled in 2004, 42.5% (2,799) were females. The majority of these females were enrolled in courses designed and targeted at females (JICA, 2010; Kukari, Paraide, & Kippel, 2009). This gender stereotyping and profiling has meant that females were discriminated against and denied an opportunity to undertake predominantly male courses. This situation is exacerbated by a critical shortage of governance, management, human resource, infrastructure, teaching and learning resource, and financial capacities to deliver an inclusive and an equitable TVET (Hind, Larsen, Week & Peni, 2011; Kukari, Paraide & Kippel, 2009).

Figure 55: Male and female enrolment, technical education and training, 2011 - 2013



Source: DoE TVET Division Data, 2013

Male and female enrolment trends reveal that the enrolment of females experience very little change whereas male enrolment expanded between 2011 to 2012 but deteriorated slightly in 2013. In spite of this, male enrolment was still higher than the enrolment of females. Male enrolment increased from 3,339 in 2011 to reach a high of 3,572 before declining in 2013 to 3,284. On the other hand, female enrolment experienced a very small growth in the same period. The enrolment trend shows that 1,743 females were enrolled in 2011 and then increased slightly to 1,824 in 2012 before dropping to 1,741 in 2013. Male enrolment increased by 233 whereas female enrolment increased by 83 between 2011 and 2013.

Proportionately there were twice as many males than females enrolled in TET colleges. This pattern of enrolment has contributed towards the creation of big gender TET participation gap between the males and the females. Increase in female enrolment is inadequate to make any positive impact on the gender parity gap. Data indicates that this gap will widen further if current trend persists. Immediate steps should be taken to substantially increase education and training opportunities for females at this level of education. These should include the provision of both hard and soft capacities and the recapitalization of colleges (Hind, Larsen, Week & Peni, 2011) and the development and

implementation of gender inclusive curriculum (JICA, 2010; Kukari, Paraide & Kippel, 2009).

Management

Management performance and result indicators focused on the provision of a cost effective and an affordable TVET (DoE, 2004). A major review of the capacity of TVET colleges by Hind, Larsen, Week and Peni, (2011) for AusAID revealed that this objective has not been achieved. Additional efforts are required, especially from the government, to address the underlying problems in order to effectively position TVET to provide an inclusive, equitable, cost effective, and a quality education and training for all. Some of these challenges are discussed here.

Rehabilitation and Maintenance of Existing Facilities

The provision of appropriate and inclusive infrastructure is essential not only for ensuring access by all citizens to vocational and technical education and training but also provide an environment conducive for teaching and learning. However, existing infrastructure and facilities in all TVET institutions in PNG are run down and need to be urgently rehabilitated to provide an environment conducive for teaching and learning. This will also allow more students to have access to vocational and technical education and training. Infrastructure must not become a barrier to PNG citizens having access to vocational and technical schools. It must be designed and constructed in ways that will enable all students regardless of their backgrounds and abilities to receive a vocational and technical education.

Provision of appropriate Teaching and Learning Resources

Appropriate and adequate resources, including state-of-the art machinery, must be provided to enable students to learn and competently acquire the knowledge and skills required by the emerging industrial and economic context. The lack of appropriate teaching and learning resources has severely affected the teaching and learning of relevant knowledge and skills required by the private sector, particularly in the industrial sectors of manufacturing, Information Communications Technology, mining, petroleum and Liquefied Natural Gas, and transport. The private sector requires people who are

competent in their area of specialization, have a good attitude towards work, and can deliver the outcomes desired by their employers. The provision of teaching and learning resources that will prepare students who will be ready for employment upon graduation is thus necessary in the preparation of employees to be.

Provision of Quality Teaching Staff

The quality of student learning outcomes is as good as the quality of the instructors that are responsible for teaching the students. Initial instructor training and their ongoing professional development are vital in the teaching of the curriculum and in enabling students to effectively learn the required knowledge and skills. Therefore, initial training for instructors must be critically reviewed to pave the way for an effective and relevant education and training program to be developed and implemented. The focus of such a program will be to equip the instructors with knowledge of how to develop and implement the curriculum, operate different types of machines and instruments, assess students using different measuring instruments, and manage TVET institutions. Upon graduation and while teaching, they should be engaged in ongoing professional development. This will help them to learn to monitor and evaluate their own teaching and their students' learning, effectively implement and assess the curriculum, manage TVET institutions in a transparent and accountable manner, and better manage their resources.

ADULT AND OUT-OF-SCHOOL YOUTH EDUCATION

Introduction

This chapter presents an analysis of adult and out-of-school youth education. This form of education has been termed as non formal education. This naming of adult and out-of school youth education not only disconnects it from the formal education system but marginalizes it from being considered as a viable and a cost effective pathway for learning essential life skills and empowering the masses. The labeling of adult and out-of-school youth education as non formal education has resulted in its positioning on the periphery of the national education dialogue, its perception as education for illiterates and people with low academic ability, and hence it's low prioritization by the government. This analysis of adult and out-of-school youth education will focus on literacy rather than non formal education per se. Literacy is more holistic, connected, and transformative in its intent, and more targeted and inclusive in its delivery and outcomes.

Context of Adult and Out-of-School Youth Education

The right to literacy is implicit in the right to education. Literacy is the basic and fundamental tool for personal, community and national development. The United Nations Literacy Decade (2003-2012) resolution states, "literacy is at the heart of basic education for all and creating literate environments and societies is essential for achieving the goals of eradicating poverty, reducing child mortality, curbing population growth, achieving gender equality, and ensuring sustainable development, peace and democracy" (p.5). Moreover, it is critical for people emancipation and empowerment, and radical transformation of people's realities and hence, their lives. It "is a very important part of the effort to meet the learning needs of the majority of Papua New Guineans" (JICA, 2001, p. 38).

PNG's commitments towards ensuring a literate population are manifested in its development aspirations. These aspirations are firmly embedded in most of its development policy and planning frameworks. These include Vision 2050, the National Strategic Plan 2030, Medium Term Development Strategy 2015, and the NEP 2014. Its literacy strategy is interwoven with its overarching human resource development goal of

"improving Papua New Guinea's Human Development Index (HDI) ranking to 50 from 148 amongst the United Nations member countries" (GoPNG 2009, p.5) and its objective to "train and empower citizens to become powerful forces for development and nation building" (ibid, 2009, p.36). The GoPNG proposes to achieve these outcomes mainly by supporting and enhancing community empowerment initiatives, providing accessible learning institutions, and providing incentives to enhance equity (ibid, 2009).

However, efforts to translate these strategies into meaningful and positive actions have been negligible (Kare & Sermel, 2013). Poor coordination amongst responsible government departments and agencies (Gelu 2010; Kukari, 2010) and lack of commitment by the government (Kare & Sermel, 2013; National Literacy and Awareness Secretariat, 2014) have been the main contributing factors to the current poor state of adult and youth education in PNG. These problems are exacerbated by a lack of clarity over administrative responsibility for adult and youth education. Currently, responsibility for adult and youth education is vested in a number of different government agencies and departments particularly, the Ministry of Education and the Ministry of Community Development. This has and continues to create a climate of confusion and ongoing uncertainty amongst the stakeholders as to who to partner with to deliver literacy programs.

Development partners, especially Non Government Organizations and Faith-Based Organizations, see the benefits of changing PNG citizen's lives, particularly the lives of marginalized people, and have taken proactive measures to provide access to relevant adult and youth education programs. They are doing this with minimal input and support from the government and its departments. In most part, their education programs are uncoordinated, poorly resourced, and at times unsustainable (Kamene, 2008; National Literacy Awareness Secretariat, 2014). To mitigate the constraints of providing adult and out-of-school education, providers often target their training programs at a particular population group, for example women. This strategy they hope will have a multiplier impact, leading to multiple outcomes. The old adage" you educate a woman and you educate a family or you educate a woman and you educate a nation" underpins this education strategy.

Despite the challenges, providers of adult and out-of-school youth have and continue to make a positive impact on the lives of countless number of adults and youth they engage in their education programs. Nevertheless, access to these programs is limited and sporadic due to poor coverage and absorptive capacity, perception of adult and youth education as low class and for people with low academic ability, and a lack of understanding of its importance in transforming people's lives (Kamene, 2008, Kare & Sermel, 2013; National Literacy and Awareness Secretariat, 2014).

There is no doubt that adult and out-of-school youth education is struggling for relevance, recognition, and support from many sectors of PNG. It suffers from misconceptions and bias, as well as, the dichotomy between formal and non formal education. These factors make it very difficult to implement and manage it, and achieve the intended results. Yet, it provides a significant mode of breaking the cycle of poverty and ensuring a quality of life for all. It is the key to breaking the shackles of oppression and empowering people to lead more meaningful and rewarding lives. It must be prioritized for intervention by governments at all levels to make it more widely available for easy access by all who desire this form of education.

Access to, and Participation in, Adult and Out-of-School Youth Education

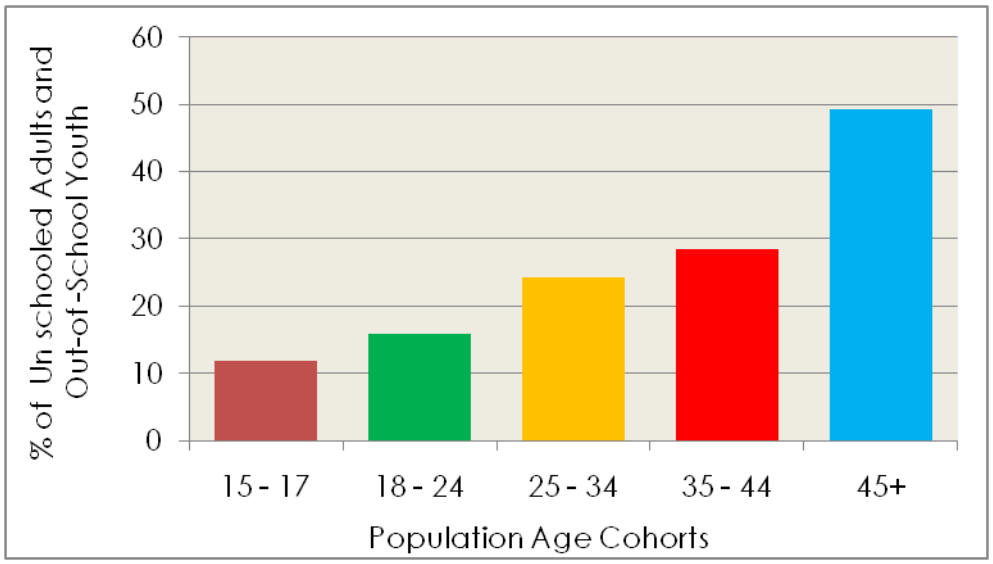
Demand for adult and out-of school youth education is more likely to increase as more adults and youth become aware of the transformative power of education. This will spur them to take necessary actions to access the literacy programs provided by the government, different church denominations, Non Government Organizations, and other development partners. However, at this juncture, the majority of adults and youth do not yet have access to, and participate in, receiving literacy programs. This could be attributed to, amongst other factors, poor coverage, inadequate support for adult and youth education programs, and weak inclusive and equitable strategies and negative perceptions of adult and youth literacy programs (Kamene, 2008; Kare & Sermel, 2013).

Population of Youth and Adults that Never Attended School

Many adults and out-of-school youth have never attended school or received some form of schooling in their lives. Presented in figure 56 is the data on the population that never

attended school to put into perspective the proportion of adult and out-of school youth population requiring further education opportunities, including literacy programs.

Figure 56: Proportion of adults and out-of-school youth that never attended school, PNG, 2010



Source: NSO PNG Household Income and Expenditure Data, 2010

Data from figure 56 indicates that the older Papua New Guineans are, the more likely that they never attended school. The percentage of Papua New Guineans missing out on schooling increases with age. About 49% of Papua New Guineans 45 years of age and above never attended school. This age group is followed by 35 – 44 year olds group (28.5%), 25 – 34 years old group (24.2%), 18 – 24 years old group (15.9%), and 15 – 17 year old group (11.8%). This data reveals the presence of a bulk of Papua New Guineans that have never gone to school. It is more likely that this population is illiterate, that is, they may not be able to read and write, make informed decisions, and understand and deal with development issues that impact on them, their families, and communities. Inclusive and equitable opportunities should be provided to empower and emancipate these groups to permit them transform their lives and actively and meaningfully participate in national and community development.

Number of Non–Formal Education Learning Centers

Guy and Avei (2001) revealed that there were 640 adult and out-of-school youth literacy sites in PNG. According to Kamene (2008) most of the literacy centers are owned and operated by different churches. Nonetheless, the number of sites varied markedly from province to province and region to region with the highest number recorded in the highlands provinces. Southern Highlands Province had 205 or (32%) of the reported sites in 2001. Momase, Southern, and New Guinea Islands had fewer literacy sites. In terms of provincial distribution, West New Britain had the highest number of 42 sites.

This data show a big disparity amongst the regions and the provinces in the provision of literacy centers. There were marked differences in the adult and out-of-school-youth education coverage between the regions and the provinces. This could be attributed to, amongst other factors, differing education priorities amongst the provinces, negative perceptions of adult and out-of-school youth education, and ad hoc establishment literacy sites.

Retention

Retention of participants after they have enrolled for literacy programs has been and continues to be a major challenge. Many participants drop out and fail to complete their programs. This not only underscores the inefficiency of the adult and youth education programs but also the persistence of illiteracy and its long term effects. According to the National Literacy and Awareness Secretariat (2014) participants drop out for a number of reasons. These include:

- lack of proper learning facilities, including classrooms and libraries;
- no proper pathways in place for learners;
- lack of motivation amongst participants;
- absence of a standardized curriculum;
- inconsistency in the running of programs;
- withdrawal of participants, especially during harvest and cultural activities, to attend to economic and cultural obligations;
- lack of resources and facilities;

- lack of trained teachers;
- lack of sustainability of programs; and
- low status accorded to adult and youth literacy programs, especially by the government.

Effective strategies should be developed to mitigate the above factors so that those who enroll for literacy programs can continue and complete their programs. This should be done through collaboration and partnerships between all stakeholders with the national and the decentralized governments taking the lead.

Quality of Adult and Out-of-School Youth Education

The target for PNG is to achieve 70% literacy by 2015. It was revealed from the 2000 national census data that the LR was 56.06% (National Statistics Office, 2000). The progress of PNG towards its literacy target has not been consistently measured since so it is difficult to know where it is in relation to this target. However, the methodology used by the National Statistics Office (NSO) to collect functional literacy data has been discredited mainly because it was an unreliable method of collecting literacy data (Kare & Sermel, 2013). Participants were asked to self declare if they were able to read and write. There was no actual assessment of whether or not respondents can write and read. Thus, the functional literacy reality of population in PNG was misrepresented and underestimated. In spite of this, the above indicator has been continuously used to inform planning and policy development.

Consequent studies on the functional literacy of the PNG population, especially the functional literacy of adults and out-of school-youth, indicate that the literacy levels were much worse than portrayed by the National Statistics Office. ASPBAE and Papua New Guinea Education Advocacy Network (PEAN) (2011) for example in their PNG education experiences survey and literacy assessment in five provinces found that more than 70% of the participants self declared that they were able to read and write. However, an assessment of their ability to read and write revealed that less than 15% in four provinces and 25% in one province were able to read and write.

Poor literacy rates amongst adults and out-of-school youth could be attributed to a plethora of factors. Some were alluded to earlier. Others as identified by the National Literacy and Awareness Secretariat (2014) are:

- poor quality of facilitators or trainers;
- poor learning facilities;
- poor understanding and teaching of curriculum;
- curriculum irrelevance, and
- curriculum not designed for adult and youth learners.

The other more critical dimension of adult and youth learning is the extent to which they are able to sustain and continuously use what they have learned in their literacy programs. If they do not use the knowledge and skills they have acquired in their daily lives they are more likely to revert to illiteracy. This situation will not only perpetuate the illiteracy cycle but make its breaking very difficult. This situation permeates both the formal and the informal systems of education. The best strategy for addressing this issue is to make sure that curriculum is relevant to the learners. It must focus on addressing lifelong literacy needs of the learners. Moreover, opportunities must be provided for learners to continuously engage in self learning and in learning in group situations. This will add value to their learning and, at the same time, keep what they have learned and are learning currently.

The quality of adult and out-of-school youth education is measured using the Literacy Rate (LR). The current focus is on measuring the extent to which adults and out of school youth are able to read and write. This is often referred to as functional literacy. LR can also be used to measure adult and youth competencies in other forms of literacy. Data on the population of adults and out-of-school youth who are able to read and write is presented in figure 57.

Figure 57: Proportion of adults and out-of-school youth who were able to read and write, PNG, 2010



Source: NSO PNG Household Income and Expenditure Data, 2010

Data from figure 57 shows that the younger the Papua New Guineans the more literate they are. In other words, literacy rate deteriorates as the population grows older. As can be seen from the data, the literacy rate for 14 – 25 year olds (78.8%) was much higher than that of 26 – 50 year olds (65.7%) and over 50 year olds (43,9%). This cascading literacy rates may be attributed to access to schooling, including functional literacy programs, coverage of adult and out-of-school youth programs, including both conventional and out-of-school literacy education programs, and other factors already discussed.

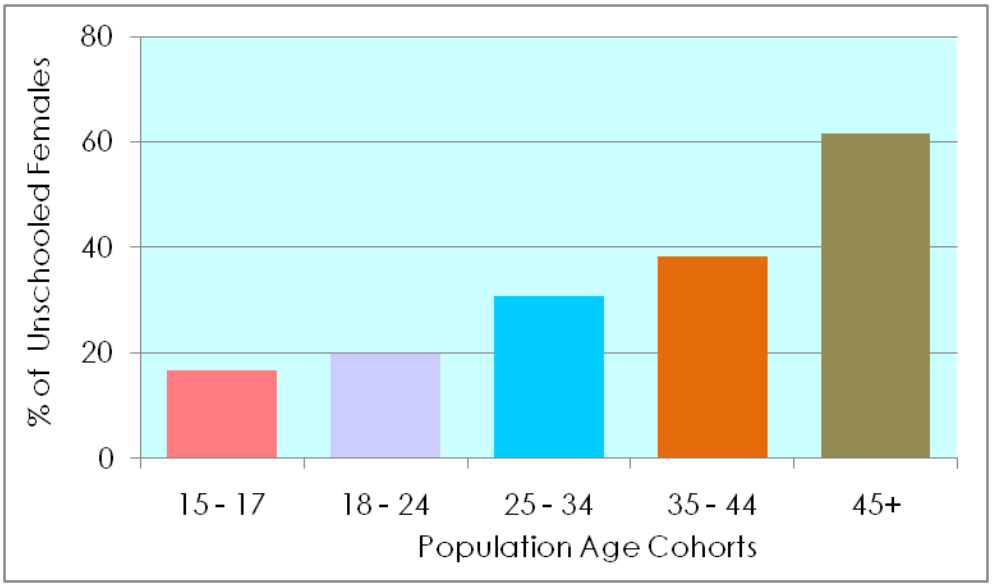
Data does also indicate an immediate need for action to address the state of adult and out-of-school youth literacy. These actions must, as a matter of priority, targeted and providing universal access to basic education, up scaling literacy programs, improving coordination amongst all stakeholders under the leadership of government, improving levels of funding, and capacitating the sector with essential resources to enable inclusive and equitable access, and the achievement of quality and sustainable lifelong outcomes.

Equity

Inclusive and equitable education strategies and outcomes are critical to the empowerment of all sectors of the population, particularly the empowerment of marginalized and at risk populations. It is also critical in alleviating poverty and in improving the quality of life for all. Equity as noted by Kare and Sermel (2013) is a cross cutting issue. Therefore, it must be considered and included in the development dialogue, in planning and in policy development, and in the design and implementation of development strategies at all levels.

Research has shown that providing inclusive and equitable educational opportunities for especially women do lead to informed decision-making, active participation in development in all spheres of development, improved understanding of human rights, and greater cultural awareness and sensitivity (Kare & Sermel, 2013; Kukari, Paraide & Kippel, 2009). Figure 58 shows the proportion of females that never attended school.

Figure 58: Proportion of females that never attended school, PNG, 2010



Source: NSO PNG Household Income and Expenditure Data, 2010

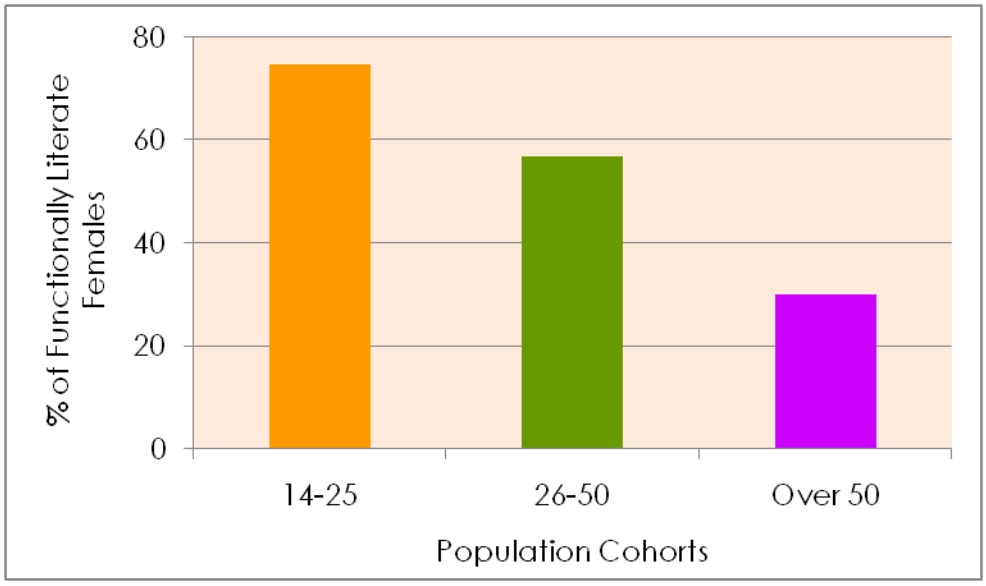
The pattern of females who never attended school is consistent with the overall national pattern on the same variable. The older the females were the more likely that they have never attended school. Conversely, the younger they were the more likely that they attended school. The percentage of females who did not attend school increased correspondingly with the increase in their ages. Collectively, the data shows that an

increasing percentage of adult females never attended school compared to female youth. It is more likely that most, if not all, of the females who did not attend school were functionally illiterate. It is therefore important that this group of females is provided opportunities to either go to school or to build up their literacy capacity by undertaking relevant literacy programs or courses.

Female Functional Literacy Competency

Research has clearly shown that females face more challenges and obstacles than males in accessing education and in achieving high academic results. It is even difficult in non formal school settings where females had to decide between their cultural and family obligations and enrolling for a literacy program. However, many females have excelled academically where inclusive and supporting environments for lifelong independent learning are created and fostered. Figure 59 shows the proportion of females who were able to read and write extracted from the PNG Household Income and Expenditure Survey carried out by NSO between 2009 and 2010.

Figure 59: Proportion of females who were able to read and write, PNG, 2010



Source: NSO PNG Household Income and Expenditure Data, 2010

The pattern of females who were able to read and write is consistent with the pattern of females who never attended school (see figure 58). Proportionately, the functional literacy rate of older females who never attended school was much lower than younger

females who never attended school. This means that the older the females the more illiterate they were. On the other hand, the younger the females the more literate they were. Data indicates the existence of a population of functionally illiterate women however illiteracy was more pronounced in the older than the younger female cohorts. Necessary actions should be taken to allow girls to access the formal education system or FODE to complete some form of schooling and enable women to undertake relevant literacy programs.

Management

The National Literacy and Awareness Council (NLAC) and the National Literacy Awareness Secretariat (NLAS) are responsible for the governance and the management of adult and out-of-school youth education programs. The former "is responsible for policies and strategies for the development of literacy programs" (JICA, 2001, p.38). The latter implements and monitors the decisions and policies made by NLAC. However, the overall governance, management, and implementation of literacy programs in PNG have been uncoordinated, disconnected with the literacy realities of PNG, and ineffective. Shortage of hard and soft capacities, inadequate funding, lack of resources, and poor monitoring of literacy programs, amongst other factors, have contributed to the poor state of literacy programs in PNG.

Management, Coordination, and Monitoring of Literacy Programs

There is a lot of fragmentation in the management, coordination and monitoring of literacy programs in the country. For a start the responsibility for policy, planning, management and, to some extent, legal aspects of adult and out-of-school youth education and training programs is performed concurrently by a number of government departments and agencies, namely the Ministry of Education and the Ministry of Community Development. This fragmentation of responsibility over adult and out-of-school-education has weakened the overall management and the implementation of literacy programs. It is one of the main barriers to implementing literacy strategies and achieving the desired results.

The divided mandate over adult and out-of-school youth literacy prevailing in our organizational and management structures is a serious hindrance to the delivery of

effective literacy programs. This situation must be resolved immediately for the benefit of all citizens. Only one government department should be tasked with the responsibility of managing, coordinating, and monitoring literacy programs in the country. This will permit effective dialogue, linkages, and partnerships with all stakeholders already actively participating in delivering literacy programs to be developed, harnessed, and sustained. This will be an important catalyst for literacy policy and program development, and action towards addressing the poor state of literacy amongst Papua New Guinean citizens.

Clear strategies for improving the management, coordination and monitoring of literacy interventions must be identified and implemented to enable all stakeholders to work in unison towards addressing the literacy situation in PNG. Comprehensive and mutually beneficial and accountable partnerships must be developed amongst all stakeholders to lay the foundation for action on poor state of adult and out-of-school youth literacy in the country.

Strategic Government Support for the Delivery of Literacy Programs

The government has made a commitment towards improving the literacy status of PNG by providing "easy and affordable access education to all citizens, invest in knowledge industry and technological advancement, and support and enhance community empowerment initiatives" (GoPNG 2009, p. 36). The government proposed to achieve these outcomes through the establishment and operation of Community Colleges throughout the country. Some colleges were established in some districts to serve as focal points for the delivery of literacy programs. Some initial effort was made to implement this strategy. Communities had a formal place where they can go and learn how to read and write, and acquire other literacies. Yet, owing to poor coordination and interface between the three tiers of governments, most, if not, all colleges have ceased to function and left idle.

Much financial input, strategic support, and improved and sustained commitment will be required from governments at all levels to provide broad-based adult and out-of-school youth education programs. Governments must provide the required leadership to ensure that the poor state of literacy in the country is gradually improved. It must be fully

committed to supporting literacy initiatives devised and implemented by other stakeholders by developing and implementation enabling policy frameworks and committing itself fully to the principles embedded in the State and Church, and State and Non State Actors Partnership Frameworks. Moreover, it needs to seriously examine its role in the emancipation and empowerment of its citizens and its responsibility in making sure that all citizens have the required literacy to effectively participate in national development and benefit from its gains.

2000 National Literacy Policy

A National Literacy Policy was developed in 2000 to provide a platform for addressing the challenges of providing access to literacy programs for all Papua New Guineans, especially to adults and out-of-school youth (JICA, 2001). This policy's emphasis was on providing opportunities for functionally illiterate adults and out-of-school youth to learn how to read and write. The intentions of the policy were valid and significant in raising the levels of literacy amongst Papua New Guineas. Yet, it has not been fully implemented therefore its intended outcomes have not been realized (NLAS, 2014).

The policy needs to be reviewed and a new policy developed in consultation with all stakeholders. The new policy should provide an effective inclusive and equitable framework for addressing the worsening literacy situation in the country. It should clearly identify the literacy gaps at the national and sub-national levels, set clear, achievable, and measurable targets, and visibly spell out the strategies that will be pursued to achieve these targets. The governance and the management structures, the roles and the input by all stakeholders, resource implications, and a monitoring framework should be included as well. The goal of this policy framework is to ensure that all Papua New Guineans acquire and sustain the necessary knowledge and skills that they are able to use to effectively function in the modern context. Moreover, the achievement of equitable outcomes must be a focal point of this policy.

CROSS CUTTING ISSUES

Introduction

All children have the right to have access to, and participate in, receiving a quality education regardless of their background or circumstances. This right is enshrined in a number of global and national legal frameworks and conventions. These include, at the national level, the national Constitution of PNG and the Lukautim Pikinini Act and, at the global level, the Universal Declaration of Human Rights and the United Nations Convention on the Rights of the Child. These rights are also self guarded and promoted by a number of global and national policy frameworks which include the MDGs, the EFAGs, Vision 2050, the National Strategic Plan, the Medium Term Development Strategy, the National Education Plan, and the Universal Basic Education Plan. These frameworks provide the means for enabling children to have access to, and participate in, education. They ensure that children's rights to education are promoted and protected by governments at all levels, communities, parents, and all citizens.

In spite of these efforts to protect and promote children's right to education, many children, especially girls, children with a disability, children infected or affected by HIV/AIDS, children engaged in child labour, children living in geographically isolated and remote communities, children living in poverty, and children living in conflict and disaster prone areas, are continuously denied this fundamental human right. These children should be identified and targeted for inclusion using inclusive and innovative strategies, including consultations with women, persons with disability, and people living with HIV&AIDS to consider their views.

This chapter examines the cross cutting issues of gender equality, children with disability, and children infected and affected by HIV/AIDS.

What is a Cross Cutting Issue?

A Cross Cutting Issue (CCI) is an issue that is important to be taken into consideration in all sectors and programs usually with a goal of including the needs of a particular

marginalized group in society (Department for Community Development, 2012). Cross cutting issues often include:

- Gender equality;
- Child rights and child protection;
- Disability, and
- HIV & AIDS.

Gender Equality

PNG is committed to the development and empowerment of all citizens, including women and girls, through its constitution – specifically under the National Goals and Directive Principles. This guarantees the fundamental right and freedom of every Papua New Guinean citizen, including females, to participate actively in the political, social, education advancement and economic activities of the country. The key priority areas that are common to women and girls worldwide and are also covered in the international, regional, and national platforms for action that PNG supports include: MDGs (2000), Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) (1995), Beijing Platform for Action 1995, Pacific Platform for Action, and the Commonwealth Plan of Action on Gender Equality 2005-2015 (Department for Community Development, 2011).

Gender Equality is when the roles of females and males are valued equally. Gender equality promotes the equal participation of females and males in decision making; supports women and girls so they can fully exercise their rights; and reduces the gap between women's and men's access to and control of resources and the benefits of the development process. Equity is a process of being fair. It is ensuring that everyone is treated in a fair manner. Equity requires fairness and impartiality but not necessarily treating everyone the same way. This is sometimes needed in PNG because there are occasions when equity involves a decision made in good conscience to treat a person or group differently according to their circumstances.

In the education sector gender equity is about providing inclusive and equitable opportunities for boys and girls to have access to and receive a quality education.

However, this is often easier said than done owing to a multitude of complex factors. These factors tend to pose more barriers for girls than for boys in accessing and participating in education. Some of these include the perceived roles of boys and girls (Mead, Fox, Andrew, Zariga & Kesno, 1995), violence against girls and women (Wilson, 2013), and the burden of school fees (Guy, Paraide & Kippel, 2001). These barriers, amongst others, have been attributed to the poor rates of girls' access and participation in schooling since independence. To ensure that girls have an equitable opportunity to go to school, a number of initiatives were taken by DoE and the development partners to mitigate the causal factors. These initiatives include the "Accelerating Girls Education Program" and the development of a Gender Equity in Education Policy in 2003.

Efforts to increase access and participation of girls at various levels of education have had inconsistent results across all education levels. Overall, access and participation of girls in elementary education increased between 2007 and 2012. However, this increase was slower than the increase in the access and participation of boys and inadequate to bridge the access and participation gaps between the two sexes. Although more girls were accessing elementary school, the majority of them were dropping out of school before reaching grade 8. At the primary school level, the GPI declined between 2007 (0.87) and 2008 (0.85), and increased to 0.86 in 2009 and remained stagnant between 2009 and 2012. The data shows that the ratio of boys enrolled in primary education was consistently lower than the ratio of boys. The data also shows that there was not progress made since 2009 to close the gender parity gap. Overall, girls' access and participation in basic education still lag behind those of the boys.

Access and participation of girls in secondary and TVET levels was minimal due to, amongst other factors, poor absorptive capacity at these levels. The secondary education GPI fell dramatically between 2007 (0.77) and 2009 (0.71) before rising to 0.73 in 2010 and peaking at 0.74 in 2012. Access and participation of girls at the secondary school level is worse than at the primary school level. There is a visible gender parity gap between boys and girls. There were much less opportunities for females in TVET and Adult and Out-of-School Youth Education. This is due to few education and training opportunities and low priority given to these education pathways by governments at all

levels. The only bright spot is FODE where an equal number of females were enrolled. However, this data was provided by the principal verbally.

Generally, data on female access and participation at all levels of education show that although there were increases in female access and participation, this was not enough to bridge the gap between themselves and their male counterparts. Their chances of going to school and completing a full education cycle diminish as they progress from lower to higher levels of education. Although actions implemented to date have had a positive impact on providing equitable opportunities for females, the gains made are insufficient to make any significant difference in the enrolment of girls and women, and in closing the access and participation gaps. The discrepancy between male and female education levels create a flow-on effect that impedes the participation of females socially, economically, and politically.

"The past and present National and Provincial Education Plans have all provided statements of support for women's education, but the intention has never been translated into action…Several reports have indicated that although policy documents identify gender equity as an important objective within the PNG education system, there has not yet been a central point for the development of guidelines and strategies for the implementation of this objective" (The World Bank, 1998:41). More effort is thus required, including the effective localization and implementation of gender equity policies and gender mainstreaming, to boost female access and participation at all levels of education.

Children with Disability

PNG has made a commitment to provide education to all its citizens, including citizens with disability. This commitment is embedded in its national development policies and plans such as Vision 2050, the Medium Term Development Strategy, the National Strategic Plan, the NEPs, and the National Special Education Plan. Its goals and strategies for providing equitable and inclusive educational opportunities are influenced by, and consistent with, the global discourse and platforms for action on the same. These legal, policy and planning frameworks include the Salamanca Statement and Framework for Action on Special Needs Education (1994), United Nations Convention on the Rights

of the Child (UNCRC), and UN Convention on the Rights of Persons with Disabilities (UNCRPD).

The Convention on the Rights of the Child (1989), specifically refers to children with disabilities (Article 2), and states that:

> *'…The United Nations' Standard Rules on the Equalisation of Opportunities for Persons with Disabilities and Biwako Millennium Framework for Action: Towards an Inclusive, Barrier-free and Rights-based Society for Persons with Disabilities in Asia and the Pacific provides a set of principles for a rights based approach to disability in Papua New Guinea and a comprehensive framework defining priorities for a national policy on disability'*(Department for Community Development, 2009, p.19)

The UNESCO (1988) *Review of the present situation of special education* estimated that "less than 2% of children with disabilities in developing countries receive services of any kind" (p.3). According to DoE (2002), "It is generally accepted that these children would remain at home in the village and be cared for by the community" (p.105). However, the actual number of children with disabilities is unknown because data collection on this group of children has not been done. Unless proper data is made available, plans, policies, and programs targeting the development of children with disabilities will be based purely on assumptions. Only a very small percentage has access to some form of education whereas the majority remains invisible and as such is continuously denied their right to receive an education. It is imperative that data is collected regularly so that a more accurate figure is given of children with disabilities to help with planning and policy development to secure, protect, and promote their rights to education.

The DoE (2004) identifies its mission as "to make education accessible to the poor and physically, mentally, and socially handicapped as well as those who are educationally disadvantaged" (p.6). This commitment is reflected in the DoE (1993) Special Education Plan and inclusive education policies. To pursue its mission of making education accessible to children living with disability, DoE has established a section within the department to take carriage of special education. In addition, it has, in collaboration with special education partners such as Callan Services, established and operated resource

centers in a number of province's to cater for the education needs of children with disabilities. It has also advocated for the mainstreaming of children with disability into the conventional school system however it has been difficult catering for the learning needs of these children owing to a lack of specialized teachers, a lack of necessary resources, and non inclusive school environments.

In spite of DoE having in place an inclusive education policy, the implementation of this policy has not been effective. More needs to be done to mainstream children with disabilities into the mainstream schools. Disability mainstreaming is the way to involve children with disabilities in education. Inclusive education strategies must address the organizational structures, staff composition, board composition, and ensure that strategies are fully integrated into the department's plans and operations. Provision of an inclusive school environment is critical for children with disabilities access and participation in schooling. There must be a financial plan to reasonably accommodate people with disabilities and that all buildings and meeting rooms/other spaces or other amenities should be accessible to people with disabilities. All teachers and other education personnel should be educated on barrier free approaches to all systems and processes of DoE in the provision of education.

The following are areas that should be considered in the education and training for children with disability:

- There should be improved access to mainstream education at all levels with a strategy for equal training opportunities provided to children with disabilities from the elementary to post primary levels of education.
- Form partnerships with other stakeholders to ensure inclusive education strategies reflect the underpinning principles and strategies for securing, protecting, and promoting the education right of children with disabilities advocated in global and national conventions and legal and policy frameworks.
- Consider integration of a variety of education 'models' that may be appropriate for persons with disabilities; e.g. provision of education & training 'on and off sites'.

- Encourage alignment of DoE policies to mainstreaming gender and social inclusion to reflect social inclusion of marginalised groups including children with disabilities.

HIV/AIDS

PNG reported its first case of HIV in 1987. The number of adults and children living with HIV increased from 1987 to pick at 34,000 in 2009. The number of women living with HIV increased from 7,600 in 2001 to 18, 000 in 2009. This is an increase of 10,400 women. This number doubled the 14,000 adults and children living with HIV in 2001 (UNAIDS, 2010). It was estimated that the adult prevalence rate in 2009 was 0.9%, an increase of 0.5% from the 2001 rate. The 2010 and 2011 prevalence of HIV amongst 15 – 49 year olds was estimated to be 0.8%, an increase of 0.1% from the 2009 rate. This translates to 27,385 – 36,312 adults and children living with HIV in PNG in 2010 (UN AIDS, 2012). The median total number of adults aged 15 and more was estimated to be 27,430 and children less than 15 years were estimated to be 3,991 (ibid). This increase in the prevalence rate was observed after PNG declared HIV as a generalized epidemic in 2004.

Data shows that the most at risk groups are heterosexuals, homosexuals, and mother-to-child, and others. The HIV/AIDS epidemic in PNG is largely driven by sexual transmission (91.1%), especially unprotected heterosexual intercourse (National Department of Health, STI, HIV and AIDS Surveillance Unit, 2010). This group is followed by perinatal transmission (3.6%), followed by homosexual transmission (2.8%), and others (2.8%). The PNG National Aids Council and Partners (2010) reported using data collected from routine case reporting that the HIV/AIDS epidemic in PNG affects mainly people under the age of 40, with most cases amongst those aged 20-29 in women and 25-34 in men. More specifically, the peaks amongst men and women are found in different age groups, falling in the 20-24 age range for women, while for men it is found in the 30-34 age group (ibid).

The general population is also at risk of HIV. The PNG National Aids Council and Partners (2010) reported from available data on HIV/AIDS in PNG that 7.8% of young women and men had sexual intercourse before the age of 15. Data also show that 7.5% of

men and women (2% among women) between 15-49 years of age have had multiple concurrent sexual partners (NSO, 2006).

Similarly, a more recent study by the Medical Research Institute in Kimbe revealed that 22% of the participants (15% among women attending ANC, 37% amongst STI clinic attendees and 24% among women) reported sexual intercourse with more than one partner in the last 12 months. Amongst those with multiple partners, only 39% reported using a condom during their last intercourse (PNG National AIDS Council Secretariat and Partners, 2010).

What the above data reveals firstly, those most at risk of HIV are heterosexuals. This group, in most cases, have had unprotected intercourse. It has been the main driver of the HIV epidemic in PNG. Secondly, HIV/AIDS epidemic in PNG affects mainly people under the age of 40, with most cases amongst those aged 20-29 in women and 25-34 in men. Thirdly, it was estimated that on average there were 27,430 adults (age 15 or more) and 3,991 children less than 15 years living with HIV in 2010. This data is important in terms of addressing the HIV/AIDS epidemic in education settings. It must be used to project prevalence trends for school age populations, resource requirements, and the provision of school and community-based support mechanisms to mitigate stigma and self guard and promote the right of children affected by or living with HIV/AIDS to education. Moreover, since there is no data on teachers, students, and other education officers impacted or affected by HIV/AIDS available in the DoE, the data provided by various HIV/AIDS based organizations should be used to inform education policy development, planning, programming, and strategies for providing inclusive and educational opportunities for school children, out-of-school youth, and adults impacted or affected by this epidemic.

The DoE has been proactive in responding to the impact of the HIV/AIDS on teachers, students, and all other employees working within the NES. It has made an effort to include it as a cross-cutting issue in the NEP 2005 – 2014 but had no clear strategy for responding and addressing it across all levels of the NES. It recognizes the urgency of the HIV/AIDS situation and its inevitable impact on the education sector and planned to develop a policy to provide a platform for action (DoE, 2004). The policy has been

developed and disseminated to help guide education administrators at the national and sub-national levels, head teachers, teachers, guidance teachers, and parents on how to deal with school children and education employees impacted or affected by HIV/AIDS.

In addition, DoE has developed and disseminated curriculum on HIV/AIDS to schools for teachers and students to learn about HIV/AIDS, and collaborated with teacher education institutions to develop and teach courses on HIV/AIDS (DoE, 2008). These efforts have contributed towards raising awareness and building the capacity at the department, institutional, school, family, and individual levels to approach the epidemic in a more humane way and effectively deal with it when it presents itself.

Nonetheless, more effort is needed to combat this epidemic in education contexts, particularly the collection and dissemination of data for informed responses, and effective implementation and monitoring of strategies to ensure that more inclusive and tolerant environments are constructed and fostered to ensure education rights of all regardless of their circumstances.

MANAGEMENT

Introduction

PNG's education aspirations and the underpinning principles of human development are manifested in a number of overarching and strategic policy, legal, and planning frameworks. These include the National Constitution, Vision 2050, National Strategic Plan 2030, and the National Medium Term Strategic Plan 2015. The human development aspirations and principles that PNG aspire and is committed to are influenced by global perspectives, conventions, treaties, and laws. They are also embedded with Christian principles that we have subscribed to and uphold as a Christian nation. The Ministry of Education is mandated to lead in the translation of these education aspirations and principles into clear and measurable goals and targets, develop strategies for achieving these outcomes, and effectively implement and monitor the strategies to ensure that the desired results are fully attained.

To fulfill its mandate, the Ministry needs to effectively position itself first before it can lead in governing and managing the NES at the national and the decentralized levels of government, and at the community and the school levels. This chapter discusses some aspects of management that can be further improved, reformed or realigned to enable the Ministry to effectively perform its roles and responsibilities.

Clear, Attainable, and Measurable Education Goals and Targets

The setting of clear, achievable, and measurable goals and targets is essential to making a positive change and a radical impact on the lives of Papua New Guineans. These goals and targets, and the strategies for achieving them must be evidence-based. There must be clarity and clear focus on the outcomes to be pursued and the type of change envisaged. This is essential in education planning, policy development, and programming.

The Ministry, particularly DoE, has now developed two NEPs and countless number of policies. In most cases, these plans and policies contain educational outcomes and strategies that are either poorly estimated or recommended by individuals with a superficial understanding of the education challenges of PNG. The underestimation and a

misrepresentation of education realities in PNG have contributed to poor education target setting and the development of ineffective strategies. This has resulted in poor or no monitoring and regular reporting of performance and progress towards the achievement of intended education outcomes, and overall poor management of education plans and policies at all levels. PNG missing out on the achievement of the MDG of Universal Primary Education, the persistence visibly widening access, participation, and quality of education gaps, poor state of educational institutions, and severe deterioration of education quality across all levels of the NES are a result of a lack of clarity and measurability of education goals and targets pursued since independence.

Education outcomes together with the strategies for achieving them must be evidence-based, clear, attainable, and measurable. They must enable a positive and a meaningful change to the prevailing conditions so that there is significant improvement in access and participation in education, and in the literacy levels of Papua New Guineans.

Restructure and Realignment of Education Ministry

The Ministry of Education must position itself strategically to help it to perform its roles and responsibilities more effectively and prudently. It is empowered by relevant laws and National Executive Council decisions to manage the delivery of education in PNG and ensure that national aspirations for education are effectively and efficiently pursued and realized. To do that, the Ministry must align its thinking, plans, policies and programs, strategies, outcomes, and resources with the national as well as global development agenda in general and education agenda in particular. This it has done well and continues to do so to respond to emerging education priorities and, as it is common practice, ad hoc policy making.

Alignment with Global and National Development Agenda

Education plans, policies, and programs at all levels of government are closely aligned with global development agenda and national development aspirations embedded in a number of significant national development frameworks. This includes, amongst others, the MDGs and the EFAGs, the National Goals and Directive Principles, Vision 2050, the National Strategic Plan 2030, and the Medium Term Development Strategy. These

frameworks provide platforms for action towards improving development outcomes in which education plays a critical role. The NEP 2000 – 2004, NEP 2005 – 2014, UBE Plan 2010 – 2019, provincial education plans, and related education programs have been informed by, and closely aligned with, the global and national agenda described in these frameworks. For example, DoE has developed its Education Sector Strategic Plan 2011 – 2030 to align its goals, structures, programs, and activities more closely with Vision 2050. This is to ensure that DoE's roles and responsibilities, strategies, and programs are targeted at achieving Vision 2050 education goals and targets.

Education reforms and realignments do not only happen at the national level. Reforms are systematic and holistic, and not fragmented. Required reforms to the NES must be embraced and simultaneously carried out at the decentralized levels. There must be realignment and repositioning of the sub-national levels so that national thinking and efforts are amplified and translated into localized strategies and actions. Reforms at all levels must be carried out in unison to have any chance of succeeding in delivering the intended outcomes.

Nonetheless, realignment especially of the NES to strategically support efforts towards the attainment of national education outcomes has not been without challenges. The demarcation of education roles and responsibilities between the three tiers of government under the decentralized system of government has limited DoE's direct involvement and oversight of education provision in the provinces and districts (Bray, 1994, DoE, 2004, Kukari, 2009b). The Organic Law on Provincial and LLGs empower the provinces to govern and manage their provincial education systems, especially elementary, primary, and vocational education. Although the logic of shared power and leadership is appreciated, the capacity of provinces to manage the delivery of education is generally poor. Moreover, the interface between DoE and the provinces and districts have been curtailed by the provisions of the above law. This has resulted in lack of coordination, oversight, and direct involvement by DoE in the delivery of education at the sub-national levels. This has, to a greater extent, contributed to the poor state of education in PNG. This issue must be addressed as a matter of priority to empower DoE to be directly involved in the delivery of education at the sub-national levels.

Much has been done to reform the education structure and the curriculum since the early 1990s to provide universal access to a relevant and quality basic education, achieve gender parity in schooling, and provide alternative pathways for children to continue their education. The target date for delivering the MDGs is nearing and PNG will miss out on achieving all of these goals. The outcomes of these reforms have been mixed. Structural reforms have had a dramatically increased access, particularly at the elementary, primary, and FODE levels of the NES. Student enrolment has surpassed the project targets in the NEP. In addition, some progress has been made towards achieving the goal of UBE and gender parity. An increased number of girls are accessing and participating in school, particularly at the lower levels of the NES and FODE. However, overall, the performance of the Ministry on the key education indicators has been quite poor. The following outcomes are quite visible:

- a large proportion of children from the school age related population, females, and other vulnerable populations were yet to have access to education;
- of those enrolled in school, a large proportion dropped out before grade 12. The majority being females;
- gender parity gaps are increasing despite increases in female enrolment;
- regional, provincial, and LLG disparities in the provision of education continue to persist and increasing (Kukari, Reta & Michael, 2014);
- TVET colleges are poorly managed and in a poor state (Hind, Larsen, Week & Peni, 2013);
- FODE ‘s capacity and resourcing have deteriorated;
- NLAS and NLA capacities have dwindled because of their marginalization;
- the quality of student learning and literacy levels have deteriorated rapidly over the years (see ASPBAE & PEAN, 2011; DoE, 2013), and
- adult and out-of school youth literacy rates have regressed (ASPBAE & PEAN, 2011).

The Ministry will need to critically assess its performance to identify its strengths, weaknesses, achievements, and opportunities. Based on this analysis, identify the gaps, develop relevant interventions, set clear, attainable, and measurable targets, and develop effective and implementable strategies to achieve these targets. Strategies will include a

realignment of whole of the Ministry and provincial and district functions, systems, and personnel so that these are in tune with the strategies and programs going forward.

Effective and a more targeted and inclusive realignment of the Ministry will be critical in improving all aspects of education management and delivery, and for improving education results across all divisions. Some restructuring and realignment has been made recently to reposition officers within DoE to enable it to effectively perform its roles and responsibilities. Other reforms and realignments have been brought about by the enactment of new legislation such as the Organic Law on the Provincial and LLGs and the Determination Assigning Service Delivery Functions and Responsibilities to Provincial and Local Level Governments, development and implementation of new policies such as TFFE, introduction of ”big bang” policies such the free and compulsory education policy, and ad hoc interventions. More reforms and realignment will be done to develop and implement the Standards Based Curriculum. Whatever the reforms, these reforms must effectively position the whole Ministry to address the deteriorating state of education in PNG.

Human Resource Management

Quality human resources, their effective engagement, and management are critical to the performance of organizational roles and responsibilities and the achievement of organizational outcomes. For education, well qualified, experienced, and committed staff is necessary for the delivery of education and the achievement of required outcomes. To have the desired quality of staff, Education Ministry must invest in their professional development. This, it seems, has been neglected or delegated to someone else. Teachers, TVET college lecturers and instructors, and FODE employees have not been provided with sustainable professional development opportunities despite the existence of a “Teacher In-service Policy”. Research in PNG has shown that teacher professional learning is an important driver of quality teaching and quality student learning (Kukari & Honan, 2010; Paraide, Evans, Honan, Muspratt & Reta, 2013). To achieve quality outputs and outcomes, DoE officers, teachers, lecturers, and managers should be provided with sustainable professional learning opportunities by the Ministry. This should be prioritized for funding and implementation in the development of the next NEP.

Effective Staff deployment and engagement are important in the performance of allotted tasks and the attainment of performance outcomes. For education, efficient deployment of staff particularly teachers is necessary for a timely start to teaching and learning. Poor teacher appointment practices, high teacher absenteeism, and a lax attitude towards teaching are chronic and permeate the NES. Research has shown that teacher absenteeism and poor attitude towards their profession impact negatively on student achievement. Moreover, Kukari, Paraide, and Kippel (2009) found from their review of the Nimamar Rural LLG that teachers were normally absent from school or skip work to attend to personal matters, in most cases, they had to absent themselves to track their salaries. This is a major reason for teachers skipping their work.

The problem of teachers not receiving their salaries is linked to the chronic problems associated with teacher appointments. In their 8 province study of teacher appointment, Kukari, Paraide, Kapa-Malpo, Mugup and Wilson (2012) found that teacher appointment was ineffective, inefficient, and lacked accountability and transparency. It was always done very late and hence teachers do not commence their duties on time. As a consequence, the Resumption of Duty Forms were completed and submitted late by teachers resulting in delays in the payment of their salaries. The Teaching Service Commission and DoE must work together to address issues relating to teacher appointments and the payment of teachers salaries to allow teachers to concentrate on their teaching duties.

Financial Management

Education programs and activities as well as personal emoluments are mainly funded by governments at the national and the sub-national levels. A big proportion of the funds come from the annual national budget which the government delivers every financial year. Development partners have also been assisting to fund various programs and activities. The ultimate purpose of the funds provided to education is to help fund programs and activities that will provide an inclusive and equitable access to all Papua New Guineans to quality education and training programs. Thus, funds should be used to provide the required number of teachers to teach in various education institutions, procure and make available essential teaching and learning resources, provide professional

learning opportunities for employees, especially teachers, renovate and build new infrastructure, and pay employees entitlements.

Human resource development is a significant priority of government because its power to unlock human potential, alleviate poverty, and transform the lives of all citizens. Access to quality education and training is critical to the achievement of these goals. The national and sub-national governments are conscious of this and have prioritized education as their utmost priority and appropriate funds according to ensure that education and training is provided to all citizens. This has seen a gradual increase in the funds allocated to the education sector by the national and provincial governments. Development partner funding assistance to education has also increased over the years. However, many recurrent activities have either not been funded or underfunded leading to deterioration of essential infrastructure, lack of teacher professional development opportunities, shortage of teaching and learning resources, and poor implementation and monitoring of plans, policies, and programs. The recurrent budget should be increased to ensure that recurrent activities are adequately funded. These activities are essential to the achievement of the overall goals and specific education targets given in the NEP, the provincial education plans, and other Ministry wide plans.

Leakages in flow of funds to the provinces, districts, and especially the schools is a serious problem that the Ministry must address in consultation with the provinces to prevent funds from being wasted, misappropriated, or misapplied. Misappropriation and misapplication of funds is endemic and must be addressed as a matter of priority. Poor management and accountability of funds has contributed to teachers not being paid their annual leave entitlements, allowances, and teachers missing out on much needed teacher professional development opportunities. Moreover, it has contributed to the poor state of educational institutions, a lack of essential teaching and learning resources, and wastage of teaching and learning time due to teacher absenteeism and poor teacher appointment practices. These problems have, to a large extent, contributed to PNG's poor education indicators.

Acquittal of funds appropriate to support the delivery of education continues to be a major problem across all sectors of the Education Ministry. A lot of donor funds and funds allocated to the Ministry are yet to be accounted for. Schools in particular were not keeping proper expenditure records and accounting for funds expended. This has been the case with the management and expenditure of TFFE funds (Paraide, 2014; PEAN, 2013). DoE is taking measures to educate and train school level administrators on how to manage and account for funds disbursed to schools to fund management and teaching and learning activities. Prudent and sustained monitoring of the flow of funds to the provinces, districts, LLGs, and schools is essential to ensure that there are no leakages, that funds are expended on their intended purposes as per agreed budgets, and properly accounted for. Standard Officers should be trained to do this line of work.

Evidence-Based Decision-Making

Concerns were raised especially in 2012 about the reliability of the education data, particularly in relation to the number of schools actually operating in the NES. These concerns drove the establishment of a Task Force headed by Mr. Paru Aihi to collect data on the number of schools, teachers and school enrolment in 2012. This project cost the taxpayers K10 million to implement. To date, the project has failed to deliver the intended outcomes. So far only 48 of the 89 districts have carried out and returned their surveys. The rest of the districts (41) were yet to carry out and return their surveys. Moreover, the data collected so far is yet to be analyzed and reported. As if this is not enough, another data collection project driven by the Secretary for Education to collect electronic data from schools is now underway. This project has been poorly conceived and implemented thus creating a lot of controversy in its piloting in the National Capital District (NCD) Schools. These ad hoc projects not only undermine all the efforts made to date to collect education related data, but are responding to perceived gaps in the collection and the dissemination of education data.

More recently questions were raised on the floor of parliament about out dated and the unavailability of up-to-date data for informed decision-making at all levels. It is obvious from these concerns as well as responses that up-to-date data has not been collected systematically and regularly. If it is collected regularly, it has not been processed and made available in useable formats on a timely basis so that it can be used to inform policy

formulation and planning, measure performance of programs and projects, and inform interventions in closing the performance and outcome gaps.

In the case of DoE, Annual School Censuses have been conducted since 2007 to collect data on a range of indicators, including student enrolment, the number of schools, and the number of teachers. However, this data has not been processed and disseminated using formats that will enable stakeholders not only to know the performance of the NES and progress being made towards key education targets, but also to use the data for policy formulation, planning, and programming. Moreover, this data can also be used to assess the effectiveness of implementation of policies and plans, measure progress towards the desired outcomes, identify performance gaps, and inform strategies for closing the gaps to ensure positive and sustainable progress is made towards planned targets. This critical task has either not been performed effectively by DoE or performed inconsistently over the years. This has resulted in poor implementation and monitoring, and therefore DoE's continuous inability to effectively manage the NES and achieve national education goals and targets within the planned timeframes. Increased effort and commitment is required as well as the use of existing partnerships to help boost data collection, analysis, reporting, and timely dissemination to the end users at all levels.

Research, monitoring, and evaluation have a very important role in the development of effective policies, plans, and best practice. Nevertheless, a critical gap that exists and continues to undermine efforts toward providing universal access to education in PNG is not only political and bureaucratic indifference to the significant role that research-based evidence plays in the development of effective policies and plans, and best practice, but also a critical lack of integration of research in education delivery at all levels. This apparent lack of interest together with lack of prioritization and funding of research, monitoring, and evaluation strategies contribute directly to poor policy choices, poor planning, and poor decision-making at all levels of government. This has, to a large extent, contributed to poor progress and failures in the attainment of agreed education goals and targets.

Research must be meaningfully interwoven with policy development, planning, and practice. This will make sure that quality and informed decisions are made at every phase of policy development and planning. Moreover, the implementation of policies and plans

will be carefully monitored so that meaningful and positive progress is made towards achieving the desired outcomes. Effective and systematic use of research-based evidence in policy and practice can help policy makers and planners identify problems, understand their causes, develop effective policy responses, improve policy implementation, and monitor strategies and performance (Court, Mendizabal, Osborne, & Young, 2006). Furthermore, a sustainable and effective use of research-based evidence can lead to improved policy and practice, and hence the full attainment of education outcomes.

Education Standards and Performance Monitoring

Effective, systematic, and regularized monitoring of education standards and performance pertaining to these standards is critical to the effective performance of roles and responsibilities, implementation of policies, plans, and programs, and delivery of the desired outputs and outcomes. For education, the setting of standards and their attainment has been an ongoing challenge. Despite claims to the contrary that teaching and learning standards have been effectively monitored, research has shown that this is not the case. For example, Kukari, Paraide and Kippel (2009) found from the review of the education system of Nimamar LLG that Standard Officers rarely visited schools or visited the schools sometimes only to assess the performance of teachers and schools. Elementary schools were not monitored at all as there was no one available to do it. It is important that Standard Officers visit each school at least three times a year to assess teachers' teaching, audit school performance, and ensure that schools have the necessary resource capacity to provide a quality education to all children. Commitment towards monitoring teaching, learning, and management performance by the Standard Officers can help to improve teachers' commitment to their teaching and students' learning, teachers' teaching effectiveness, and students' academic achievement.

Monitoring of students' learning of subject content and their literacy and numeracy levels are also important for measuring student learning and benchmarking academic performance. A Curriculum Standards Monitoring Test was proposed as a measure of curriculum standards. It was meant to measure the extent to which children have learned the content given in the curriculum and their state of progress towards the full attainment of curriculum outcomes. This test was trialed but never used to monitor and report on students' learning and performance in relation to national education targets and

outcomes. At this juncture there is very little information available on the numeracy and literacy levels of students. Available data indicates that education standards have not been met with a serious regression in the competency levels of students, with some studies concluding that students leave school with very low levels of literacy (ASPBAE & PEAN, 2011; DoE, 2013). These findings, although based on a few studies, indicate firstly that students were not learning what they were required to learn and secondly, student learning was inconsistently monitored and thus learning gaps and causes were not identified early for mitigation by teachers at the school level and by education authorities at the national and sub-national levels to improve student learning.

Effective strategies for benchmarking and monitoring student learning should, as a matter of priority, devised and consistently implemented to improve both teaching and learning. Teacher education and training standards, curriculum, teaching, learning and management standards must be developed and put in place to ensure that quality outputs and outcomes are achieved at all levels of the NES. DoE is currently working in collaboration with the other Pacific countries on a Pacific Benchmarking Education Quality for Results (PaBER) to ensure comparability in education standards amongst the participating countries. The project could be used to develop a national benchmarking framework but with a regional and an international focus as well. This will help to fill in the critical standards and performance monitoring gaps, and provide a good platform for PNG to consistently monitor and report its performance in relation to key performance and quality of learning indicators.

State and Stakeholder Partnerships

The delivery of education in PNG is executed through a partnership between the State especially the faith-based organizations and the private sector. These partnerships are important in expanding education coverage, especially to the very remote and hard to reach locations, boosting access, and improving the quality of education. In the case of church and state partnership, this partnership was established in the 1970s when the government and the church systems of education were unified. This partnership has been in existence since and is used as a catalyst for delivering education services across PNG. This partnership was reaffirmed in 2008 and commitments were made to further

strengthen it going forward. As a way forward, the Secretary for Education, late Dr. Joseph Pagelio, emphatically stated that ”the country is not going to achieve its goals unless there is cooperation and understanding from all partners and innovative thinking from all involved in the planning of education” (2008, p. 8). Not only that, these partnerships must be built on mutual respect and understanding of each partners’ roles and responsibilities, inclusiveness, and an open dialogue on the education priorities of PNG and how these will be achieved.

A number of participatory decision-making mechanisms have been put in place to actively involve all stakeholders in the governance, management, and delivery of education in PNG. This includes the National Education and Provincial Education Boards, Curriculum Advisory Committees and Boards of Studies, and the Education Sector Improvement Program (ESIP). ESIP, according to late Dr. Joseph Pagelio “is a program that has representation from all of the stakeholders - the Government, the donors, the churches and the community – and which allows for all to discuss issues in education and to participate in the setting of priorities and the allocation of resources” (2008, pp. 8-9). These avenues have provided a space for collaboration and dialogue on a range of issues concerning education. Much has been achieved as a result of these consultations.

Nonetheless, there are areas where partners feel that they need to be consulted more on, particularly on the interventions and strategies for addressing the education system weaknesses. This was pointed out by late Br. Andrew Simpson in his keynote address delivered at the Church and State Partnership Seminar held at Holiday Inn, Port Moresby, in 2008. He said, “Church education agencies…are often not involved in the curriculum writing process. The curriculum writing process is often done without consultation and Boards of Studies often tend to rubber stamp rather than change the curriculum processes” (2008, p.9). A similar sentiment was expressed by the Catholic Bishops of PNG in a paid advertisement in the National of Wednesday 21st May, 2014. They said “We believe that the partnership in health and education services is good but still needs to be strengthened through better communication and consultation at both national and provincial levels” (Catholic Bishops of PNG, The National – Wednesday, May 21, 2014, p.38).

These sentiments have been continuously expressed not only by the Catholic Church but by all other partners as well. It is important that DoE takes into serious consideration the sentiments expressed by the churches and take necessary steps to address them. This is important for fostering a harmonious, inclusive, and mutually respectful relationship between the State and the churches. DoE must not lose sight of the fact that churches operate over three quarters of the schools in PNG and provide education services in places where there is no government presence. They are the co-owner of the NES and as such they should be actively involved and consulted on all aspects of education delivery.

WAY FORWARD

Introduction

Education and Training have been approached in an incremental, fragmented and uncoordinated way. This approach has and continues to allow a privileged few to receive education and training while denying the right of the majority of Papua New Guineans from receiving the same. It is imperative that education and training of Papua New Guineans must be approached in a holistic, inclusive and an integrated way. This will permit equal emphasis to be given to all levels of education and thereby creating equal opportunities for all Papua New Guineans to receive an education regardless of their ability, gender, or socio-economic background.

The development of PNG and the achievement of a sustainable quality of life for all citizens will not be possible unless a committed and strategic investment is made towards building and strengthening the capacity of all citizens and ensuring a critical mass of highly educated and well trained population. These highly educated and trained citizens will be the catalyst for driving development at the national and sub-national levels and, hence, enable the development aspirations to be realized. Moreover, strategic and a more focused investment in education, apart from providing the country with much needed human resources, will contribute significantly towards increasing literacy levels and, therefore, enable Papua New Guineans to be emancipated and empowered. This will allow for active and a more meaningful participation by all Papua New Guineans in all spheres of national development. This will lead to the reduction of poverty and the improvement in the quality of life for all Papua New Guineans.

The above principles underpin the way forward for delivering education and training, for providing expanded, inclusive, and equitable education opportunities to all Papua New Guineans, especially the most vulnerable citizens, and for breaking the cycle of poverty and hopelessness through the emancipation and empowerment of all citizens. No one should be allowed to fall through the cracks of the NES and left behind because of lack of education opportunities and poor literacy levels. Everyone must be given an opportunity to be educated and to transform their livelihoods.

At the Strategic Level

- Recasting education goals and targets - Set clear, achievable, and measurable education goals and targets for all education levels.
- Use evidence to inform education outcomes and to develop strategies.
- Develop evidence-based policies and plans.
- Improve policy and planning implementation and monitoring at all levels.
- Ensure quarterly reporting of progress of implementation of policies, plans, and programs.

At the Governance Level

- Ensure clarity of roles and responsibilities of governments at the national and sub-national levels.
- Resolve issues on interface between DoE and the provinces to enable DoE to have oversight over the performance of provincial education roles and functions.
- Capacity building of national and sub-national leaders on their education roles and responsibilities.
- Monitor performance of education roles and responsibilities by political leaders.

At the Management Level

- Ensure enabling education frameworks are effectively and prudently implemented.
- Legislate for compulsory education through an Act of Parliament.
- Ensure education policies, plans, and programs are systematically and consistently monitored for results.
- Ensure timely disbursement of TFFE funds and transparency and accountability in their expenditure.
- Sustain Tuition Fee Free Education Policy.
- Provide increased and equitable opportunities for NES employees, particularly teachers, to engage in sustainable professional development.
- Initiate and develop an Infrastructure Development Plan.

- Develop an effective system for monitoring NES employees, particularly teachers, performance and for holding them accountable for their students' learning.
- Develop, implement, and monitor the Standards-Based Curriculum.
- Collect, analyze, and disseminate education data on the performance of the NES.

At the Elementary Education Level

- Provide increased and equitable access to all children from the school age related population, particularly 6 year olds.
- Increase education coverage.
- Ensure girls have an equal chance of accessing and participating in elementary education as boys.
- Provide an inclusive and a barrier-free environment to enable children with disabilities and children impacted or affected by HIV/AIDS to access elementary education.
- Review and consider options for improving the education and training of teachers.
- Review and develop a relevant curriculum.
- Develop and implement an effective mechanism for monitoring teacher performance.

At the Primary Education Level

- Expand education coverage and absorptive capacity.
- Provide increased and equitable access to all children from the school age related population.
- Ensure girls have an equal chance of accessing and participating in primary education as boys.
- Provide an inclusive and a barrier-free environment to enable children with disabilities and children impacted or affected by HIV/AIDS to access primary education.
- Review and develop a relevant curriculum.

- Develop and implement an effective mechanism for monitoring teacher performance.

At the Secondary Education Level

- Expand secondary education coverage and absorptive capacity.
- Provide increased and equitable access to all children from the school age related population.
- Ensure girls have an equal chance of accessing and participating in secondary education as boys.
- Provide an inclusive and a barrier-free environment to enable children with disabilities and children impacted or affected by HIV/AIDS to access secondary education.
- Review and develop a relevant curriculum.
- Develop and implement an effective mechanism for monitoring teacher performance.
- Monitor the quality of teacher education and training.

At the Flexible, Open and Distance Education Level

- Increase annual budget appropriation
- Revise funding TTFE funding formula so that funds are paid according to student enrolment and not based on subjects registered for.
- Rehabilitate existing facilities.
- Provide additional classroom space to cater for tutorials.
- Provide ICT facilities in all FODE centers.
- Investigate and provide opportunities for online learning to boost access and participation.
- Strengthen the interface between FODE and the conventional education system to allow students to easily move between the two pathways in pursuit of their education goals.
- Provide increased and sustainable professional learning opportunities for FODE staff.

At the Technical Vocational Education and Training Level

- Increase TVET coverage and absorptive capacity.
- Rehabilitation of existing facilities.
- Develop, implement, and monitor a relevant curriculum.
- Provision of appropriate teaching and learning resources.
- Provide quality TVET lecturers and instructors.
- Provide increased and equitable access to all children from the school age related population.
- Ensure females have an equal chance of accessing and participating in TVET as males.
- Provide an inclusive and a barrier-free environment to enable children with disabilities and children impacted or affected by HIV/AIDS to access TVET.
- Develop and implement an effective mechanism for monitoring teacher performance.

At the Adult and Out-of-School Youth Education Level

- Develop an effective Inclusive Education Policy Framework.
- Improve the management and the monitoring of literacy interventions.
- Increase government commitment and budget appropriation to adult and out-of-school youth education programs.
- Provide increased and equitable access to all adults and out-of-school youth to education and training programs.
- Ensure females have an equal chance of accessing and participating in adult and out-of-school youth programs
- Provide an inclusive and a barrier-free environment to enable people with disabilities and impacted or affected by HIV/AIDS to access adult and out-of-school youth education.
- Develop, implement, and monitor relevant literacy programs.
- Develop and implement an effective mechanism for monitoring adult and out-of-school youth access and participation, and the quality of literacy programs.

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