



CENTRE FOR APPLIED SOCIAL RESEARCH

A CENTRE OF THE

MAURITIUS RESEARCH COUNCIL

*A Study of Attitudes and Lifestyles Implications
of the Pilot Implementation of Summertime
in the Republic of Mauritius 2008-2009*

Final Report

19 May 2009

TABLE OF CONTENTS

	<i>Page</i>
Table of Contents	i
List of Tables	iii
List of Figures	vi
Preface	vii
Executive Summary	viii
CHAPTER ONE - BACKGROUND REVIEW TO STUDY	1
1.1 Introduction	1
1.2 Time	2
1.3 What is Time?	2
1.4 What is Summertime?	6
1.5 Origins of Summertime	7
1.6 Benefits and Drawbacks	9
1.7 Health, Physical and Mental Effects	11
CHAPTER TWO - FOCUS GROUP DISCUSSIONS ON EFFECT OF SUMMERTIME IN THE EDUCATION SECTOR	15
2.1 Introduction	15
2.2 Summertime and its effects on schools and education	16
2.2.1 Schools in Towns and Villages	17
2.2.2 Arrival time at schools	17
2.2.3 Behaviour in class	17
2.2.4 Teaching staff performance	18
2.2.5 Advantages of Summertime	18
2.2.6 Disadvantages of Summertime	18
2.3 General perception of Summertime	18
CHAPTER THREE - ANALYSIS OF THE RESULTS OF THE STUDY ON SUMMERTIME IN MAURITIUS	20
3.1 Introduction	20
3.2 Press Reports	21
3.3 Methodology	22
3.4 Biographical details	23

3.5	Awareness of Summertime	25
3.6	Use of Time	31
3.7	Use of Extra Hour of Daylight	35
3.8	Use of Electricity	45
3.9	Work Related Impact	48
3.10	Social Implications	50
3.11	Physical Effects	58
3.12	Approval of Continuation of Summertime	65
CHAPTER FOUR - CONCLUSION		71
4.1	Conclusion	71
4.2	Policy Implications	75
Selected Bibliography		78
Appendix I - Technical Details of the Study		79
Appendix II - Questionnaire.....		83
Appendix III – Focus Group Discussions.....		104

List of Tables

Table 3.1:	Sex, Age Group & Marital Status
Table 3.2:	Highest educational level achieved
Table 3.3:	Household monthly income (respondent estimate)
Table 3.4:	Aware that the clocks were moved forward
Table 3.5:	Aware it would be darker in the morning
Table 3.6:	Aware it would be lighter in the evening
Table 3.7:	Where did you hear about Summertime?
Table 3.8:	Enough information on the implementation of Summertime was provided
Table 3.9:	In favour before the introduction of Summertime
Table 3.10:	Easy to adapt - by Sex
Table 3.11:	Adaptation periods
Table 3.12:	Change in morning routines
Table 3.13:	Change in evening routines
Table 3.14:	Use of extra hour of daylight
Table 3.15:	Darkness in the morning made a difference - by sex
Table 3.16:	Enjoyed extra daylight in evening - by sex
Table 3.17:	Enjoyed extra daylight in evening - by age group
Table 3.18:	I enjoyed having an extra hour of daylight in the evening - by personal income group
Table 3.19:	More household work done in the evening - by sex
Table 3.20:	More time on childcare - by sex & 45 years old or less with children
Table 3.21:	More quality time spent with children - by sex & 45 years old or less with children
Table 3.22:	More time spent with family because of extra daylight - by age group
Table 3.23:	More time spent relaxing because of extra daylight - by age group
Table 3.24:	Took up new fitness activities - by sex

Table 3.25:	Stopped fitness activities in the morning - by sex
Table 3.26:	Stopped doing fitness activities in morning - respondents doing new fitness activities in the evening
Table 3.27:	Had stopped fitness in morning & taken up fitness activities in the evening - by age group
Table 3.28:	Shifted morning activities to evening because of Summertime - by sex
Table 3.29:	Those that shifted activities from morning to evening during Summertime - by age group
Table 3.30:	Did you make use of the extra hour of daylight in the evening? - by personal income group
Table 3.31:	I used my free time in the evening more for leisure activities during Summertime - by personal income group
Table 3.32:	Perceived usage of lights in the morning
Table 3.33:	Perceived usage of lights in the evening
Table 3.34:	My household used more electricity during Summertime
Table 3.35:	Enjoyed returning home from work in daylight in Summertime - by sex
Table 3.36:	Used the evening more for leisure - by sex
Table 3.37:	Used the evening more for leisure - by age group
Table 3.38:	Went out more in evenings - by sex
Table 3.39:	More walks & fitness activities during the evening - by sex
Table 3.40:	Did more sporting activities in the evening - by sex
Table 3.41:	Went out more with children in the evening - by sex
Table 3.42:	Family conflicts
Table 3.43:	Decrease in crime
Table 3.44:	Increase in personal alcohol consumption
Table 3.45:	Increase in alcohol consumption by other members of household
Table 3.46:	Difficulty to sleep at normal time
Table 3.47:	Age of respondents finding it difficult to sleep during Summertime

Table 3.48:	Harder to get up in morning
Table 3.49:	Effect on sleeping habits of children
Table 3.50:	Perception of the effect of Summertime on student performance
Table 3.51:	Feeling of fitness - by sex
Table 3.52:	Felt less fit - by age group
Table 3.53:	Feeling of tiredness
Table 3.54:	Felt more tired - by age group
Table 3.55:	Any changes in sleep pattern - respondents who reported feeling more tired only
Table 3.56:	Any changes in sleep pattern - respondents who reported feeling less fit only
Table 3.57:	Change in the time went to bed - by sex
Table 3.58:	Change in the time went to bed - respondents who felt less fit during Summertime & felt more tired during Summertime & slept less during Summertime only
Table 3.59:	Change in meal times
Table 3.60:	Made physical adjustment to lighter evenings - by sex
Table 3.61:	Made physical adjustment to darker mornings - by sex
Table 3.62:	Introduction of Summertime a positive thing - by sex
Table 3.63:	Summertime is to be repeated in same fashion - by sex
Table 3.64:	Trial repeat for longer period of years
Table 3.65:	Repeat for shorter duration
Table 3.66:	In general, the introduction of Summertime has been a positive thing - by personal income group
Table 3.67:	Summertime should be repeated every summer as it was implemented this year - by personal income group

List of Figures

Figure 1.1	World Summertime implementation map
Figure 3.1	Do you know why the Government decided to do this?
Figure 3.2	Reasons why the Government decided to do this?
Figure 3.3	When did you hear about Summertime?
Figure 3.4	Did any of your usual Evening routines change during the period of Summertime?
Figure 3.5	I enjoyed having an extra hour of daylight in the evening.
Figure 3.6	Enjoyed having an extra hour of daylight in the evening – by Age Group
Figure 3.7	Enjoyed having an extra hour of daylight in the evening – by Personal Income Group
Figure 3.8	In general I got more things done because of the extra hour of daylight in the evening
Figure 3.9	I spent more time with the rest of the family because there was daylight for longer - by Age Group
Figure 3.10	I took up new fitness activities because of the extra hour of daylight in the evening - by Age Group
Figure 3.11	Perception of usage of lights
Figure 3.12	I enjoyed being able to return home from work in daylight during Summertime
Figure 3.13	Perception of the effect of Summertime of absence and lateness during Summertime
Figure 3.14	Proportion of those doing more evening walks and fitness activities – by Age Group
Figure 3.15	Proportion of those doing more evening sport – by Age Group
Figure 3.16	The Children played outside for longer during Summertime
Figure 3.17	Amount of studying done in Summertime
Figure 3.18	Introduction of Summertime is a positive thing
Figure 3.19	Summertime should be repeated in the same fashion
Figure 3.20	If Summertime is repeated, it should be for a shorter period of time
Figure 3.21	Summary of opinions of Summertime
Figure 3.22	When Summertime should end?

Preface

The Mauritius Research Council through its Centre for Applied Social Research was solicited by the Ministry of Renewable Energy and Public Utilities to conduct this study on 'Attitudes and Lifestyles Implications of the Pilot Implementation of summertime'. We are pleased to submit our report.

Dr Arjoon Suddhoo
Executive Director

Mauritius Research Council
19th May 2009

Executive Summary

1. The Time Act of 2008 was enacted to introduce Summertime in Mauritius between 26 October 2008 and 29 March 2009. The main objective of the Ministry of Renewable Energy and Public Utilities by introducing Summertime was to reduce energy consumption and associated carbon emissions. However, the extended period of daylight also has a social impact in that it affects the daily routines of people during the period in which it is in force.
2. The main objective of this study was to gather data from a fully representative sample of the adult population of Mauritius and Rodrigues so as to enable an assessment of the impact of Summertime on the social behaviour of individuals.
3. Proportional sampling techniques were used to establish representative samples for Mauritius where 1, 200 adults were selected and Rodrigues where the sample was 240 adults aged over 18 years of age.
4. A Qualitative Methodology was also designed to capture information about the effect, if any, of the implementation of Summertime on school students and the daily functioning of schools.
5. As the primary considerations of the study implementation were speed and quality, it was not possible to design and implement a rigorous quantitative based fieldwork study in schools. Therefore a decision was taken to gauge the effects, if any, on schools in a more qualitative manner with information collected through Focus Group Discussions with senior members of staff of Primary and Secondary Schools. The Tertiary sector students would have been captured by the representative sampling of the adult population.
6. The results showed that there were two key factors when looking at the relationship of education and summertime; the fact that it was dark in the mornings and the fact that for the greater part of Summertime the schools were on vacation.

7. It was reported that many of the students in both primary and secondary schools enjoyed the longer evenings because there was daylight remaining for activities after they returned home on completion of any private or additional tuition. This was particularly the case for girls who felt easier about returning home in the evening when it was still light.
8. There was no reported noticeable change in lateness or absence although it was suggested that at the beginning of the new school term in January there were more instances of school vans being late although this situation very quickly returned to normal.
9. According to the participants the students were more excited in the late afternoon knowing that there would be time to play and enjoy themselves, even if they had after school activities of any kind.
10. There were no indications that Summertime had in any way impacted on the performance of the teaching staff.
11. Many of the students were quick to see and utilise the benefits of Summertime. For the teaching staff, there were also recognised benefits in that after work they had more time for themselves to go shopping, to do gardening and for other personal activities in the evening.
12. The only real disadvantage reported was the need to get up in the dark in the mornings and this only really seems to have been problematic from the beginning of the new term in January.
13. Most of the participants felt that if the implementation was repeated, they would be prepared for it and would be more able to adjust so that the benefits would outweigh the disadvantages.

14. The methodology also comprised a quantitative component with the implementation of a full fieldwork study in the islands of Mauritius and Rodrigues. For this purpose the latest sampling frames based on the most up to date listings of the islands of Mauritius (2009) and Rodrigues (2005) held by CASR were used.
15. Fieldwork Results - Just over half of the study population were female and the rest male with the expected broad spread across the age group range relative to the actual population.
16. Education levels reported by the respondents display the expected curve of concentration in the middle range and thinning at the lowest and highest levels.
17. For the household income group categories, it was found the range matched what was expected from a sample of this type in that the most of the households were clustered in the income range of between Rs 5,000 and Rs 30,000 per month with some outliers below Rs 5,000 and above Rs 30,001.
18. Awareness of Summertime - Almost five percent of the respondents to this survey did not know that the clocks were moved forward at the end of October.
19. Isolating just those respondents who had said that they were aware of the implementation of Summertime, less than three quarters of them reported that they knew why the Government had decided to do this.
20. Of those respondents who did give the reason they thought Government had implemented Summertime the main reason given by respondents as to why government had decided to implement Summertime was for saving energy.
21. Of the main group of respondents who were aware that Summertime was actually in force, 28 percent were not aware that it would be darker for longer in the mornings.
22. However, it appears that a greater number of respondents who were aware of the implementation of Summertime knew that this would mean that it would remain lighter until later in the evening.

23. The majority of those respondents who knew of the implementation of Summertime, were made aware through the use of the radio and television with a surprisingly small amount indicating that they were informed through newspapers.
24. A very large proportion of people who were aware of Summertime reported that they only became aware of it just before it started and another significant proportion reported only becoming aware of it after it started.
25. 44 percent of the respondents disagreed that sufficient information was provided to them in advance of Summertime being implemented.
26. Of those respondents who were aware that Summertime had been implemented, a large proportion stated that, in their opinion it was not easy to adapt to Summertime. A greater proportion of male respondents than female, 28 percent and 20 percent respectively, stated that they thought that it was easy to adapt to Summertime.
27. Use of Time - There was quite a lot of reported changes in routine, with 70 percent of respondents reporting at least some change and with more female than male reporting so. 74.7 percent and 66.1 percent of females and males respectively reported changes in personal routines.
28. Only 12 percent of respondents recorded no use of this period of light, while almost 80 percent of them indicated that they had used this time to some degree.
29. Almost two thirds of all respondents felt that the extra hour of darkness in the morning had made some kind of difference to them, with female respondents more likely to feel so as compared to male respondents.
30. Contrary to some of the previous indicators, 58.2 percent of the respondents did enjoy the extra daylight in the evening. Together with 18.4 percent of respondents that were unable to make up their minds on this issue, it left less than one quarter of all respondents reporting that they did not enjoy having the extra hour of daylight in the evening.

31. The rates of those who indicated that they did not enjoy having the extra hour of daylight in the evenings increased from only 19.7 percent of those aged 30 years old or under, through 23.5 percent of the middle age group of those aged 31 to 50 years old and up to 25.8 percent of those respondents aged 51 and over.
32. The proportion of those enjoying the extra hour of daylight in the evening during summertime were the younger adults at over two thirds of those aged 30 or under, 66.7 percent and almost 61 percent of those aged 31 to 50 years old.
33. There is a noticeable difference in responses when the results are interpreted by Personal Income Group, where the higher the personal income then the more likely the respondent was to respond that they enjoyed having the extra hour of daylight in the evening.
34. Use of Extra Hour of Daylight - Half of all respondents, with little difference between males and females stated that in their opinion they got more things done because of the extra hour of daylight during the evening.
35. 45.9 percent of male respondents and 52.7 percent of female respondents stated that they got more household work done in the evening because of the extra daylight available.
36. 64.3 percent of male respondents and 71.5 percent of the female respondents to whom the question applied, stated that they spent more time on childcare at home because there was daylight for longer. 69.5 percent of female and 67 percent of male respondents to whom the question applied stated that they spent more quality time with the children during the period of implementation of Summertime.
37. The results are generally in favour of Summertime being a positive influence in family bonding and unity. Over 57 percent of all respondents agreed that they spent more time with their family because of the longer period of daylight.

38. Figures are higher for younger respondents with 65.1 percent those aged 30 years old or under stating that the extra daylight in the evening meant that they spent more time with their families which falls slightly for the age group 31 to 50 years old and then drops substantially to 48.7 percent for those aged 50 years old or over.
39. More than one quarter of the respondents indicated that they had shifted some of their activities from the morning to the evening because of Summertime, with more females reporting so, as compared to males. Of those who did shift their activities in this manner, 50.7 percent were aged between 31 and 50 years old while it is noticeable that the younger and older respondents were less likely to have done so.
40. The use of the extra hour of daylight in the evening appeared to be more popular among respondents in the personal income group, Rs 30,001 or more.
41. There is a definite difference in responses between the three main personal income groups with 50.5 percent of those respondents in the higher personal income category using this time for leisure as compared to the lowest income group and the middle income group at 38 percent and 44 percent respectively.
42. Use of Electricity - 64.7 percent of respondents thought that they had used more lights in their houses in the morning than they usually do in summer. 15.5 percent of respondents felt that the usage had been a lot more than usual during this period. Some 41.6 percent of respondents stated that they used the lights in the house for the same amount of time during Summertime as they would usually do during usual summer, whereas 32.8 percent reported that they used less lighting than usual in summer.
43. 54 percent thought that their household used more electricity during Summertime in the period till the end of December and 61.3 percent thought that their household used more electricity from the beginning of January until the end of March.
44. Work Related Impact - Of those that were in employment, 70.8 percent of them enjoyed being able to return home from work in daylight with a greater proportion of female respondents than male stating this was the case, 73.1 percent and 69.6 percent respectively.

45. There does seem to have been an impact on lateness with 24.1 percent of all the respondents to whom the question was applicable, stating that they were late more often than usual during Summertime.
46. Social Implications - Around 42 percent of all respondents stated that during Summertime they had used more of their free time for leisure activities. Of those respondents who agreed that this was the case, a greater proportion of them were aged between 31 years old and 50.
47. 38.5 percent of the respondents reported that they went out more in the evening during Summertime. However, this is not necessarily significant given that Summertime would not be the only factor impacting on a decision as to whether or not respondents would go out in the evening. Both males and females reported going out more often in the evening during Summertime.
48. Of those who did report an increase in the amount of involvement in activities during Summertime, 44.5 percent, were in the age group of 31 to 50 years old.
49. 18.5 percent of all respondents did report an increase in their sporting activities during the evening during Summertime with over twice as many males as females reporting having done so, with the greatest proportion being in the age group 31 to 50 years old.
50. 37.4 percent of all respondents stated that they did go out more often in the evening with their children during Summertime. Perhaps more importantly the results show that more male respondents than female, 39.9 percent and 35.1 percent respectively, indicated that this was the case. This appears to reinforce the idea that the extra daylight was an encouragement for men to take children out more.
51. The effect of Summertime on the studying habits of children appears to have been generally positive as reported by 50 percent of the respondents, who stated that their children studied the same amount as usual, while 21 percent said that their children studied more during this period. Summertime began at the lead up to the exam season this can be viewed as being a positive implementation benefit.

52. 46.6 percent of respondents felt that Summertime had a negative effect on the performance of their children at school.
53. Physical Effects - The findings show that there is a split between those respondents who felt the same or felt less fit. 48.3 percent felt no change in their general fitness, while 47.3 percent felt less fit and 4.4 percent felt fitter. There was a higher proportion of positive responses from male than female respondents; for example, 5.8 percent of male respondents reported feeling more fit during Summertime as compared to 3.2 percent of female respondents and 49.7 percent of female respondents reported feeling less fit compared to 44.7 percent of male respondents.
54. Of the group of respondents who reported feeling less fit in Summertime over three quarters of them were aged between 31 and 50, and 30.2 percent were aged 51 years old or over.
55. 75.4 percent of all respondents reported that during this period they changed the time that they went to bed with little differentiation between male and female respondents.
56. 44.4 percent of male respondents felt that they made the adjustment to the lighter evenings quickly, as compared to 30 percent of females.
57. The respondents appeared to find it more difficult to make the adjustment to the darker mornings stating that they believed they made the adjustment to dark mornings quickly.
58. Approval of Continuation of Summertime - A minority of respondents, 21.5 percent, agreed that the introduction of Summertime was a positive thing with a greater proportion of male than female respondents thinking this was so at 27 percent and 16.4 per respectively.
59. Some 62.7 percent of respondents disagreed to the idea of reimplementing Summertime and 64.4 percent of them also disagreed that Summertime should be be tried over several years.

60. However, there was a more positive reaction to the suggestion that if Summertime is repeated then it should be for a shorter duration. To this proposal 46.4 percent of all respondents agreed with 17.1 percent undecided. Therefore just 36.5 percent of all respondents were clearly in disagreement with this proposal.
61. Some 57 percent of respondents would like Summertime to stop at the end of January
62. Those respondents in the lowest income group showed an approval percentage of 19 percent but this rises through 22 percent of those in the middle income group and to 38.5 percent of respondents in the highest income group. These findings tally with the results that were presented earlier on the use of the extra hour of daylight during Summertime and how those respondents from the upper income groups were more likely to use this time effectively and more likely to enjoy their use of this time.
63. Conclusion - Unfortunately, from the scientific aspect, the opportunity of implementing an appropriate *pre* and *post* event scientific study on opinion and presumption was not taken before implementing Summertime. This was an opportunity missed and any future implementation of Summertime should include such a study that would also have as part of the methodology, a diary keeping exercise by respondents during the period of implementation.
64. Nevertheless, the implementation of this full scale social study did come up with some key findings regarding the experiences and opinions of a representative sample of the Mauritian population regarding Summertime.
65. The results show that there was more time available in the evenings for more outdoor and recreational activities. The extra daylight was particularly appreciated by girls and young women who could feel safer about going home in the evening when it was still light. This aspect of greater safety for women in the evening was a point that was clearly stressed.
66. Upon the return to school in the new term some initial adjustment meant a slight increase in lateness but there was no real noticeable change in lateness or absence with the pattern of school activities.

67. This was also the case for many working people who, ordinarily would return home just before dark set in but now, with Summertime, had a period of extra daylight to enjoy at the end of the working day. The results show that a significant proportion of people put this to good use in a way that created extended benefits, such as with extra input with children and other family members and physical activities outside of the home.
68. It would appear that the approach to the implementation of Summertime could have been better utilised to inform people of the social benefits of longer evenings, with suggestions on how to best utilise such time. There were no real negative effects reported that can be directly linked to Summertime other than some people not liking having to get out of bed in the dark.
69. Policy Implications - Implementing such a radical change for just one trial period was ambitious in that it was unlikely that people would make the adjustment quickly or make the necessary preparations for them, to make the best use of the time available to them. It would also appear that what information campaigns were mounted were not successful in putting a clear message across, particularly about the social benefits of Summertime. If Summertime is established, or is repeated for a longer period of time as a trial, then it is more likely that most people will make these adjustments and will most likely become attuned to making the best use of Summetime.
70. The results of the study show that ending Summertime at the end of January would be more in line with peoples' wishes as there would not be the darker mornings once schools had begun in the new term.
71. Given that the majority of people stated that they relied on the radio and television for information on the implementation of Summertime, these media should be the predominant means of supplying information and education on this subject. Written media can also be used but should not be solely relied upon to adequately convey the information to the maximum number of people in the country.

72. A large number of people did use the longer and lighter evenings for social; leisure- and health-based activities. In this respect it would be beneficial if all public bodies and services could support of the use of longer and lighter evenings during the period of Summertime for exercise and sport activities by extending and adapting the opening hours of public facilities.

73. Using extra daylight for health-related activities would fit with the concept of *Maurice Ile Durable*.

Chapter One - Background Review to Study

1.1 Introduction

The Time Act of 2008 was enacted to introduce Summer Time in Mauritius between 26 October 2008 and 29 March 2009. The main objective of the introduction of Summer Time was to reduce energy consumption and associated carbon emissions. However, the extended period of daylight also has a social impact in that it affects the daily routines of people during the period in which it is in force.

The Ministry of Renewable Energy and Public Utilities commissioned this study so as to investigate such social impacts using established and rigorous social research procedures. This study did not look into energy consumption or carbon emissions as these aspects were dealt with by more technical studies that were simultaneously carried out by other agencies. Nevertheless, the fieldwork for this more socially oriented study did include some investigation of the energy use patterns of individuals and households.

The main objective of this study was to gather data from a fully representative sample of the adult population of Mauritius so as to enable an assessment of the impact of Summertime on the social behaviour of individuals. Such social changes investigated included changes to the normal pattern of behaviour, normal in the sense that this was the pattern when daylight saving procedures had not been implemented, and that might have been brought about by the introduction of Summertime. In particular the study looked at the individual perceptions of the influences that Summertime had on such issues as health, leisure and other social factors, particularly how people used the additional daylight available in the evening or reacted to the extra hour of darkness in the morning.

Several broad headings were used in the preparation of the research tools, particularly the questionnaire, which covered the main social dimensions of summer time. The most important component of the questionnaire was designed to gain information on the opinions of respondents on how summer time was perceived to have impacted on aspects of education, health, leisure and work, whether employed or homework. Questions were also included on

individual understanding of the concept of Summertime and daylight saving and a measurement of the individual desire of the respondents for the implementation to be continued.

The quantitative aspect of the study was based on the implementation of a full fieldwork study in the islands of Mauritius and Rodrigues and the full details of the methodology used are available in Chapter Five of this report.

1.2 Time

Summertime is a much misunderstood concept both in its actual implementation, what the effects will be, and in the reasons for such implementation. It was clear from the lead up to the implementation of Summertime in Mauritius that the government was keen to promote the energy saving benefits of implementing Summertime. However there are also social and physical benefits that may result from Summertime and it is these social effects that this study was specifically commissioned and designed to research into.

Before looking into the results of the fieldwork study conducted in Mauritius in early 2009 it is worth taking the reader through a brief introduction to the history of Summertime, or Daylight Saving or any of the other names that have been used to describe it. Before we do this we need a brief look at what we are dealing with and the subject at the core of this phenomenon and this study; time itself.

1.3 What is Time?

Time is simultaneously one of the simplest and one of the most complex concepts that there is. On the most basic of levels it is something that we use to organize our day and then give it no more thought. It is simply a tool we use to regulate our lives by dividing up the past, present and future in organized measurable patterns.

But to physicists time is something different and is measured by quantum mechanics. Simply put, there is a constant, a photon with energy h , which behaves as though it were oscillating once per second and it is on this oscillation that modern atomic clocks are based thereby giving the standards on which other time measurements are set¹.

For most people this is something of which they probably know little and care even less as the most important factor for them is the measuring of the passing of the day. For many people this is based on the same principle that has governed human daily routines since the dawn of humankind; the rising and setting of the sun.²

Such observations and measurements of the cycle of the sun were the basis of the earliest measures of time; what we can call, for the sake of simplicity, the calendar. The simplest and earliest measures of time were therefore based on the measuring of the duration of one rotation of the earth relative to the sun, a rotation of the moon about a point on the earth, and of the earth around the sun.

Such natural cycles pertaining to assisting in the measurement of time are not limited to the use of the human race as the cycles of nature are also tied in with these events. What is different is that human societies have continually attempted to create and refine systems based on these natural cosmological cycles so that they can be used as a way of determining standard and repeatable lengths of time such as those we use today; the second, the minute, the hour, the day, week, month and year and so on.

Nevertheless there has always been one key flaw in the system in that the duration of the repeated motions of the cosmological bodies in relation to each other, and in relation to the earth, are not divisible into pure whole numbers. This is one of the reasons why calendars in use today have been constantly adjusted and refined to keep the passage of time in line with cosmological periods and to standardise the timing of repeated events in the human calendar, which would otherwise gradually move later into the year. It is also an easy assumption to make that all calendars were previously aligned to the same mathematical base as our current

¹ Based on <http://www.sankey.ws/time.html>

² As we will see later this is an issue in the current study as many people in Mauritius still order their lives and their daily routines according to sunrise and sunset.

one, which they were not, but for the sake of keeping in line with the current study this is not something that will be explored at length here.

Different societies at different times created different ways of keeping track of time in ways that suited their need and using technology that was available to them and methods that made sense to them. These earliest calendars were often based on the moon cycle and some simply counted the number of new moons or full moons since the accession to power of leaders. The early Egyptian year, based on a calendar system that was in use almost 7,000 years ago, was based on measuring the seasons from the visible rising of Sirius above the horizon. The Mayan calendar of Central America began 12 August 3113 B.C. Gregorian but is no longer in use. A less successful calendar system was that of the French revolutionary calendar which had 10-day weeks beginning from the 22 September 1792 and with individual names for all the days, weeks and months.³

For most of the time that people were concerned with measuring time, other than the division of day and night, rough approximations were sufficient. Checking the position of the sun in the sky would have told you whether you were closer to dawn, in the middle of the day or closer to night with rough approximations in between. Such gross measurements were refined with the introduction of Sundials, which enjoyed widespread usage until the adoption of more mechanical means of measuring the time.⁴ Although different societies had invented and used different forms of mechanical clocks over a long period of time for most it was really not necessary to be too accurate about the actual time of the day given that most days were pretty much like any other.

Nevertheless, even the widespread adoption of mechanical clocks as they became cheaper to produce and more accurate in recording time, did not standardise the time as they were set by the local position of the sun which, obviously, meant that clocks in different geographical areas were out of step with each other to the point that different towns and cities in the same

³ Waugh A, 1999, Time, Hodder, London

⁴ The time indicated by the apparent sun on a sundial is called Apparent Solar Time, or true local time. The time shown by the fictitious sun is called Mean Solar Time, or local mean time when measured in terms of any longitudinal meridian.

country, particularly in large countries where such events first occurred, would have been operating on a slightly different time in relation to each other. Again, it really wasn't much of a problem given that travel and contact was usually measured in days and weeks and not minutes and seconds.

The main change to the need for more accuracy was brought about by the requirements of factories and railways at the height of the so called Industrial Revolution, which, as it has mutated into the Technological Revolution, continues to drive the desire for refinements to the measuring of time. In essence factories need to operate to shifts to keep the machinery running and to this a system of timekeeping was devised that was revolutionary compared to the type of time that most people had been used to observing in what upon until then had been agrarian societies.

The need for the constant refinement of the measurement of this time has continued as the world has become increasingly dependent on accuracy. The modern world, with its systems of almost immediate communication and rapid transport systems needs very accurate time keeping and various effective methods of maximizing time.

Returning to the first moves in this direction, Britain led the way in setting a standard time for the whole country that was implemented to remove the difficulties caused by towns and cities having different times once rapid transport between them was established by the railways. In addition, factory owners needed shift workers to be at work at a set hour to establish handovers that kept the machines running and to record and optimise the cost of production, which was generally paid at piece rate. By 1855, the vast majority of public clocks in Britain were set to Greenwich Mean Time.⁵

Eventually, the measurement of time became an international issue and a Canadian, Sir Sandford Fleming, was instrumental in developing an accepted international system of timekeeping with the adoption of a standard or mean time with hourly variations according to established time zones. In 1884, the system of measuring international time from the prime meridian (GMT) was adopted at the International Prime Meridian Conference in Washington.

⁵ Nevertheless some were fitted with two minute hands, one for local time and one for GMT, something that has been observed in Mauritius during Summertime with some people not adjusting their watch to the actual time but keeping it on non-Summertime.

However, throughout the world the division of day and night is unequally distributed such as can be observed between the poles, the tropics and the equator. This suits the needs of some but is an inconvenience to others.

In the Western civil calendar there are constant adjustments made so that the hours, days and months fit together. Some are commonly known, such as the leap year day that is appended every fourth year by creating an extra day at the end of February. But other more minor adjustments are also made such as one additional second that was added to the end of 2008 and beginning of 2009 at midnight on January 31st. 2008, of which probably few people were aware. Because of the needs of the modern world, with computer controlled scientific equipment and the scheduling of aircraft and other items of precision we have now arrived at the point where we measure seconds by counting cycles derived from quantum mechanics, which is much more constant than the rotation of the earth. Yet even this precise measurement has to be adjusted at some point to keep the universal civil clock time in line with the length of a solar day.

But is it really necessary to go to these lengths to measure time so accurately? Of course, there are some endeavours such as astronomy and physics that require incredibly accurate measurements of time divided into minute sequential intervals but, for most of us, the rough measuring of the day by hours and minutes would seem to be adequate. In fact, in our daily lives most of us rely on a system that is not much different from those that have been used since the earliest attempts at making calendars.

1.4 What is Summertime?

What is known in Mauritius as Summertime is known by various names worldwide such as Daylight Saving Time or British Summertime etc. For the purposes of this report, and to save the need for repetition of the explanation of the relationship of the two key terms, Summertime and Daylight Saving Time will be seen as being synonymous.

Whatever it is called, the principle is the same in that during the period of Summertime set between two pre-selected dates all of the clocks of the country implementing the process are turned forward an hour so that the result appears to be that an hour of daylight has been taken from the morning and moved to the evening.

This lengthens the amount of daylight available in the evening but increases the length of darkness in the morning. However, whatever the process is called the result remains the same but it has nothing to do with summertime or in saving any time; as none is saved. It is simply an adjustment of the clocks so that it appears to be become lighter later in the morning and remain lighter later in the evening than would have been the case if the clocks were not adjusted.

In most places where such adjustments to the clocks are made so as to extend the daily period of daylight into the evening this is set to happen at 02:00. The reasoning behind this was originally that this would be an ideal changeover time in that it minimized disruption given that most people would be asleep and that there would be few trains running or bars and restaurants open. However, in the modern world this is less likely the case as airlines are flying constantly and people are active day and night. Nevertheless, 02.00 remains the established hour for the changeover and people appear to generally accept this.

1.5 Origins of Summertime

The idea of daylight saving by the introduction of Summertime and the moving forward of clocks is generally credited to Benjamin Franklin in 1784, although it is likely that many people had considered it before then but were not in a position to move the idea forward.

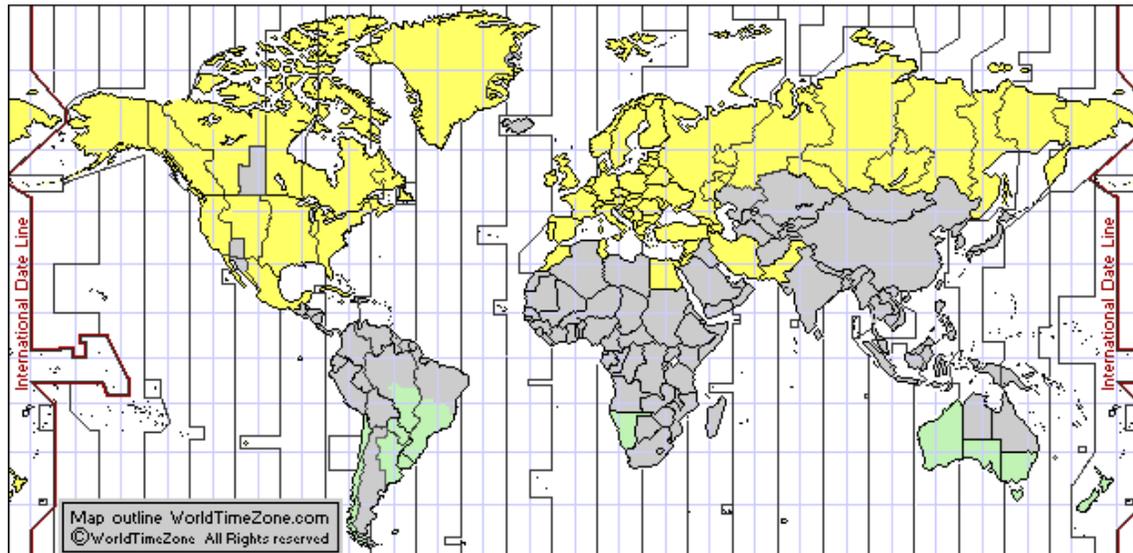
However, the first really serious advocate of the concept was a London builder by the name of William Willett who addressed the subject in his pamphlet, "Waste of Daylight" (1907). His system was different from that generally used in many parts of the world but was aimed at achieving the same result. Willett's system was based on advancing clocks 20 minutes on each of four Sundays in April and similarly putting them back by 20 minutes on each of four Sundays in September. The history of introducing this alteration to the clocks has always met with controversy and although Willet's idea was presented to Parliament several times, it was always rejected.

However, in the course of the First World War Germany did introduce a form of Summertime and on May 17th 1916 the UK followed suit. But the introduction was met with a storm of opposition and confusion often based on nothing more than people did not like change. The Royal Meteorological Society in the UK were insistent that Greenwich Mean Time would still be used to measure tides and there was also opposition from the general public and particularly from farmers and others whose way of life was built around early rising and who made use of daylight in the morning.

The energy saving benefits of Summer Time were recognized to the point that during World War II the UK introduced Double Summer Time by putting the winter clocks on Summertime and the Summertime clocks one hour ahead of that, that is at two hours ahead of Greenwich Mean Time. Many other countries have since followed suit with some of them retaining Summertime while others have implemented a form of Daylight Saving only to remove its implementation at a later date. Currently many countries implement some form of Daylight Saving including some of the federal states of the USA and Australia but not others.

Countries in Yellow and Green currently implement some form of Summertime or Daylight Savings while those countries, or states within countries, in Blue do not.

Figure 1.1: World Summertime Implementation Map



Source: <http://www.worldtimezone.net>

The main purpose of Summertime is to make better use of daylight. The clocks are altered during the summer months to move an hour of daylight from the morning to the evening. Returning to what this means in different places on the world it is necessary to look at how time and the seasons affect the amount of daylight a country receives. For countries on, near the equator or who have the equator running through them, there is very little difference between the amount of daytime and night time. The day is divided into two equal halves of 12 hours each. But as you move further north or south of the equator then the amount of daylight available to countries alters significantly from an equal split between day and night. The closer a country is to the North Pole or the South Pole then the longer the period of daylight they will have in Summer. This is one reason why in Figure I most of the northern hemisphere implements Summertime. However, other than for the social benefits it is debatable whether such a process is useful in tropical countries of the southern hemisphere.

1.6 Benefits and Drawbacks

The effects of moving over to Summertime are inter-related and, in many ways, both simple and complex depending on the use of the daylight shift and the possible effects on lifestyle. Such effects can be placed under different headings that broadly fit into two main groups such as Energy Usage Effects and Social Effects.

Taking the Social Effects first, as they are the main topic of this study, then we can investigate the full range of impact on lifestyle that have been reported as being presumed results of shifting to Summertime. Available literature has been used to see whether the effects of such phenomena are generally seen to be valid or not, wherever a version of Summertime is implemented.

Looking at the available literature it rapidly becomes apparent that there is a clear split between those who enjoy having Summertime, as it gives them more daylight in the evening, and those who prefer to keep the daylight pattern unchanged as they feel that this is more natural or more suited to their needs in the morning.

In fact, nothing about time is natural, as human beings have always altered their work/eat/sleep patterns to suit their needs. Some of the complaints that are more commonly directed towards Summertime are as trivial as the inconvenience of having to change the time on many clocks and the more personal effect of having to adjust to a new sleeping pattern. For most this could be seen as being a mere nuisance to be endured at the beginning and end of Summertime but for others they feel more strongly about any change to their daily routine and perhaps feel that, somehow, creating an extra hour of daylight in the evening is an imposition rather than an agreed benefit.

It would appear from available literature that the arguments centered on the fact that Summertime will contribute to energy saving are somewhat negated by the fact that, first of all, simple things such as the use of lights will most likely transfer from the evening to the morning while other more complex effects will mean that there is little saving on energy on the national and, indeed, international scale. The use of televisions and other electronic equipment is likely to remain more intense in the evenings than the mornings as far as home use is concerned but the pattern of industrial use is likely to remain unchanged given their needs for consistency in production or service.

Where the extra hour of daylight in the evening might have social benefits it is also clear that the use of that extra hour might for social events might, in fact, contribute to an extra demand on other energy usage such as people using more fuel as they travel to go shopping, to visit the beach or to visit family and friends.; events that would not have occurred had there not been additional evening sunlight.

Early risers are also people who often feel that their pattern of living has been unfairly disrupted by Summertime in that they now have to spend longer in darkness before the breaking of dawn. For some of them the fact that they rise early also means that they go to bed early and for them during Summertime it is still at the beginning of their bedtime.

Another concern often raised by parents is that of children going to school in the continuing hours of darkness as the sunrise has been delayed. This is a genuine concern, however, in Mauritius, the main bulk of Summertime falls into the period of the long summer school holidays.

1.7 Health, Physical and Mental Effects

For some researchers in Germany, the results of their investigations appear to show that whatever the apparent change of time related to the implementation of Summertime this does not affect the performance of one's so called Body Clock. In short, the body does not quickly make the transition but remains linked to natural time, in line with the seasonal pattern, rather than clock time which is in line with whatever policy is used in implementing daylight saving.

Roenneberg (2008) states that, "When you change clocks to daylight savings time, you don't change anything related to sun time, (...) this is one of those human arrogances -- that we can do whatever we want as long as we are disciplined. We forget that there is a biological clock that is as old as living organisms, a clock that cannot be fooled. The pure social change of time cannot fool the biological clock."

It is accepted in medical circles that, in general, the human body operates to a sleep / wake pattern that is known as the circadian rhythm. In effect this can be seen as the body's internal clock, which, for most people, is apparently in tune with the passage of the sun in that it changes in four-minute intervals, that is, the time it takes for the sun to cross one line of longitude,

Apparently, as Roenneberg (2008) explains, the circadian rhythm of most people⁶ does not change in relation to the social change; in effect, the body pursues its habitual patterns regardless of what hour the clock may say it is. Roenneberg's (2008) data on the sleep patterns of 55,000 people in Central Europe found that sleep time on days off work when daylight savings time took effect followed the seasonal progression of dawn under standard time, but not under daylight savings time.

However, others see the innate ability of people to rapidly adjust their lifestyle as being more rigorous thereby negating any such effects of the introduction of Summertime on their daily living patterns or biological rhythms. Ptacek (2009) is clear that we can see similar effects as for a long time now people around the world, apart from a few societies, have been living with the benefits of artificial lighting rather than being restricted to living simply in tune with the

⁶ It is a case of most people as not everybody has the same pattern and some people have persistent chronic sleep disorders,

sun cycle. In addition, some people stay up all night and turn the lights on, or live a life perpetually out of step with natural daylight patterns to the point that, in fact, in developed societies there has been an overall change regarding the functioning of body clocks and the effects on circadian rhythms that have been there long before concepts such as Summertime were in place.

Ptacek (2009) sees Summertime as being no more unnatural than the use of artificial light and that given there may be societal benefits such as saving energy it is not something that should be of concern to our physical experience of societal patterns as it can be seen as being no more disruptive than any other way that people use to manipulate time.⁷

It is known that there are some effects on the social climate associated with the use of Summertime. Some of these are simply because certain events are less likely to happen during the hours of daylight. For example, a study by the U.S. Law Enforcement Assistance Administration found that there was consistently less total crime, and between a 10 and 13 per cent reduction in violent crimes, during periods of Summertime than during the rest of the year. Similar results were found and reported in the British Crime Surveys of 1988 and 1992. The reason presumed is quite simple yet elegant in that violent crime is less likely to occur in daylight hours and other crimes are more suited to the cover of darkness. At the same time, criminals are less likely to get up early in the morning to commit crimes than they are to do so at night, when dark becomes a key factor.

Summertime has been seen to have some effect on the mood of some people in countries where it is implemented annually. One clear effect that has been recorded in the USA, for example, is that people are generally more likely to become more active in the evenings during the period of Summertime. For many it is a clear benefit that upon leaving work they do not feel that night will immediately fall and that this leads to apparently increased optimism and an upturn in outdoor exercise.

⁷ <http://health.usnews.com/usnews/health/healthday/071024/bodys-clock-never-adjusts-to-daylight-savings-time.htm>

Some research does suggest that there may be a link between the transition to daylight savings time and a reduction the quantity and quality of sleep. However this research is related to countries where the implementation of daylight savings means that it may stay light up until 23.00 and would not necessarily apply to Mauritius where the implementation of Summertime adds only one hour of daylight in the evening.

But if people wish to transpose such results to the situation in Mauritius a more positive corollary is that during daylight savings periods rates of depression are observed to decrease. Hildebolt (2005) presents the findings of research that suggests that extra daylight can extend the life and health of teeth and bones given that bodies get vitamin D through sun exposure and that Vitamin D, is essential for preventing bone and teeth disorders.ⁱ

A 1976 survey of 2.7 million citizens in New South Wales, Australia, found 68% liked daylight saving and similar results have been found in surveys in the USA. The simple fact is that many people like to enjoy long summer evenings and that this is the primary reason driving their liking for Summertime rather than other factors such as energy conservation that for most are secondary factors.⁸

In New Zealand, power companies have found that power usage decreases by between 3.5 percent when daylight saving starts and 5 per cent during the period of Summertime. In addition, less electricity is thought to be used because people are at home for fewer hours during the "longer" days of spring and summer. Most people plan outdoor activities in the extra daylight hours. When people are not at home, they don't turn on the appliances and lights.

As well as the above some argue that there is a public health benefit to Summertime as it decreases traffic accidents and that an increase in accidents in the dark mornings is more than offset by the evening decrease in accidents.

⁸ Although energy saving may be primary driving factor for the government the social impact clearly there both jointly and severally.

However, recent research indicates that pedestrian fatalities from cars soar at 6:00 p.m. during the weeks after clocks are set back in the fall. Walkers are three times as likely to be hit and killed by cars right after the switch as in the month before DST ends. Researchers from Carnegie Mellon University, who found a 186 percent jump in the risk of being killed by a car for every mile walked, speculate that drivers go through an adjustment period when dusk arrives earlier. Although the risk drops in the morning, because there are fewer pedestrians at 6:00 a.m., the lives saved in the morning don't offset those lost in the evening. There may also be an economic benefit to DST, as daylight evening hours encourage people to go out and shop, potentially spurring economic growth.

Chapter Two - Focus Group Discussions on Effect of Summertime in the Education Sector

2.1 Introduction

In the discussions leading to the design and implementation of this study it was clear that there was a need to investigate any effects that Summertime was having on schools and particularly on the performance of the pupils and staff and any reported changes to the patterns of lateness, absence or illness.

However, this was not a simple task. The primary considerations of the study implementation were speed and quality where the one would not compromise the other. A study of school students in a representative sample of primary and secondary schools in the Republic of Mauritius would have entailed a complex and time consuming array of listing, sampling and verification techniques. As well as this the obtaining of permission from the Ministry of Education and parents of those children sampled to take part would be time consuming while the study methodology would need to be considered and approved by a relevant ethics committee. All of which would have taken far longer than the time available.

In addition there would be expected problems with the quality of the data collected. Primary school children are not the easiest respondents with whom to work reliably and their responses are not always the most relevant. With secondary school students the relevance and validity of their answers can also be suspect leading to the use of verification systems that would complicate the fieldwork and add to the time frame of the study.

Therefore a decision was taken to gauge the effects, if any, on performance and related to schools in a more qualitative manner supported by some primary quantitative data. This data was collected through the inclusion of some questions based on school and education in the household questionnaire use in the main fieldwork. Of course, not all selected respondents would have school age children on whom to provide any information and a filtering system was used to eliminate such households when compiling and analysing the results related to school and education.

The qualitative aspect was approached by holding a series of Focus Group Discussions with a selection of representatives of senior staff. These were selected from both Primary and Secondary schools and the questions posed were pre-determined and laid out in a Discussion Guide (see Appendix III).

2.2 Summertime and its effects on schools and education

When the discussions with those representing the schools began it became clear that there were two key factors when looking at the relationship of education and summertime; the fact that it was dark in the mornings and the fact that for the greater part of Summertime the schools were on vacation.

The issue of darkness in the morning was seen to be a novelty at first but not one that impacted too adversely on the functioning of the schools although some did report on the trend of some of students and staff to complain about having to get up in the morning when it was still stark. However, this was offset by the use of the extra daylight in the evenings which appeared, according to the statements given by the participants, to be generally appreciated and put to good use. It was generally agreed that people got used to the darker mornings but that it became problematic after the school holiday when it was more difficult to have to get up in the hours of darkness and go to school. Nevertheless, during the period of the vacation this had made little or no difference to the lifestyle of students and staff who were able to enjoy more free time and more daylight to pursue outdoor activities.

The participants also commented on the fact that many of the students in both primary and secondary schools enjoyed the longer evenings because there was daylight remaining for activities after they returned home on completion of any private or additional tuition that they may be involved in. This was particularly the case for girls who felt easier about going home in the evening when it was still light.

2.2.1 Schools in Towns and Villages

It was reported that there appeared to be an observable difference between the behaviour of children who lived in the more rural areas and those who lived in the towns. The assumption made by the participants was that those who live in the more rural areas still lead lives that are more regulated by the cycle of the sun than by the clock. People are used to getting up at sunrise and going to bed at sunset. It should be remembered that this is only conjecture on the part of the participants and not provable fact.

Nevertheless, one over-riding feature was the fact that all of the children enjoyed the longer days because they were able to watch more television and to stay up later until the sunset.

2.2.2 Arrival time at schools

There was not reported noticeable change in lateness or absence although it was suggested that at the beginning of the new school term in January there were more instances of school vans being late although this very quickly returned to normal. The main issue again remained the fact that many students and staff of both primary and secondary schools did not appreciate having to get up in the dark. For some women staff this was an issue as they had to leave home and wait for their transport in the dark.

There appeared to be no real issues of safety and although in some countries where the difference in time is significantly longer there have been reports of more traffic accidents happening in the early morning darkness there does not appear to be any evidence of that being the case in Mauritius.

2.2.3 Behaviour in class

It was reported that, in general, there was some evidence of there being a slower start to the day in that school was beginning before it had really got light but there were no reports of this being at any time problematic. However, many children take private tuition before school starts and this was now taking place in darkness. What was reported by the participants was that the children were more excited in the late afternoon knowing that there would be time to

play and enjoy themselves, even if they had after school activities of any kind, given that there would be an extended period of daylight in the evenings.

2.2.4 Teaching staff performance

There were no indications that Summertime had in any way impacted on the performance of the teaching staff.

2.2.5 Advantages of Summertime

Many of the students were quick to see and utilise the benefits of Summertime. For the teaching staff, there were also recognised benefits in that after work they had more time for themselves to go shopping, to do gardening and for other personal activities in the evening.

2.2.6 Disadvantages of Summertime

The only real disadvantages reported were the need to get up in the dark in the mornings and then this only really seems to have been problematic from the beginning of the new term in January.

2.3 General perception of Summertime

Although at first sight it would appear that there is a trend of those participating in these meetings not seeing the advantages of Summertime as the topic is discussed it is evident that for most they felt that themselves and their peers, whom they represented, were not used to change and that if the implementation was regularised they would be prepared for it and would be more able to adjust so that the benefits outweighed the disadvantages which are mainly focussed on the necessity of having to get up in the dark for a part of the year.

Several suggestions were made which can be summarised as being wholly or partly related to the need to repeat Summertime for a period of years so as to acclimatise to the phenomenon but also with the population being necessarily prepared. Secondly, it was suggested that it would be more acceptable for teachers, staff and students if the period of Summertime were to terminate at the end of January so as to minimise the disadvantages which only really come to bear at the beginning of the new school term.

Chapter Three - Analysis of the Results of the Study on Summertime in Mauritius

3.1 Introduction

In the period leading up to the introduction of Summertime in Mauritius it was clear that there were many misconceptions about what exactly the process was and what the likely effects would be. Unfortunately, the opportunity of implementing an appropriate scientific study on opinion and presumption was not taken before the introduction of Summertime but some anecdotal stories can be mentioned out of interest. In some cases there are instances of some people believing that all hours would change with phone calls being made to ascertain what time meetings would take place now that “the time had changed”. Some people are known to have kept their watches and clocks set on the non-Summertime so that they would be in tune with the “natural” time, while others celebrated events such as the New Year one hour later than the midnight that the clock recorded and set off their celebratory fireworks in line with the “real” midnight.

Of course, some people with set routines had better logic for not changing the hour of some of their actions but it still meant that they were out of step with the actual time of the country.

In the early part of the Summertime period it was known that some people were complaining because their routine bodily functions such as eating, bathing and toileting had been disrupted to the point that they were unable to perform the actions adequately. However, the literature is clear that this is unlikely. One point to make is that the difference that the shift to Summertime made to Mauritius was only one hour. Most people will feel some need for adjustment when travelling across several time zones but this is not normally felt normal for a change of just one hour. However, the popular psyche was that any change might be difficult and detrimental to routine and therefore detrimental to health. The actual opinions of the people on this subject are presented in the review of findings later in the report.

3.2 Press Reports

People have many different ways of formulating an opinion on something. Perhaps the two most pertinent to be considered here are basing opinion on personal experience and basing opinion formulated under the influence of the media. Few people in Mauritius have experienced Summertime previously apart from those who lived through the previous brief introductory period in 1982 and those who have lived abroad in countries where Daylight Saving or Summertime is implemented as a matter of course.

Accordingly, opinions on Summertime for most Mauritians have been formulated on the experience of one brief experimental period and guided by the output of the media on the subject. There is no doubt that Summertime, and any changes to the flow of time and alterations of routine, is an emotive subject and, subsequently, one that members of the media have not shied away from.

But, as might be expected, few of the articles in the written press were based on explaining the concept, how it works, why it is implemented and objective descriptions of any possible benefits and drawbacks of its implementation, but appear to be more subjective on why Summertime is not a good thing. Such articles have ranged from the clearly subjective opinion of the author to those dressed up as being scientific in that opinion polls were conducted. However, such market research techniques are not rigorous enough to be considered as representative of public opinion and, therefore, a guide to inform decision makers to re-implement Summertime. Such studies, conducted by telephone and using quota sampling techniques are part of the domain of market research and have no place in the realm of rigorous social science research but the reader is not informed of this and, therefore, is likely to have their opinion swayed or at least influenced by the subjective nature of the reporting. However, it is recognized that the media has a role of not just informing but in entertaining its readership and it is perhaps in the field of entertainment that such articles should be placed even though they are presented in the guise of information.

The above context warranted the implementation of a rigorous scientific study of the attitudes and opinions of the experiences of the Mauritian population regarding Summertime and the results of that study are presented below. These findings are based on rigorous social science research and can be used to inform policy making.

3.3 Methodology

This study was a full scale fieldwork based exercise that covered the whole Republic of Mauritius⁹. The target population was all adults, that is persons aged 18 or above, living in private households in Mauritius and Rodrigues. To achieve this, the survey was conducted on a random sample of 1,440 respondents in the Republic of Mauritius comprised of some 1,200 respondents selected in the Island of Mauritius and 240 respondents in the island of Rodrigues.

A proportionate stratified sample was drawn using a three-stage sampling design. The sampling unit at the first stage was determined as the Primary Sampling Unit (PSU) in line with the PSUs defined and used officially by the Central Statistics Office in Mauritius. The secondary sampling unit was individual households and, finally, the third and final sampling stratum was the ultimate sampling unit, and this was a person aged 18 or above in a selected household and individually selected using a system whereby all adults in that household had the same chance of being selected.

In the Island of Mauritius, the first stage was the selection of eighty (80) PSUs. This was followed by the second stage where fifteen (15) households were selected from each of the 80 PSUs giving a total of 1,200 households. In the third stage one adult was selected from each of those households that had been selected at the second stage giving the required sample size of 1,200 individual adults. ($80 \times 15 \times 1 = 1,200$ individuals) For Rodrigues, the same process was repeated using a selection of eight (8) PSUs at the first stage and thirty (30) households per PSU at the second stage with 1 adult selected from each household at stage three resulting in the required sample size of 240 individual adults. ($8 \times 30 \times 1 = 240$)¹⁰.

The survey was conducted in March 2009. The sampling frame used was from the most recent listing of households available at the Centre for Applied Social Research. A copy of the questionnaire is available at Appendix II and more details on the methodology is available in Appendix III.

⁹ Except for Agalega

¹⁰ A full description of the methodology adopted for this study is available in Appendix I.

During the analysis the results were checked three ways; for the Republic of Mauritius, for the Island of Mauritius and for the Island of Rodrigues. In fact, the differences in results were minimal and did not warrant a separate chapter for the Island of Rodrigues. Therefore the results presented, apply to the Republic of Mauritius.

3.4 Biographical details

The first part of the questionnaire contains details to ensure that the sampling procedure has been successfully conducted. It provided biographical details of the actual respondents selected, and these should match within an identified and acceptable margin of error, the known population profile of the country. The details of the personal profiles of those who were selected to take part in the study are presented in Table 3.1. Just over half of the study population were female and the rest male. There was a broad spread across the age group range while nearly two thirds of the respondents were married.

Table 3.1: Sex, age group & marital Status			
		No.	%
Sex	Male	678	48.2%
	Female	730	51.8%
Group Total		1408	100.0%
Age Group	20 or under	62	4.4%
	21-25	101	7.2%
	26-30	152	10.8%
	31-35	151	10.7%
	36-40	143	10.2%
	41-45	178	12.6%
	46-50	128	9.1%
	51-60	234	16.6%
	61 or over	259	18.4%
	Group Total		1408
Marital Status	Single	242	17.2%
	Married	877	62.3%
	In a Union	56	4.0%
	Divorced or Separated	64	4.5%
	Widowed	169	12.0%
Group Total		1408	100.0%

These findings are more associated with verifying the sampling and the fieldwork procedure but will become more important when they are used as variables in the later analysis of results of opinions.

Another key variable is the education level of the respondents. Table 3.2 gives the spread of education levels achieved by the respondents. It displays the expected curve of concentration in the middle range and thinning at the lowest and highest levels.

		No.	%
Education	No Formal Education	118	8.4%
	Incomplete Primary Education	304	21.6%
	Passed CPE / Std. VI	266	18.9%
	Lower Secondary Incomplete	277	19.7%
	SC or Equivalent	257	18.3%
	A Level or Equivalent	104	7.4%
	Degree or Equivalent	52	3.7%
	Post Graduate Degree or Equivalent	22	1.6%
	Other	8	.6%
Group Total		1408	100.0%

With the household income group categories it is found that most of the households are clustered in the income range of between Rs 5,000 and Rs 30,000 per month, with some outlying poorer and poorest households at one end and at the other end of the range the more wealthy households with a monthly combined household income of greater than Rs30, 001. These findings are expected for a sample of this type.

		No.	%
Household Monthly Income Group	No Income	3	.2%
	Less than Rs2,000	8	.6%
	Rs2,001-Rs3,000	50	3.6%
	Rs3,001-Rs4,000	41	2.9%
	Rs4,001-Rs5,000	50	3.6%
	Rs5,001-Rs10,000	450	32.0%
	Rs10,001-Rs15,000	339	24.1%
	Rs15,001-Rs20,000	193	13.7%
	Rs20,001-Rs30,000	143	10.2%
	Rs30,001-Rs50,000	94	6.7%
	Rs50,001 or more	37	2.6%
Group Total		1408	100.0%

3.5 Awareness of Summertime

One of the issues raised in the discussions both prior and during the conducting of this study was the issue of the awareness and, by extension, the preparedness of the people to be ready to make the most of Summertime when it was in force.

The actual introduction of Summertime in any country at any time, as is clear in the historical aspects of the desk review is a very sensitive issue. People do not seem to appreciate anybody making alterations to their routines. It could be argued that as Summertime was enacted by an Act of the National Assembly then there is no debate necessary. However, the opinions of the people on this subject are valid as, contrary to many other Acts, this one has an effect on everybody man, woman and child whether they agree with it or not.

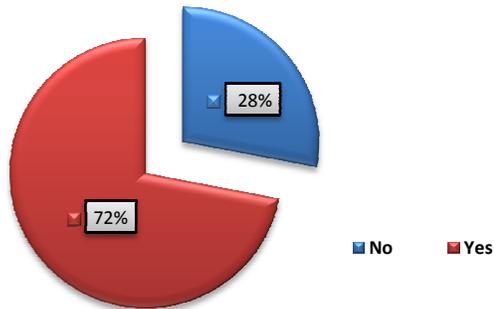
Therefore it was necessary to ensure that the public were made aware of the actual implementation intention, the schedule, the effects it was likely to have on their personal time and the reasons for its implementation. In this study, the fieldwork questionnaire began with a section on the awareness of the respondents as to the various aspects of the implementation of Summertime and the results make for some interesting reading.

Almost five per cent of the respondents to this survey did not know that the clocks were moved forward at the end of October.

		No.	%
Did you know that the clocks were moved forward by an hour at the start of Summer last year?	Yes	1339	95.1%
	No	69	4.9%
Group Total		1408	100.0%

Isolating just those respondents who had said that they were aware of the implementation of Summertime (Figure 3.1), less than three quarters of them reported that they knew why the Government had decided to do this. This is important, especially when analysing the opinion the respondents had of Summertime it is necessary to remember that over one quarter of them stated that they did not know why Summertime had been implemented.

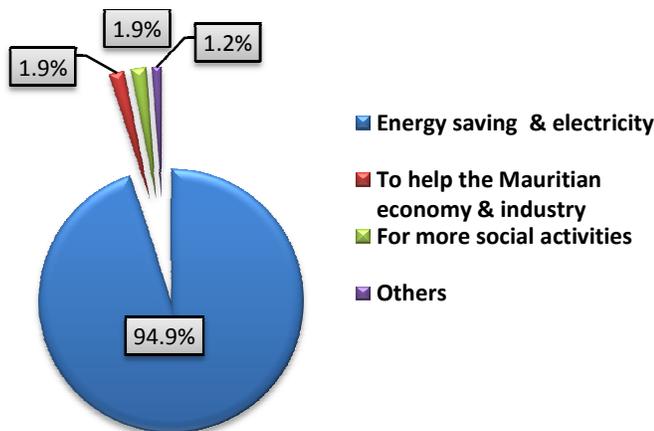
Figure 3.1: Do you know why the Government decided to do this?



Note: (The 1337 respondents who knew about Summertime only)

The main reason given by respondents as to why government had decided to implement Summertime was for saving energy (Figure 3.2). This can be expected as the main information campaigns were clearly stating that this was the case and there was little, in any, emphasis on the social benefits that might be gained from moving to a form of Daylight Saving.

Figure 3.2: Reasons why the Government decided to do this



Staying with the group of respondents who were aware that Summertime was actually in force it is important to note that a substantial proportion of them, some 28 per cent, were not aware that it would be darker for longer in the mornings (Table 3.5).

This will need to be considered when looking at their opinions as to the phenomenon on Summertime itself, as it is in this first period of implementation that it was perhaps an understandable shock to those that were not aware of the fact that during this period it would be darker for longer in the early morning. This is clearly an issue of the need for clear and concise information to be presented to the public prior to the implementation of such an event.

Table 3.5: Aware it would be darker in the morning		
I was aware that it would remain dark until later in the morning	No.	%
Was Aware	878	65.9%
Don't Know or Can't Remember	79	5.9%
Was not aware	376	28.2%
Group Total	1333 (6 non responses)	100.0%

If such a large proportion of people were aware of the implementation of Summertime but were not aware of the effect it would have on the light in the early morning then how aware were they of the fact that it would remain lighter until later in the evening during the implementation period? Interestingly, it appears that a greater number of respondents who were aware of the implementation of Summertime knew that this would mean that it would remain lighter until later in the evening (Table 3.6). This is perhaps because this is the effect that was most promoted; the idea that energy could be saved by an extra hour of daylight. What many people did not realise was that this would be offset by a longer period of darkness in the morning, indicating a lack of knowledge for many as to how Summertime actually works.

Table 3.6: Aware it would be lighter in the evening			
		No.	%
I was aware that it would remain lighter until later in the evening	Was Aware	1162	86.8%
	Don't Know	30	2.2%
	Was not aware	146	10.9%
Group Total		1338	100.0%

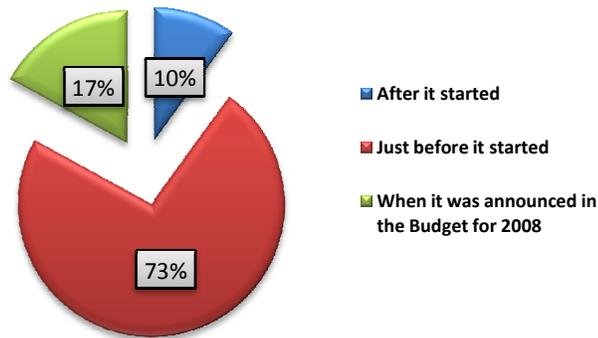
It is quite clear from the results that the majority of those respondents aware of the implementation of Summertime were made aware through the use of the radio and television with a surprisingly small amount indicating that they were made aware of it through newspapers. This is not a surprising result as in the present time most information is conveyed through these media.

However, it does seem to indicate that presumed illiteracy is not necessarily a prime mover behind those who remained unaware of the implementation of Summertime or behind the lack of understanding that many respondents had regarding the trading of a darker morning for a lighter evening during Summertime. Perhaps the information conveyed on the television and radio did not include a sufficient explanation of how the implementation of Summertime would affect the daily routines of the population of the country (Table 3.7).

		No.	%
From where did you hear about the implementation of Summertime?	From Friends	53	4.0%
	From Family	68	5.1%
	From Newspapers	61	4.6%
	From Radio and Television	1129	84.3%
	Overheard People Talking About It	28	2.1%
Group Total		1339	100.0%

Having established from where the information on the implementation of Summertime came from it is interesting to look how far in advance of the event these respondents were aware of it (Figure 3.3). A very large number of people who were aware of it only just before it started and a significant 10 percent of respondents became aware of it only after it started. For both these groups of respondents there would have been little or no time for preparation for how they would compensate their routines or make the best use of Summertime; something that will need to be considered when looking at the opinions of the respondents on Summertime in general.

Figure 3.3: When did you hear about Summertime?



Note: Out of 1334 respondents

Given the above it is not surprising that 44 per cent of the respondents disagreed that sufficient information was provided to them in advance of Summertime being implemented (Table 3.8). The obvious indication here is that the information campaigns relating to the implementation of Summertime did not satisfactorily achieve their target.

Table 3.8: Enough information on the implementation of Summertime was provided			
		No.	%
Enough information on how Summertime would be implemented was provided to me in advance of it being introduced	Agree	585	43.8%
	Neither Agree nor Disagree	158	11.8%
	Disagree	594	44.4%
Group Total		1337	100.0%

One important element to look at now is how many of those respondents who were aware of the impending introduction of Summertime were in favour of it. This means removing those respondents who found out about it after it started.

Of those that were aware of the proposed introduction of Summertime, just over one half were not in favour of its introduction while the others were either in favour or had no opinion either way (Table 3.9). This result needs to be considered with the fact that information on the implementation was not seen as being provided sufficiently by many respondents and to consider if there would have been any difference, either positive or negative, had the information campaigns on Summertime been more effective.

Table 3.9: In favour before the introduction of Summertime			
		No.	%
Prior to the introduction of Summertime I was in favour of its introduction	Agree	318	26.4%
	Neither Agree nor Disagree	280	23.3%
	Disagree	605	50.3%
Group Total		1203	100.0%

Regarding adaptation to Summertime, among the respondents who were aware that Summertime had been implemented there is a large proportion stating that, it was not easy to adapt to Summertime. However, there is some difference in the opinions of males and females with 28 per cent and 20 per cent respectively, stating that they thought that it was easy to adapt to Summertime (Table 3.10).

Table 3.10: Easy to adapt by sex							
		Sex				All Respondents	
		Male		Female		No.	%
		No.	%	No.	%		
It was generally easy to adapt to Summertime	Agree	181	27.6%	133	19.6%	314	23.6%
	Neither Agree nor Disagree	58	8.9%	75	11.1%	133	10.0%
	Disagree	416	63.5%	469	69.3%	885	66.4%
Group Total		655	100.0%	677	100.0%	1332	100.0%

Summer itself appears for most people in Mauritius to be split into two distinct halves; one before the end of January, which is generally regarded as the holiday period, and the other from the beginning of February until May. This is significant as the schools return at the middle to end of January and there could well be a greater negative reaction to the darker mornings in this period. This would explain why 56.3 percent of respondents disagree that it was easier to adapt to summertime in the second period (Table 3.11).

Table 3.11: Adaptation periods			
		No.	%
It was easier to adapt to Summertime in the period January to March 2009 than October to December 2008	Agree	309	23.1%
	Neither Agree nor Disagree	276	20.6%
	Disagree	753	56.3%
Group Total		1338	100.0%

3.6 Use of Time

The study questionnaire next moved on to the use of time during the period of Summertime, assuming that even those respondents who were not aware of the implementation of Summertime did notice the difference in the pattern of daylight hours.

Many people seemed to be more aware of the extra hour of daylight that was going to be one of the effects of Summertime, perhaps partly because this was the main factor that was promoted prior to Summertime. However, there was also an effect on the amount of daylight that was, to all intents and purposes, lost from the morning in that the shift from standard time to Summertime meant that there were darker mornings as well as lighter evenings. Table 3.12 shows that there was quite a lot of reported change in routine a with 70 per cent of respondents reporting at least some change and with more female than male respondents doing so, 74.7 per cent and 66.1 per cent respectively.

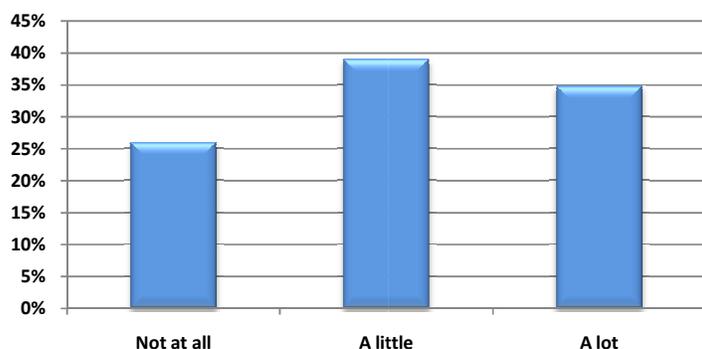
Did any of your usual MORNING routines change during the period of summertime?	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
No Response	3	.4%	0	.0%	3	.2%
Not at All	227	33.5%	185	25.3%	412	29.3%
A little	212	31.3%	256	35.1%	468	33.2%
A lot	236	34.8%	289	39.6%	525	37.3%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Respondents were also asked about any changes in their routines in the evening. Similar findings as in the morning were obtained, although the difference between female and male respondents is reduced (Table 3.13).

Did any of your usual EVENING routines change during the period of summertime?	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
No Response	2	.3%	1	.1%	3	.2%
Not at All	195	28.8%	171	23.4%	366	26.0%
A little	267	39.4%	282	38.6%	549	39.0%
A lot	214	31.6%	276	37.8%	490	34.8%
Group Total	678	100.0%	730	100.0%	1408	100.0%

The total though is slightly higher with almost 74 per cent of all respondents recording some change to their evening routines during Summertime (Figure 3.4).

Figure 3.4: Did any of your usual Evening routines change during the period of Summertime?



As to what these changes might have been is to some degree reflected in the reports of use of the extra daylight in the evenings and Table 3.14 shows that only 12 per cent of respondents recorded no use of this period of light while almost 80 per cent of all respondents indicated that they had used this time to some degree. There is a small but observable difference between the responses of males and females to this question. More male respondents, 15.8 per cent, say that they made use of this period of extended daylight a lot compared to female respondents at 12.2 per cent. The difference is reversed with those recording that they did not use the extra daylight much.

How much use did you make of the extra hour of daylight in the evening?	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
A lot	107	15.8%	89	12.2%	196	13.9%
Some	237	35.0%	252	34.5%	489	34.7%
Don't know	39	5.8%	70	9.6%	109	7.7%
Not much	202	29.8%	237	32.5%	439	31.2%
None	91	13.4%	78	10.7%	169	12.0%
No Response	2	.3%	4	.5%	6	.4%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Returning to the issue of the extra hour of darkness in the morning that was a major topic of concern for many respondents who felt that this made a difference to them. Almost two thirds of all respondents did feel that this hour of darkness had made some kind of difference to them with female respondents more likely to feel so, than male respondents; 66.8 per cent and 62.1 per cent respectively (Table 3.15).

Did the extra hour of darkness in the MORNING make any difference to you?	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
A lot	243	35.8%	296	40.5%	539	38.3%
Some	178	26.3%	192	26.3%	370	26.3%
Don't know	23	3.4%	33	4.5%	56	4.0%
Not much	139	20.5%	137	18.8%	276	19.6%
None	95	14.0%	72	9.9%	167	11.9%
Group Total	678	100.0%	730	100.0%	1408	100.0%

The next question was based on a key point in relation to the implementation Summertime in that it relates directly to the degree to which people felt that they enjoyed the extra hour of light during the evenings in Summertime. Contrary to some of the previous indicators 58.2 per cent of the respondents did enjoy the extra daylight in the evening (Table 3.16). Together with 18.4 per cent of respondents that were unable to make up their minds on this issue it left less than one quarter of all respondents reporting that they did not enjoy having the extra hour of daylight in the evening.

I enjoyed having an extra hour of daylight in the evening	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	406	59.9%	413	56.6%	819	58.2%
Neither Agree nor Disagree	107	15.8%	152	20.8%	259	18.4%
Disagree	165	24.3%	165	22.6%	330	23.4%
Group Total	678	100.0%	730	100.0%	1408	100.0%

The findings have been analysed by taking dividing the relevant study population into three age groups; 30 or under, 31 – 50 years old and 51 and over. By using this simplified pattern of three distinct groups, the result is similar to where age was used as an analytical variable

previously in that there is an evident difference in the opinions of those 50 years old and under and those aged 51 years and above (table 3.17).

I enjoyed having an extra hour of daylight in the evening	Age Groups (simplified)						All Respondents	
	30 or under		31- 50		51and over		No.	%
	No.	%	No.	%	No.	%		
Agree	210	66.7%	364	60.7%	245	49.7%	819	58.2%
Neither Agree nor Disagree	43	13.7%	95	15.8%	121	24.5%	259	18.4%
Disagree	62	19.7%	141	23.5%	127	25.8%	330	23.4%
Group Total	315	100.0%	600	100.0%	493	100.0%	1408	100.0%

The rates of those who indicated that they did not enjoy having the extra hour of daylight in the evenings increases from only 19.7 per cent of those aged 30 years old or under, through 23.5 per cent of the middle age group of those aged 31 to 50 years old and up to 25.8 per cent of those respondents aged 51 and over. Although there is a higher rate of those not enjoying the extra light in the evenings among the older age group the proportion is still only just over one quarter of them while almost half of respondents in this age group, 49.7 per cent did enjoy it. The fact remains, however, that the proportion of those enjoying the extra hour of daylight in the evening during summertime were the younger adults at over two thirds of those aged 30 or under, 66.7 per cent and almost 61 per cent of those aged 31 to 50 years old. In general it can be stated that the majority of the respondents enjoyed having an extra hour of daylight in the evenings with a greater proportion doing so in the younger age groups.

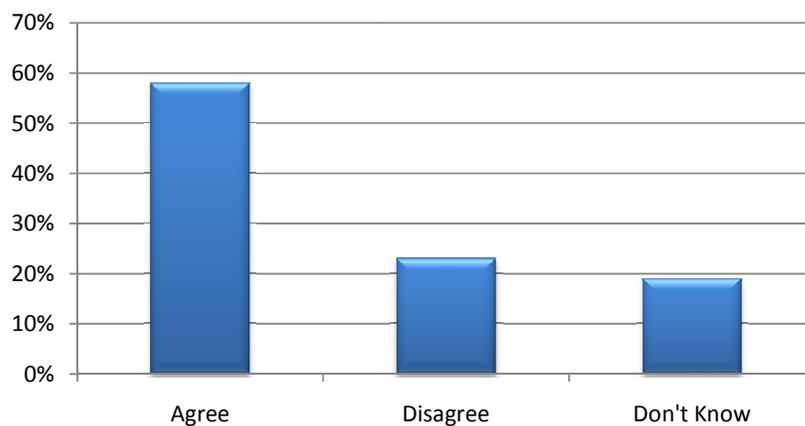
There is a noticeable difference in responses when the results are interpreted by Personal Income Group where it shows that the higher the personal income, the more likely the respondent enjoying having the extra hour of daylight in the evening (Table 3.18).

Table 3.18: I enjoyed having an extra hour of daylight in the evening by Personal Income Group										
	Personal Monthly Income Group								Group Total	
	Rs5,000 or less		Rs5,001 - Rs30,000		Rs30,001 or more		No Response		No.	%
	No.	%	No.	%	No.	%	No.	%		
Agree	412	57.7%	333	57.3%	58	63.7%	14	63.6%	817	58.0%
Neither Agree nor Disagree	133	18.6%	111	19.1%	12	13.2%	5	22.7%	261	18.5%
Disagree	169	23.7%	137	23.6%	21	23.1%	3	13.6%	330	23.4%
Group Total	714	100.0%	581	100.0%	91	100.0%	22	100.0%	1408	100.0%

3.7 Use of Extra Hour of Daylight

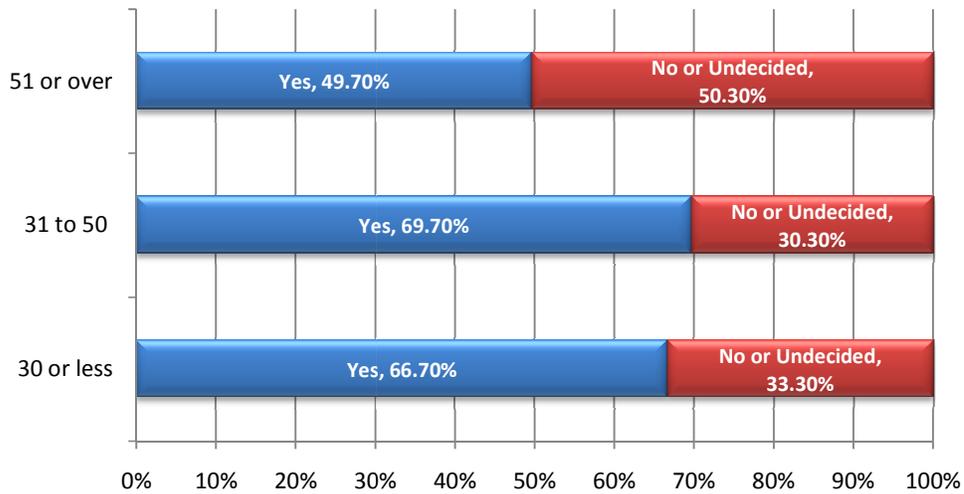
This section was prepared to ascertain what use people made of the extra hour of daylight during the evenings while Summertime was in force. 58 percent of respondents enjoyed having an extra hour of daylight in the evening (Figure 3.5).

Figure 3.5: I enjoyed having an extra hour of daylight in the evening (All respondents)



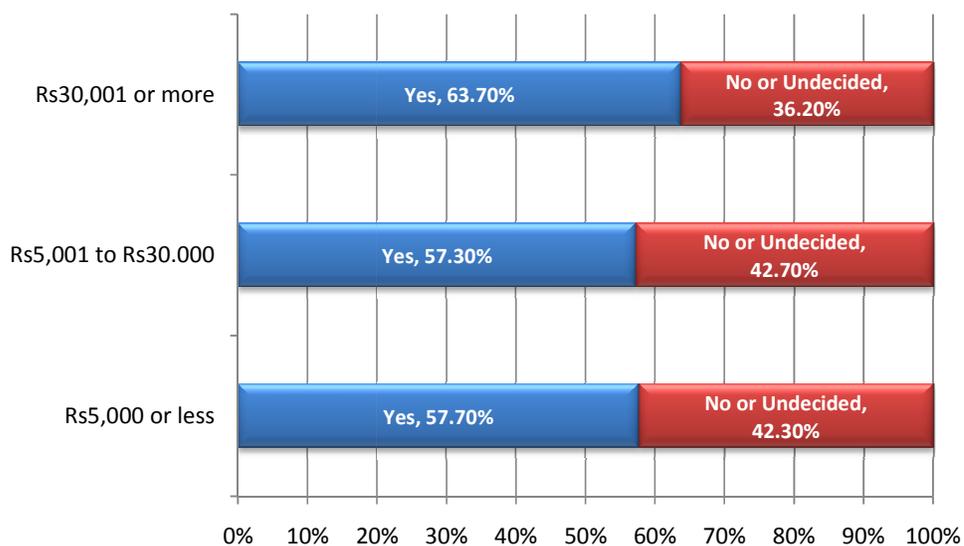
This enjoyment of the extra hour of daylight, as outlined elsewhere in the report is age relative with the younger and middle aged respondents tending to be more likely to agree that they enjoyed, but even close to half of the older respondents also stated that they enjoyed the extra hour of daylight available to them during this period (Figure 3.6).

Figure 3.6: Enjoyed having an extra hour of daylight in the evening by Age Group



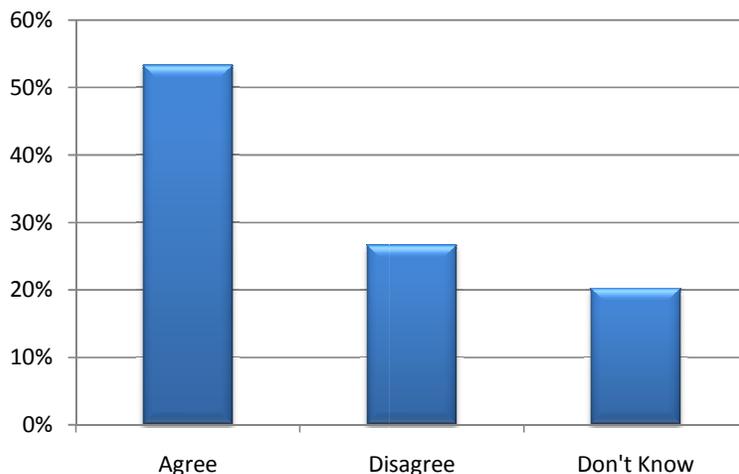
Enjoying the extra hour of daylight is also income-relative, with 63.7 percent of respondents earning Rs 30,001 or more claiming that they enjoyed the extra daylight (Figure 3.7).

Figure 3.7: Enjoyed having an extra hour of daylight in the evening by Personal Income Group



The overall picture is that over half of all respondents, with little difference between male and female respondents stated that in their opinion they got more things done because of the extra hour of daylight during the evening (Figure 3.8).

Figure 3.8: In general I got more things done because the extra hour of daylight in the evening



Note: All respondents

Turning to housework, table 3.19 shows that 45.9 percent of male respondents and 52.7 percent of female respondents stated that they got more household work done in the evening because of the extra daylight available. The overall percentage for all respondents was 49.4 per cent. This backs up some of the information gained from the FGDs and the anecdotal evidence in that many people, but more women than men, used the extra hour of light in the evening to do things such as gardening or housework. In fact, one negative aspect to be considered was that many women regard their working day in the home as lasting until sunset so the later hour of the sun going down prolonged their working day, which, perhaps, is one of the mitigating factors as to why so many of the female respondents felt that they got more housework done.

In general I got more household work done because there was daylight for longer	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	311	45.9%	385	52.7%	696	49.4%
Neither Agree nor Disagree	158	23.3%	161	22.1%	319	22.7%
Disagree	209	30.8%	184	25.2%	393	27.9%
Group Total	678	100.0%	730	100.0%	1408	100.0%

There is no doubt that people got more things done during the evening in the period of Summertime but we should be aware that this would normally be the case given that even without any form of Daylight Saving in place the hours of sunligh would be lenghened by about one hour during this period. Nevertheless there do seem to be clear indications that the extended period of daylight offered by the implementation of Summertime does give people a corresponding extended opportunity for doing a range of tasks, and that this is something that many respondents clearly enjoy.

The next question that respondents faced was on childcare and whether they were able to spend more time on childcare at home because there was daylight for longer.

This gives some interesting and not unexpected results. Firstly, the question did offer an option for those for it was not applicable which is why there are fewer respondents in the data sets. A filter was also applied so that only those respondents who had previously indicated that they had children were included in this part of the analysis and a second filter was applied to select only those respondents aged 45 years old or less.

Although this would perhaps miss a small amount of older parents it would assist in making the general result more valid. In effect the responses in Table 3.20 are related to respondents under 45 years old who had children in the house. The results show that the extra hour of daylight greatly helped in childcare as 64.3 per cent of male respondents and 71.5 per cent of the female respondents who fit the profile described above, stated that they spent more time on childcare at home because there was daylight for longer.

Table 3.20: More Time on Childcare (by Sex & 45 years old or less with children)							
I spent more time on childcare at home because there was daylight for longer		Sex				All Respondents in Profile	
		Male		Female		No.	%
		No.	%	No.	%		
Agree	184	64.3%	243	71.5%	427	68.2%	
Disagree	102	35.7%	97	28.5%	199	31.8%	
Group Total	286	100.0%	340	100.0%	626	100.0%	

Similar findings are evident with the results of responses to the statement that the respondent spent more quality time with the children because there was daylight for longer. In this instance the overall agreement with the statement was 68.4 per cent with very little difference between the female and male respondents at 69.5 per cent and 67 per cent respectively (Table 3.21). These two findings in themselves can be seen as a major justification for the continuation of Summertime in that children have appeared to have benefited from extended and good quality parental input during the extra hour of daylight.

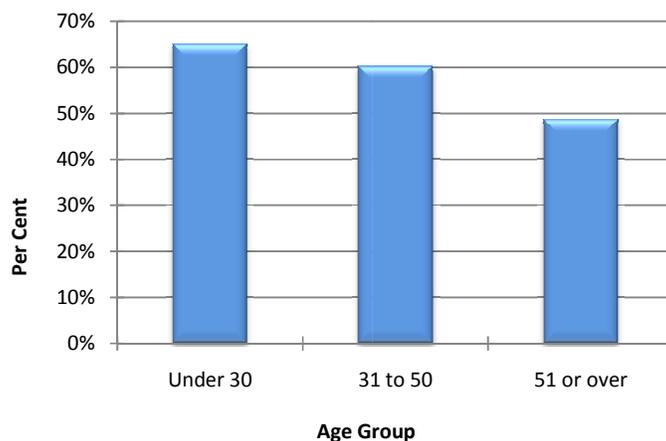
I spent more quality time with the children because there was daylight for longer	Sex				All Respondents in Profile	
	Male		Female			
	No.	%	No.	%	No.	%
Agree	191	67.0%	237	69.5%	428	68.4%
Disagree	95	33.0%	103	30.5%	198	31.6%
Group Total	286	100.0%	340	100.0%	626	100.0%

Moving away from concentrating on a group of respondents that fit a particular profile it is possible to open up the findings to look at whether or not the extra hour of daylight generally encouraged people to spend more time with their family. Again, the results are generally in favour of Summertime being a positive influence in family bonding and unity. Table 3.25 shows that over 57 per cent of all respondents agreed that they spent more time with their family because of the longer period of daylight while, significantly, only 13.8 per cent of all respondents disagreed that this was the case (Table 3.22).

I spent more time with the rest of the family because there was daylight for longer	Age Groups (simplified)						All Respondents	
	30 or under		31- 50		51 and over			
	No.	%	No.	%	No.	%	No.	%
Agree	205	65.1%	362	60.3%	240	48.7%	807	57.3%
Disagree	83	26.3%	193	32.2%	130	26.4%	406	28.8%
Not Applicable or No Response	27	8.6%	45	7.5%	123	24.9%	195	13.8%
Group Total	315	100.0%	600	100.0%	493	100.0%	1408	100.0%

Figures are higher for younger respondents with 65.1 per cent those aged 30 years old or under stating that the extra daylight in the evening meant that they spent more time with their families which falls slightly for the age group 31 to 50 years old and then drops substantially to 48.7 per cent of those aged 50 years old or over (Figure 3.9) . Again there are signs of the non-use of the benefits of Summertime being more concentrated in the older respondents.

Figure 3.9: I spent more time with the rest of the family because there was daylight for longer, by Age Group



A very similar pattern is seen with the results related to the statement on whether or not respondents spent more time relaxing because of the extended hours of daylight in the evening. It again appears that the older the respondent then the less the likelihood that they made the most of the benefits of Summertime although almost half of them still did so (48.7 per cent, Table 3.23).

I spent more time relaxing because of the longer hours of daylight	Age Groups (simplified)						All Respondents	
	30 or under		31- 50		51 and over		No.	%
	No.	%	No.	%	No.	%		
Agree	205	65.1%	362	60.3%	240	48.7%	807	57.3%
Neither Agree nor Disagree	69	21.9%	168	28.0%	107	21.7%	344	24.4%
Disagree	41	13.0%	70	11.7%	146	29.6%	257	18.3%
Group Total	315	100.0%	600	100.0%	493	100.0%	1408	100.0%

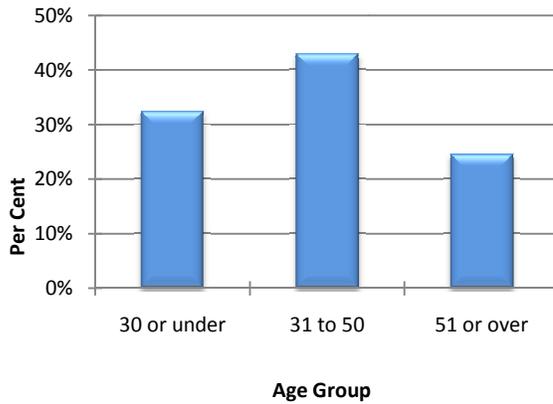
Given that 57.3 per cent of the respondents were using the extra daylight to relax leads to querying exactly what this relaxing consisted off. For some people the term “relaxing” is literal in that they would use leisure time to do the least exertions possible while for others some form of activity or sport is part of their leisure time and would be included in their interpretation of what constitutes relaxation.

The study also included some questions on activities and some respondents stated that they used the extra hour of daylight to take up new fitness activities (Table 3.24).

I took up new fitness activities because of the extra hour of daylight in the evening	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	159	23.5%	97	13.3%	256	18.2%
Neither Agree nor Disagree	223	32.9%	349	47.8%	572	40.6%
Disagree	296	43.7%	284	38.9%	580	41.2%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Looking more closely at this group of respondents involved in new fitness activities during the extra hour of daylight it is noticeable that they are spread across the age range but with the majority of them in the middle age group of 31 – 50 years old but also with a good representation from those aged 51 years old (Figure 3.10). This is significant as it shows that the implementation of Summertime had a positive effect on the exercise activities of many people including a large number of those aged over 50 years old. Given that one of the major objectives of the country is maintaining and improving the good health of the population then this can only be regarded as a positive aspect related to the implementation of Summertime. However, caution should be exercised here regarding the absolute numbers that the percentages represent.

Figure 3.10: I took up new fitness activities because of the extra hour of daylight in the evening



Nevertheless, this is only one aspect of the effect on fitness activities. The main thrust behind this line of enquiry was to see whether respondents were taking up new fitness activities or were shifting their usual activities from the morning to the evening.

To check this, the enquiry also looked into whether people stopped doing any fitness activities in the morning during Summertime. In fact, it turns out that very few of the respondents, just 13.8 per cent overall, recorded that they stopped doing fitness activities in the morning because of it being dark which indicates that the extra fitness activities that many people were engaged in during the longer, lighter evenings were not simply a replacement for some that had been stopped in the morning (Table 3.25). This indicates that there was still a large group of people taking up new fitness activities in the evening because of the extra daylight.

I stopped doing some fitness activities because of the extra hour of darkness in the morning	Sex				All Respondents	
	Male		Female			
	No.	%	No.	%	No.	%
Agree	112	16.5%	83	11.4%	195	13.8%
Neither Agree nor Disagree	282	41.6%	406	55.6%	688	48.9%
Disagree	284	41.9%	241	33.0%	525	37.3%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Nevertheless, it would be worthwhile running the data by those respondents who stated that they had taken up new fitness activities in the evening and we see that those that did shift from the morning and those that did not shift their activities are represented roughly equally in the results at 40.2 per cent and 41 per cent respectively (Table 3.26).

Table 3.26: Stopped doing fitness activities in Morning (Respondents doing new fitness activities in Evening)

I stopped doing some fitness activities because of the extra hour of darkness in the morning	Sex				All Respondents in Profile	
	Male		Female			
	No.	%	No.	%	No.	%
Agree	63	39.6%	40	41.2%	103	40.2%
Neither Agree nor Disagree	30	18.9%	18	18.6%	48	18.8%
Disagree	66	41.5%	39	40.2%	105	41.0%
Group Total	159	100.0%	97	100.0%	256	100.0%

When analysed by age it is clear that it is the middle age group were more likely to shift some activities from morning to evening, whereas those in the younger and older age group being less likely to do so (Table 3.27).

Table 3.27: Had Stopped Fitness in Morning & Taken Up Fitness in Evening (by Age Group)

I stopped doing some fitness activities because of the extra hour of darkness in the morning	Agree	
	No.	%
Age Groups 30 or under	35	34.0%
31- 50	45	43.7%
51and over	23	22.3%
Group Total	103	100.0%

Respondents were next asked as to the role that Summertime might have directly played, rather than indirectly, in any shifting of activities, of any kind, from the morning to the evening. In general, less than one quarter of the respondents indicated that they had shifted any of their activities form the morning to the evening. 23.7 per cent of females and 16.4 per cent of males respectively reported having done so (Table 3.28).

Table 3.28: Shifted Morning activities to Evening because of Summertime (by Sex)

Did you shift any of your MORNING activities to the evening because of Summertime	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Yes	111	16.4%	173	23.7%	284	20.2%
No	567	83.6%	557	76.3%	1124	79.8%
Group Total	678	100.0%	730	100.0%	1408	100.0%

From Table 3.29 it can be seen that of those that shifted their activities in this manner, 50.7 per cent were aged between 31 and 50 years old, while it is noticeable that the younger and older respondents were less likely to have done so.

Table 3.29: Those that shifted activities from Morning to Evening during Summertime (by Age Group)

Age Groups (simplified)	No.	%
30 or under	64	22.5%
31- 50	144	50.7%
51 and over	76	26.8%
Group Total	284	100.0%

The use of the extra hour of daylight in the evening appeared to be more popular among those respondents in the higher personal income groups and the results show a steady rise in the proportion of respondents making use of the extra hour of daylight in the evening from 47 per cent of those on income of Rs 5,000 or less, through 49 per cent of respondents with a mid-range income of between Rs 5,001 and Rs 30,000 to 63 per cent of those in the upper personal income bracket of Rs 30,001 or more (Table 3.30).

Table 3.30: Did you make use of the extra hour of daylight in the Evening? By Personal Income Group

	Personal Monthly Income Group								Group Total	
	Rs5,000 or less		Rs5,001 - Rs30,000		Rs30,001 or more		No Response		No.	%
	No.	%	No.	%	No.	%	No.	%		
Yes	337	47.2%	284	49.0%	57	62.6%	7	31.8%	685	48.7%
No	304	42.6%	264	45.5%	30	33.0%	9	40.9%	607	43.1%
Don't know	69	9.7%	30	5.2%	4	4.4%	6	27.3%	109	7.7%
No Response	4	.6%	2	.3%	0	.0%	0	.0%	6	.4%
Group Total	714	100.0%	580	100.0%	91	100.0%	22	100.0%	1407	100.0%

Similar results are observed when analysing the data on use of the extra hour in the evening for leisure activities. There is a definite difference in responses between the three main personal income groups with 50.5 per cent of those respondents in the higher personal income category using this time for leisure, compared to the lowest income group and the middle income group at 38 per cent and 44 per cent respectively (Table 3.31).

Table 3.31: I used my free time in the EVENING more for leisure activities during Summertime by Personal Income Group

	Personal Monthly Income Group								Group Total	
	Rs5,000 or less		Rs5,001 - Rs30,000		Rs30,001 or more		No Response		No.	%
	No.	%	No.	%	No.	%	No.	%		
Agree	269	37.7%	257	44.2%	46	50.5%	5	22.7%	577	41.0%
Neither Agree nor Disagree	125	17.5%	96	16.5%	15	16.5%	10	45.5%	246	17.5%
Disagree	302	42.3%	223	38.4%	30	33.0%	7	31.8%	562	39.9%
Not Applicable	18	2.5%	5	.9%	0	.0%	0	.0%	23	1.6%
Group Total	714	100.0%	581	100.0%	91	100.0%	22	100.0%	1408	100.0%

3.8 Use of Electricity

The content of Section D of the fieldwork questionnaire was concerned with the consumption of electricity during the period of More specifically, the questions in this section concentrated more on the opinions of respondents regarding their energy consumption and their perceptions as to any change in the usage. This may or may not be supported by the report of the CEB who will calculate the actual consumption patterns.

The majority, some 64.7 per cent of respondents thought that they had used the lights in their house more in the morning than was usual in summer including 15.5 per cent who felt that the usage had been a lot more than usual during this period (Table 3.32). This would appear to be a logical result as it was darker in the morning and people were up and performing activities in darkness that they would normally be performing in daylight.

Table 3.32: Perceived usage of lights in Morning		
How much did you use the lights in your house in the MORNING during Summertime	No.	%
A lot more than usual in summer	218	15.5%
More than usual in summer	693	49.2%
Same as usual in summer	443	31.5%
Less than usual in summer	48	3.4%
A lot less than usual in summer	6	.4%
Group Total	1408	100.0%

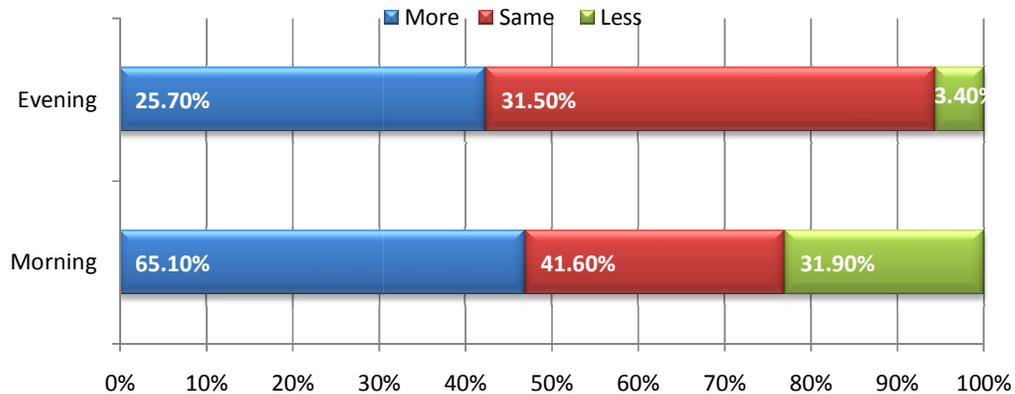
However, as is clear it remained lighter during the evening so it would make sense if this use of light was at the least compensated by a decrease in usage during the evenings during Summertime in comparison with previous summer. Some 41.6 per cent of respondents stated that they used the lights in the house for the same amount of time during Summertime as they would usually do during summer whereas 32.8 per cent reported that they used less lighting than usual in summer (Table 3.33).

Table 3.33: Perceived Usage of Lights in Evening		
How often did you have on the lights in the EVENING during summertime?	No.	%
A lot more than usual in summer	63	4.5%
More than usual in summer	298	21.2%
Same as usual in summer	586	41.6%
Less than usual in summer	449	31.9%
A lot less than usual in summer	12	.9%
Group Total	1408	100.0%

As was indicated earlier, people can be poor judges of their consumption patterns and these perceptions may or may not be confirmed by the official figures on energy consumption during the period of Summertime. It is interesting, from a social behaviour point of view, that many people did not feel that their use of lighting had decreased in the evenings during Summertime (Figure 3.11). This might be linked to set behaviour patterns whereby people habitually turn on lights and other electrical apparatus as soon as they get home. After all, this was the first real experience of Summertime for most people in Mauritius and it would be

highly unfair to expect a rapid and instant change in habits. During most of the rest of the year, and in previous summers, it would rapidly get dark soon after many people returned from work or school and so switching on the lights as one came through the door would be almost automatic and, in many ways, quite logical. What would be strange for most people at first was that it would not become dark as fast as they normally expected.

Figure 3.11: Perception of usage of lights



Another automatic reaction would be to turn on the radio or the television or both, if they were not already on. This was not asked directly during the study but was covered by questions on the respondents' perception of whether or not they used more electricity or not during Summertime.

However, a word of caution is needed here as during the period of Summertime some CEB clients received an electricity bill far higher than would normally be the case, which resulted from the billing system at the CEB rather than Summertime. However, it is a factor that needs to be taken into account when looking at the results pertaining to this particular set of questions.

To maximise the amount and quality of the information gathered the question of perception of electricity consumption was posed twice; once relating to the earlier period of the implementation of Summertime between the beginning of November and the end of December 2008 and once relating to the later period of Summertime from the beginning of January up to the end of March 2009. What we see is that 54 per cent thought that their household used more electricity during Summertime in the earlier period up to the end of

December and 61.3 per cent thought that their household used more electricity from the beginning of January until the end of March (Table 3.34).

Table 3.34: My household used more electricity during Summertime		
Beginning November to end of December 2008		
	No.	%
Agree	760	54.0%
Don't Know	233	16.5%
Disagree	415	29.5%
Group Total	1408	100.0%
Beginning January to end of March 2009		
	No.	%
Agree	863	61.3%
Don't Know	214	15.2%
Disagree	331	23.5%
Group Total	1408	100.0%

These results are informative but, notwithstanding what was said above about the effect of the CEB billing changes, they will have to be re-visited at a later date to be analysed in conjunction with official records of electricity consumption patterns. It may also be the case that as more people had to get up earlier in the morning once the return to school began in January then there would be more usage of lights in the morning.

3.9 Work Related Impact

Work is one of those issues that can be more important for some than for others. The different types of work that people perform are too varied to analyse by each variable and for this reason it is normal practice to reduce the number of categories into which they fit. For this study the categories have been simplified further than usual to create 5 categories of Professional, Vocational, Unemployed, Homemaker and Student. To achieve this during the fieldwork all respondents were asked to state their occupation and the interviewer was instructed to put down on the questionnaire exactly what the respondent said. After the fieldwork was completed each and every occupation was entered and then these were coded to fit into the main categories used for analysis. Out of interest about 400 different occupations were recorded, many of which were different versions of the same occupation.

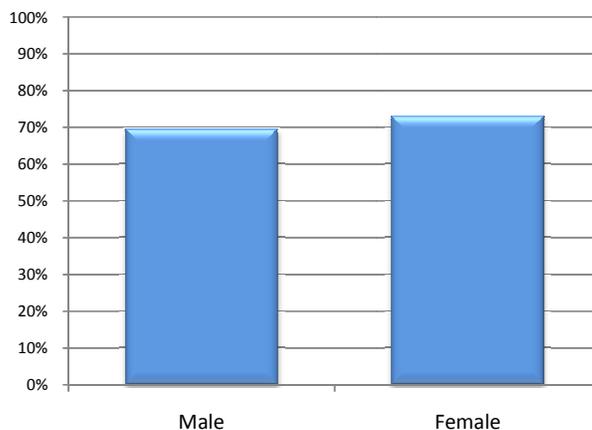
For the sake of making the results as easily understandable as possible many of the respondents have been filtered out of the analysis for parts of this section. For example, obviously only those who stated that they were actually in employment have been asked employment related questions.

Of those that were in employment 70.8 per cent of all respondents to whom the question applied enjoyed being able to return home from work in daylight with a greater proportion of female respondents than male stating this was the case, 73.1 per cent and 69.6 per cent respectively (Table 3.35 and Figure 3.12).

I enjoyed being able to return home from work in daylight during Summertime	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	358	69.6%	185	73.1%	543	70.8%
Disagree	100	19.5%	40	15.8%	140	18.3%
	56	10.9%	28	11.1%	84	11.0%
Not Applicable						
Group Total	514	100.0%	253	100.0%	767	100.0%

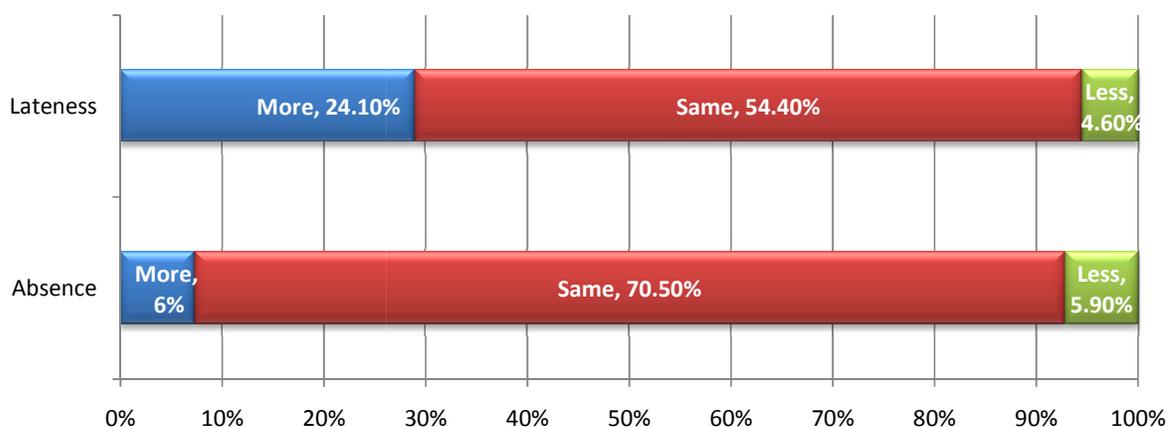
The proportion for whom the question applied, but for whom the response was not applicable always returned home before darkness regardless of the season or time of year. This is a very positive aspect of the longer hours of daylight particularly for women.

Figure 3.12: I enjoyed being able to return home from work in daylight during Summertime



There appeared to be no real effect on absence from work as only 6 per cent of all respondents reported that this was the case during Summertime. However, there does seem to have been an impact on lateness with 24.1 per cent of all the respondents to whom the question was applicable stating that they were late more often than usual during Summertime (Figure 3.13).

Figure 3.13: Perception of Effect on Absence and lateness during Summertime (Working Respondents only)



Such perceptions of lateness and absence are unreliable and it would be necessary to look at the more official figures to ascertain any true rate of difference between the frequency of lateness and the amount of absenteeism during the rest of the year and during the period of Summertime. Indeed, it would also be necessary to look at the figures for ordinary summers as well as any lateness or absenteeism during this period, consequently lateness and absenteeism cannot be clearly correlated with the implementation of Summertime. Nevertheless, there is one clear affect that Summertime did have and that was to push the television schedules later into the evening and it should not be overlooked that this meant that the football matches being televised live from Europe started at 00.45.

3.10 Social Implications

This section deals with the main aspects of this study in that it investigates any implications or effects people thought that the implementation of Summertime had had on their personal lives.

Around 42 per cent of all respondents stated that during Summertime they had used more of their free time for leisure activities with more male respondents than female respondents doing so at 47.2 per cent and 36.8 per cent respectively. Table 3.36 shows that of those respondents that agreed that this was the case a greater proportion of them were aged 31 years old or over than 30 and under at 69.7 per cent and 26.1 per cent respectively.

I used my free time in the evening more for leisure activities during Summertime	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	320	47.2%	269	36.8%	589	41.8%
Neither Agree nor Disagree	110	16.2%	135	18.5%	245	17.4%
Disagree	248	36.6%	326	44.7%	574	40.8%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Also a greater proportion was aged 51 years old and over, 30.2 per cent, than 30 or under, 26.1 per cent. One reason could be that the extra hour of daylight was an encouragement to older people in the population to better enjoy their leisure time (Table 3.37).

Age Groups (simplified)	I used my free time in the evening more for leisure activities during Summertime						All Respondents	
	Agree		Neither Agree nor Disagree		Disagree		No.	%
	No.	%	No.	%	No.	%		
30 or under	154	26.1%	45	18.4%	116	20.2%	315	22.4%
31- 50	257	43.6%	98	40.0%	245	42.7%	600	42.6%
51 and over	178	30.2%	102	41.6%	213	37.1%	493	35.0%
Group Total	589	100.0%	245	100.0%	574	100.0%	1408	100.0%

38.5 per cent of the respondents reported that they went out more during in the evening during Summertime (Table 3.38). However, this is not necessarily significant given that Summertime would not be the only factor impacting on a decision as to whether or not to go out in the evening. Whether there was Summertime in operation or not other events happening, available money, transport and weather would also be factors that could influence behaviour patterns. One needs to resist the temptation to see clear links between Summertime and certain behaviour without factoring in or considering possible other causal variables. However, it is

noticeable that more male respondents than female reported going out more often in the evening during Summertime at 45.4 per cent and 32.1 per cent respectively.

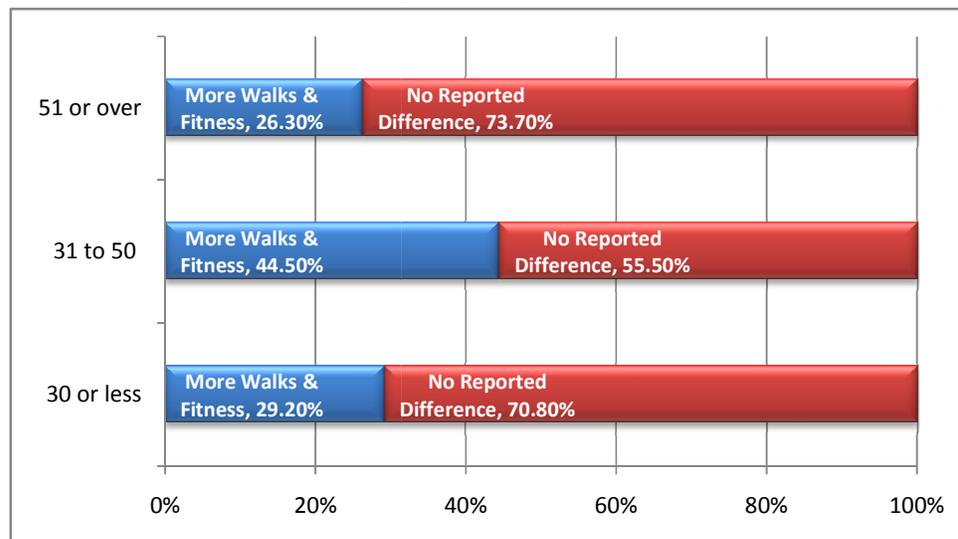
I went out more during the evening during Summertime	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	308	45.4%	234	32.1%	542	38.5%
Neither Agree nor Disagree	98	14.5%	123	16.8%	221	15.7%
Disagree	272	40.1%	373	51.1%	645	45.8%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Fewer still respondents stated that they went out more for fitness activities during the evening in Summertime but of the 26.5 per cent of respondents who did report having done so there was a greater proportion of male than female respondents, 33.3 percent and 20.1 per cent respectively (Table 3.39). Again these results need to be qualified in that the question asks whether the respondent went out *more* for such activities. For those regularly involved in such activities then the continuation of them and to some degree the extension of time involved in the activity would not be reflected in these results.

I went out more for walks or fitness activities such as jogging in the evening during Summertime	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	226	33.3%	147	20.1%	373	26.5%
Neither Agree nor Disagree	201	29.6%	279	38.2%	480	34.1%
Disagree	251	37.0%	304	41.6%	555	39.4%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Figure 3.14 shows that of those who did report an increase in the amount of involvement in such activities during Summertime, 44.5 per cent, were in the age group of 31 to 50 years old. Any encouragement in such behaviour for people of this age group can only viewed as being positive. Again, caution is advised in interpretation as the numbers represented by these percentages are not necessarily large.

Figure 3.14: Proportion of those doing more evening walks and fitness activities – by Age Group



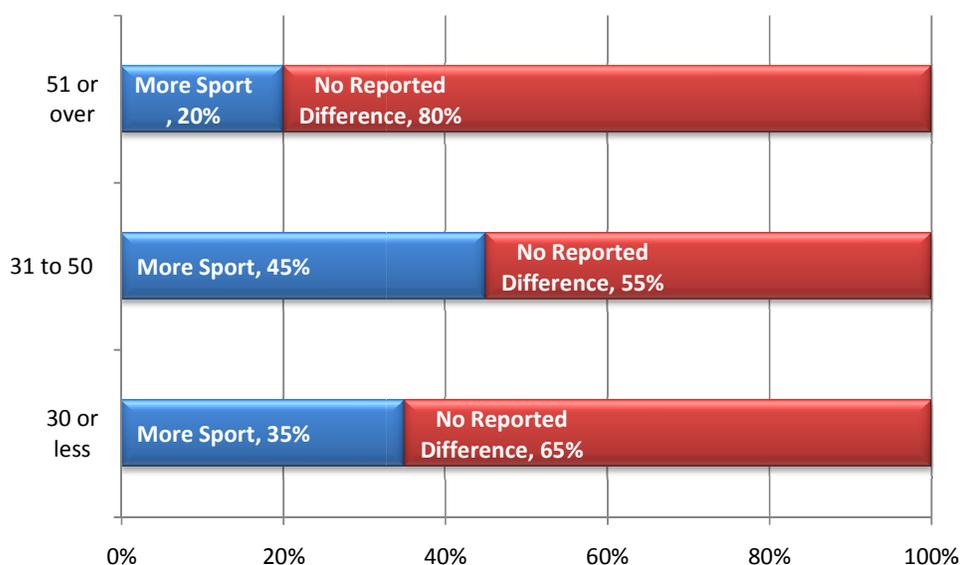
Respondents were then asked whether or not they did MORE sporting activities during the evening during Summertime. In fact, to be able to agree that this was the case and that the amount of sporting activity that one was involved in necessitated that the respondent was already engaged in some sporting activity. It also only asked about increases in such activities in the evening. This is why the results show such high returns in relation to those to whom the question was not applicable.

Nevertheless, the results in Table 3.40 show that 18.5 per cent of all respondents did report such an increase in their sporting activities during the evening during Summertime with over twice as many males than females reporting on having done so.

I did MORE sporting activities during the EVENING during Summertime	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	175	25.8%	85	11.6%	260	18.5%
Neither Agree nor Disagree	91	13.4%	98	13.4%	189	13.4%
Disagree	266	39.2%	300	41.1%	566	40.2%
Not Applicable	146	21.5%	247	33.8%	393	27.9%
Group Total	678	100.0%	730	100.0%	1408	100.0%

However, one should remember that many more female respondents had reported doing more housework at this time. Again, looking at the profile of those respondents engaged in such an increase in their sporting activity during the evening in Summertime the greatest proportion, 44.6 per cent were in the age group 31 to 50 years old (Figure 3.15).

Figure 3.15: Proportion of those doing more evening sport – by Age Group



The study now turned to questions relating to children and any perceptions on the part of the respondents on their interaction and scale of activities with the children in the household. Firstly, there is a need for some result qualification. To generate these results only those respondents who identified during the question on Household Composition that was at least one child in the household were included in the data generation. Secondly, it was not necessarily the case that the adult selected in the sampling process was in any way responsible for the children living in the same household; these would have been recorded in the category of Not Applicable in the questionnaire and they have also been filtered out at the data generation phase.

The results show that a lot of children would have benefited in this way as 37.4 per cent of all respondents stated that they did go out more often in the evening with their children during Summertime. Perhaps more importantly the results show that more male respondents than female, 39.9 per cent and 35.1 per cent respectively, indicated that this was the case (Table

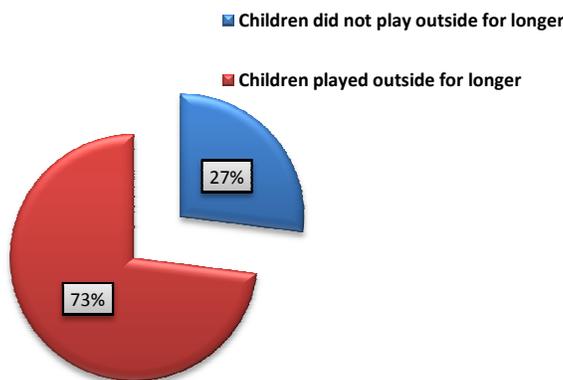
3.41). This appears to reinforce the idea that the extra daylight was an encouragement for men to take children out more.

Table 3.41: Went out More with children in the Evening (by Sex)						
I went out more in the evening with the children during Summertime	Sex				All Respondents in Profile	
	Male		Female			
	No.	%	No.	%	No.	%
Agree	138	39.9%	129	35.1%	267	37.4%
Disagree	208	60.1%	239	64.9%	447	62.6%
Group Total	346	100.0%	368	100.0%	714	100.0%

As was said before, this is positive in itself as the proportion of respondents who were quite happy at home with the children would disagree with statement as it was worded while those respondents who had always gone out with the children in the evening would also disagree if they had not increased the amount of time that they went out with the children as it would not be either feasible or possible to go out more with the children than they already did. With this in mind the result as it stands is quite positive as it indicates that a significant number of children got to go out more in the evenings during Summertime.

Children usually play outside for longer during summer. However Figure 3.16 shows that although 72.7 per cent of the relevant respondents stated that this was the case, it would be reasonable to assume that this would be expected regardless of the implementation of Summertime.

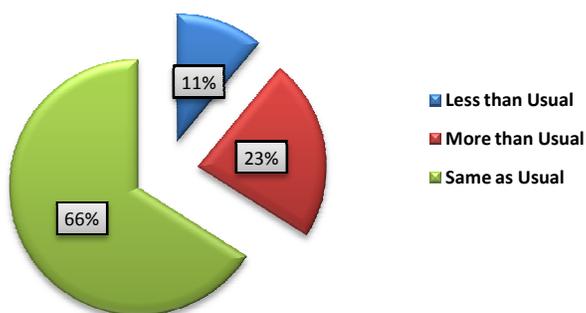
Figure 3.16: The Children played outside for longer during Summertime



However, it is also reasonable to assume that if children are playing outside for longer anyway because it is lighter in the evening, then the fact that the available light in the evening was extended by one hour would mean that many would play outside for longer as a consequence. Therefore, it can be deduced from the data that Summertime did mean that many children were involved in an extended period of play during the period of its implementation.

The effect of Summertime on the studying habits of children appears to have been generally positive as reported by 66 per cent of the respondents who stated that their children studied the same amount as usual, while 23 per cent said that their children studied more during this period (Figure 3.17). This supports the statements made by some of the representatives of senior teaching staff in the FGDs that there was evidence that children were studying more and also extending their after school tuition. The reasons given for this was that because it was lighter in the evenings it meant that there would both be time and light left for other activities after studying for longer and that they would not have to go home in the dark after extended studies. Given that the implementation of Summertime began at the lead up to the exam season this can be viewed as being a positive implementation benefit.

Figure 3.17: Amount of Studying done in Summertime



Respondents were also asked about any noticed effects on family conflict during the period of Summertime. If there was any suspicion that the implementation of Summertime might lead to an increase in family conflict then the results clearly negate that hypothesis with a mere 6 per cent of respondents feeling that it did and an overwhelming majority of almost 84 per cent feeling that it did not (Table 3.42). For clarity it should be noted that those respondents to whom this question was not applicable were not included in the analysis.

Table 3.42: Family conflicts		
There was an increase in the incidence of family conflicts during Summertime	No.	%
Agree	80	6.0%
Don't Know	138	10.3%
Disagree	1116	83.7%
Group Total	1334	100.0%

In other countries there has been a noticeable decrease in the rate of certain crimes during the period of Summertime and, as mentioned in Chapter One of this report, criminals tend to favour longer hours of darkness in the evening. For this study almost 12 per cent of all respondents felt that there had been a general decrease in crime in their area during the period of Summertime but the majority of respondents, almost 57 per cent, did not know (Table 3.43). This is not surprising as most people do not spend their time monitoring crime. However, it will be interesting to use this data at a later date when the relevant crime statistics for this period become available.

Table 3.43: Decrease in Crime		
In my opinion there has been a general decrease in the incidence of crime in my area	No.	%
Agree	167	11.9%
Don't Know	801	56.9%
Disagree	440	31.3%
Group Total	1408	100.0%

This section looks at the responses regarding alcohol consumption during the period of Summertime. For the purposes of analysis respondents that said that they did not normally drink alcohol, have been filtered out of data. The responses show that for those that do normally drink alcohol the majority of them, 84.2 per cent, did not feel that their consumption of alcohol had increased during the longer evenings of Summertime.

Table 3.44: Increase in Personal Alcohol Consumption		
My consumption of alcoholic drinks increased in the evening during Summertime	No.	%
Agree	42	5.3%
Neither Agree nor Disagree	83	10.5%
Disagree	664	84.2%
Group Total	789	100.0%

There were similar results pertaining to the responses given by the respondents regarding the alcohol consumption of others in their household. Again, those who stated that the question did not apply have been filtered out of the analysis while the number of respondents has increased because although some may not consume alcohol themselves, others in their household might do so. The responses indicate a slight increase to the belief that the alcoholic consumption other members of the household increased during Summertime (Table 3.45). Overall it would seem that Summertime had no significant role in increasing the consumption of alcohol. What has not been measured is whether it played any role in decreasing alcohol consumption in the same period given that we have seen that many respondents were engaged in other activities during this period of longer and lighter evenings.

Table 3.45: Increase in Alcohol consumption by Other members of the household		
The consumption of alcoholic drinks by other members of the household increased in the Evening during Summertime	No.	%
Agree	34	3.8%
Don't Know	80	8.9%
Disagree	780	87.2%
Group Total	894	100.0%

3.11 Physical Effects

Some of the most widely anticipated, real and not so real effects of Summertime have been the effect on sleep patterns. In reality the time shift in Mauritius with the implementation of Summertime and its probable effects on the circadian rhythms are likely to be relatively minor given that the difference is only around one hour from that of the usual period of daylight in summer. Most of the literature on the subject deals with the effects of major shifts in daylight patterns such as those experienced in the Northern hemisphere where the timing of the onset of night can alternate between 16.00 and 23.00 or later according to the season.

The first question on this subject in the fieldwork study was based upon any noticed effects on sleeping behaviour. In general, many of the respondents felt that they found it more difficult to go to sleep at their usual time during Summertime (Table 3.46). There was little difference in responses between the sexes. However, what is not known is the bias affecting the results to this question by those that would normally go to bed at an early hour, which, during Summertime, would be difficult given the later hour of sunset.

Table 3.46: Difficulty sleeping at Normal time		
During the period of summertime I found it more difficult to go to sleep at the time I usually do	No.	%
Agree	1009	71.7%
Neither Agree nor Disagree	154	10.9%
Disagree	245	17.4%
Group Total	1408	100.0%

Of those respondents stating that during Summertime they had trouble going to sleep the greatest proportion were those aged between 31 and 50 years older while fewer of those respondents in the younger or older age groups felt this was an issue (Table 3.47).

Table 3.47: Age of Respondents Finding Difficulty in Sleeping During Summertime		
Age Groups	Agree	
	No.	%
30 or under	230	22.8%
31- 50	468	46.4%
51and over	311	30.8%
Group Total	1009	100.0%

To fully analyse the significance of these responses it would be necessary to know the usual time that each respondent went to bed and the time that they went to bed during Summertime. Therefore, any study on events such as this should include some form of diary keeping by a group of respondents during the whole period of implementation.

As many people were finding it difficult to go to bed then it is likely that a similar proportion of respondents would have found it harder to get up in the morning. This is exactly what is shown in the results, although the proportion of those saying that they found it more difficult to get up increases to 76.1 per cent (Table 3.48). This is not a surprising result as the longer, darker mornings would make it difficult for people unaccustomed to rising before the dawn to make the adjustment.

Table 3.48: Harder to get up in the Morning		
During Summertime I found it harder to get up in the morning	No.	%
Agree	1071	76.1%
Neither Agree nor Disagree	116	8.2%
Disagree	221	15.7%
Group Total	1408	100.0%

In support of what was reported by the participants in the FGDs, less than half of the respondents, to whom the question applied, 46.6 per cent, felt that Summertime had a negative effect on the performance of their children at school. This could be explained by the 668 respondents that reported that Summertime had an effect on the sleeping habits of children in their households (Table 3.49).

Table 3.49: Effect on sleeping habits of children		
Summertime had an effect on the sleeping habits of the children in the house	No.	%
Agree	668	84.5%
Disagree	123	15.5%
Group Total	791	100.0%

According to the FGD discussions on this point the senior teaching staff involved stated that they did not think that there was any real effect on school performance, particularly and the introduction of Summertime came at a time when school was winding down for the long summer holiday. It might well be the case that on the return to school in late January that there was some observable effect of going to bed late and getting up later impacting on school performance. Nonetheless, the combination of FGD comments and the results does not indicate that there was any real measurable effect of the implementation of Summertime and the performance of students at school (Table 3.50).

Table 3.50: Perception of Effect of Summertime on Student Performance		
Summertime had a negative effect on the performance of my children at school	No.	%
Agree	298	46.6%
Disagree	341	53.4%
Group Total	639	100.0%

As to general health issues some questions were asked to ascertain the perceptions of respondents regarding their general physical wellbeing. It has to be said that people are often poor judges of their own health and wellbeing but these results are intended only to provide an overall picture rather than hard medical data.

The findings show that there is a split between those respondents who felt the same or felt less fit, 48.3 per cent and 47.3 per cent respectively and a small group of respondents who felt more fit, 4.4 per cent. There was a higher proportion of positive responses from male than female respondents; for example, 5.8 per cent of male respondents reporting feeling more fit during Summertime compared to 3.2 per cent of female respondents and 49.7 per cent of female respondents reported feeling less fit compared to 44.7 per cent of male respondents (Table 3.51).

Table 3.51: Feeling of fitness (by Sex)						
Over the Summertime period compared to the same period last year	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
I felt fitter	39	5.8%	23	3.2%	62	4.4%
I felt the same	336	49.6%	344	47.1%	680	48.3%
I felt less fit	303	44.7%	363	49.7%	666	47.3%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Of the group of respondents who reported feeling less fit in Summertime over three quarters of them were over the age of 31 and 30.2 per cent were aged 51 years old or over (Table 3.52).

Table 3.52: Felt less fit (by Age Group)		
Age Groups	No.	%
30 or under	155	23.3%
31- 50	310	46.5%
51 and over	201	30.2%
Group Total	666	100.0%

A similar question was asked about feelings of tiredness during Summertime and elicited similar responses both in general and in the profile of responses by age group. More of the older respondents reported feeling more tired but there was also a concentration in the middle age group of 46.8 per cent of those who had stated that they felt more tired during Summertime (Table 3.53 and 3.54).

Table 3.53: Feeling of Tiredness						
Over the Summertime period compared to the same period last year	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
I felt less tired	28	4.1%	21	2.9%	49	3.5%
I felt the same	338	49.9%	316	43.3%	654	46.4%
I felt more tired	312	46.0%	393	53.8%	705	50.1%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Table 3.54: Felt More tired (by Age Group)		
Age Groups (simplified)	No.	%
30 or under	168	23.8%
31- 50	330	46.8%
51 and over	207	29.4%
Group Total	705	100.0%

As many of the respondents appeared to be feeling less fit and more tired it might be safe to assume that either they slept more because of this or, conversely, they felt less fit and more tired because they were sleeping less. As for the sleep patterns just 4.3 per cent of all respondents stated that they slept more during Summertime with little differentiation in the results between male and female respondents.

The possible reason for feeling more tired is not necessarily an effect of Summertime or the Circadian Rhythm interference but the fact that the group of respondents who stated that they felt more tired also generally reported that they had slept less, although no details are given by respondents as to the reason for their lack of sleep. Table 3.55 shows the sleeping pattern of just those respondents who reported that during Summertime they felt more tired and we see that 88.8 per cent of this group of respondents reported that they had slept less during the same period that they felt more tired.

Table 3.55: Any changes in sleep pattern (Respondents who reported feeling More tired only)		
Was there any change in the amount you slept during summertime?	No.	%
I slept more	19	2.7%
I slept the same amount	60	8.5%
I slept less	626	88.8%
Group Total	705	100.0%

In addition, of those respondents who reported that they felt less fit during the period of summertime some 87.7 per cent of them also stated that they slept less during this period.

Table 3.56: Any changes in sleep Pattern (Respondents who reported feeling Less fit only)		
Was there any change in the amount you slept during summertime?	No.	%
I slept more	26	3.9%
I slept the same amount	56	8.4%
I slept less	584	87.7%
Group Total	666	100.0%

It would appear that the feeling of less fitness and extra tiredness was not a question of the physical impact of Summertime but the secondary effects of not sleeping well in what was a long, hot and humid summer. It would also appear that a large proportion of the respondents also changed the time that they went to bed during Summertime. Although the question does not determine if the time change was from earlier to later or from later to earlier it is perhaps reasonable to assume that it would have been the former given the extended period of daylight into the evening. Over three quarters of all the respondents, 75.4 per cent, reported that during this period they changed the time that they went to bed with little differentiation between male and female respondents (Table 3.57).

Table 3.57: Change in time respondents went to bed (by Sex)						
Was there any change in the time that you went to bed during Summertime	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Yes	508	74.9%	554	75.9%	1062	75.4%
No	157	23.2%	156	21.4%	313	22.2%
Don't know	13	1.9%	20	2.7%	33	2.3%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Isolating those respondents with the following profile: “I felt less fit during Summertime & felt more tired during Summertime & slept less during Summertime” some 94.7 per cent report that there was a change in the time that they went to bed during the period of Summertime; most likely later than usual (Table 3.58).

Table 3.58: Change in time respondents went to bed (Respondents who felt less fit during summertime & felt more tired during summertime & slept less during summertime only)		
Was there any change in the time that you went to bed during Summertime	No.	%
Yes	393	94.7%
No	20	4.8%
Don't know	2	.5%
Group Total	415	100.0%

All of the above should not be surprising as the anecdotal evidence and the available literature point to a pattern whereby people change their habits to suit the time change; or rather the change in the pattern of daylight. For example, during Summertime many people are out longer, they eat later and they sleep later. To test this, the questionnaire contained a question on the time that people ate their evening meal. The results show that almost three quarters of the respondents reported a change in the time that they ate their meals during Summertime giving some evidence that the pattern described above might be a factor in some of the difficulties people reported with Summertime (Table 3.59).

Table 3.59: Change in meal times		
There was a change in the time that I ate meals during Summertime	No.	%
Agree	1049	74.5%
Neither Agree nor Disagree	164	11.6%
Disagree	195	13.8%
Group Total	1408	100.0%

The last two questions in this particular section of the questionnaire concentrated on adjustment to the lighter evenings and darker mornings that were a defining factor of Summertime in Mauritius. A greater proportion of male than female respondents felt that they made the adjustment to the lighter evenings quickly, 44.4 per cent and 36 per cent respectively with the overall proportion at less than half, 40.1 per cent (Table 3.60).

Table 3.60: Made physical adjustment to the lighter Evenings (by Sex)						
I feel that I made the physical adjustment to the lighter evenings quickly after Summertime began	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	301	44.4%	263	36.0%	564	40.1%
Neither Agree nor Disagree	133	19.6%	182	24.9%	315	22.4%
Disagree	244	36.0%	285	39.0%	529	37.6%
Group Total	678	100.0%	730	100.0%	1408	100.0%

The respondents appeared to find it more difficult to make the adjustment to the darker mornings as just 25.4 per cent of all of the respondents reported that this was the case with 30.7 per cent of male respondents stating that they believed they made the adjustment to dark mornings quickly as compared to 20.4 per cent of female (Table 3.61).

Table 3.61: Made physical adjustment to darker Mornings (by Sex)						
I feel that I made the physical adjustment to the darker mornings quickly after Summertime began	Sex				Group Total	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	208	30.7%	149	20.4%	357	25.4%
Neither Agree nor Disagree	129	19.0%	147	20.1%	276	19.6%
Disagree	341	50.3%	434	59.5%	775	55.0%
Group Total	678	100.0%	730	100.0%	1408	100.0%

3.12 Approval of Continuation of Summertime

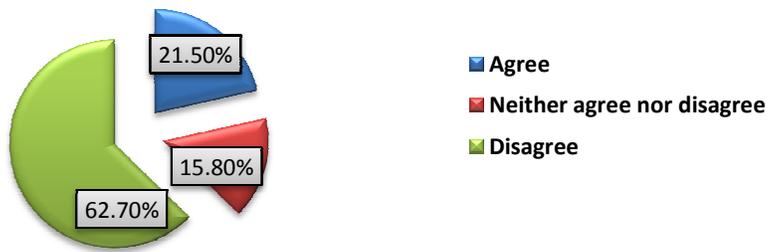
This section focuses on whether or not respondents were satisfied with their experience of the implementation of Summertime and whether or not their experiences had led to a decision as whether or not they would approve of a continuation of its implementation. To begin, we can look at some gross results regarding the general questions posed on the implementation of Summertime in Mauritius.

The most over-riding question is perhaps how many respondents were contented or not with the way that Summertime was implemented and the way that this impacted on their lives and lifestyles. The first finding is that a minority of respondents, 21.5 per cent, agreed that the introduction of Summertime was a positive thing and with a greater proportion of male than female respondents thinking this was so at 27 per cent and 16.4 per respectively (Table 3.62).

Table 3.62: Introduction of Summertime a Positive Thing (by Sex)						
In general the introduction of Summertime has been a positive thing	Sex				All Respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	183	27.0%	120	16.4%	303	21.5%
Neither Agree nor Disagree	91	13.4%	131	17.9%	222	15.8%
Disagree	404	59.6%	479	65.6%	883	62.7%
Group Total	678	100.0%	730	100.0%	1408	100.0%

This result is highly visible in Figure 3.18. However, things are not necessarily as simple as they appear at first sight and further investigation reveals some interesting nuances to the reaction to Summertime.

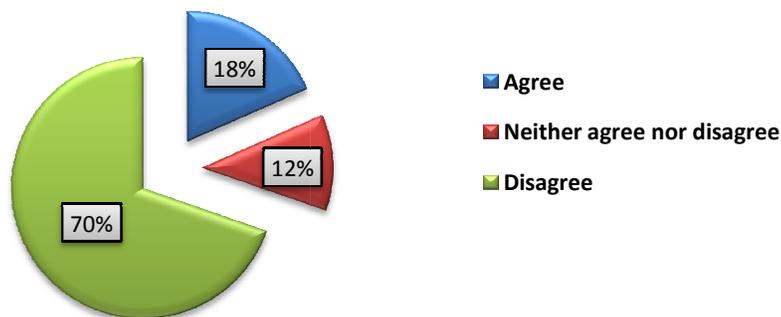
Figure 3.18: Introduction of Summertime is a positive thing



There are similar results with regard to the responses to the question on whether or not Summertime should be repeated. Regarding a repeat implementation in the fashion that it was this time some 69.7 per cent of respondents disagreed (Table 3.63).

Table 3.63: Summertime to be repeated in the same fashion (by Sex)						
Summertime should be repeated every summer as it was implemented this year	Sex				All respondents	
	Male		Female		No.	%
	No.	%	No.	%		
Agree	154	22.7%	105	14.4%	259	18.4%
Neither Agree nor Disagree	72	10.6%	96	13.2%	168	11.9%
Disagree	452	66.7%	529	72.5%	981	69.7%
Group Total	678	100.0%	730	100.0%	1408	100.0%

Figure 3.19: Summertime should be repeated in the same fashion

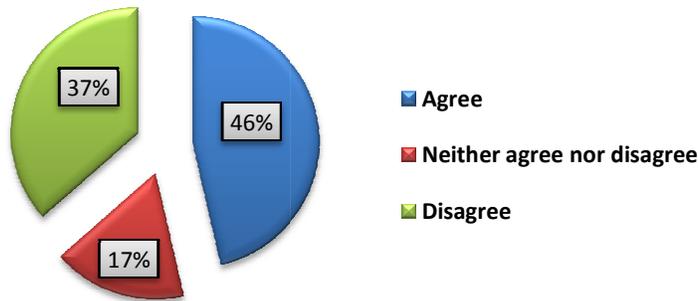


This was also the case as to whether or not respondents thought there should be an extended trial of Summertime over a longer of years, on which point 64.4 per cent of respondents disagreed.

Table 3.64: Trial repeat for Longer period of years						
Summertime should be repeated on a trial basis for a longer number of years starting with the coming summer	Sex				All Respondents	
	Male		Female			
	No.	%	No.	%	No.	%
Agree	162	23.9%	121	16.6%	283	20.1%
Neither Agree nor Disagree	94	13.9%	124	17.0%	218	15.5%
Disagree	422	62.2%	485	66.4%	907	64.4%

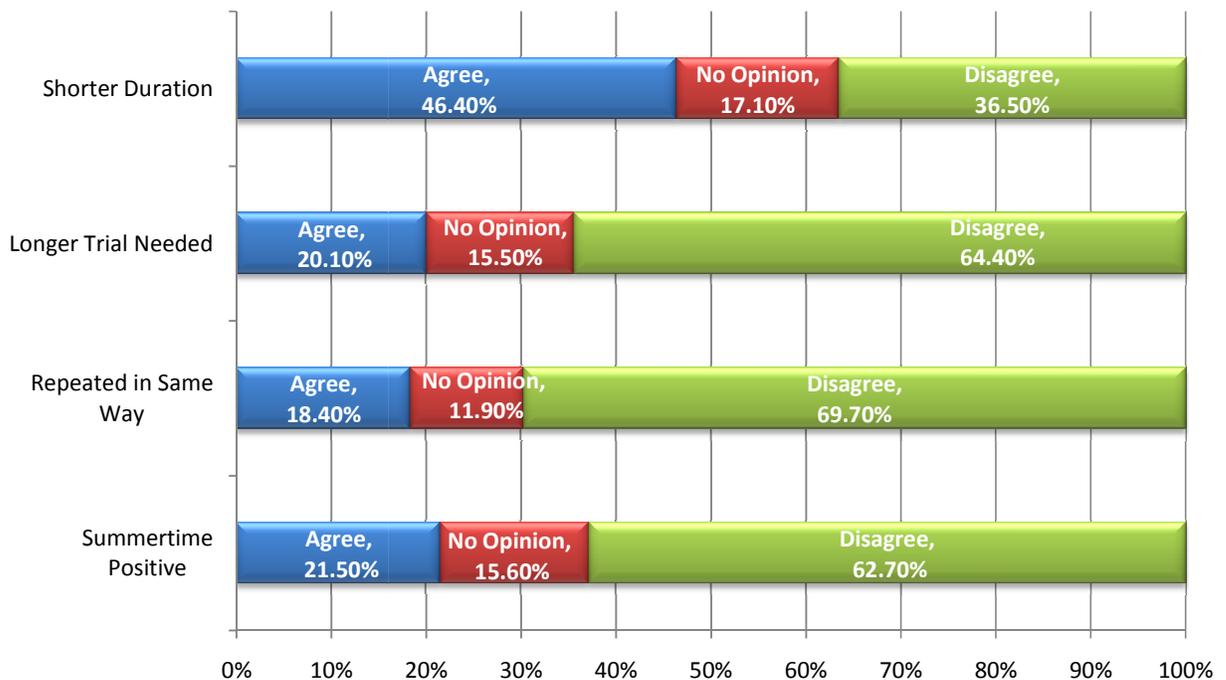
However, there was a more positive reaction to the suggestion that if Summertime is to be repeated, then it should be for a shorter duration. 46.4 per cent of all respondents agreed with 17.1 per cent undecided. Therefore just 36.5 per cent of all respondents were clearly in disagreement with this proposal (Table 3.20).

Figure 3.20: If Summertime is repeated, it should be for a shorter period of time



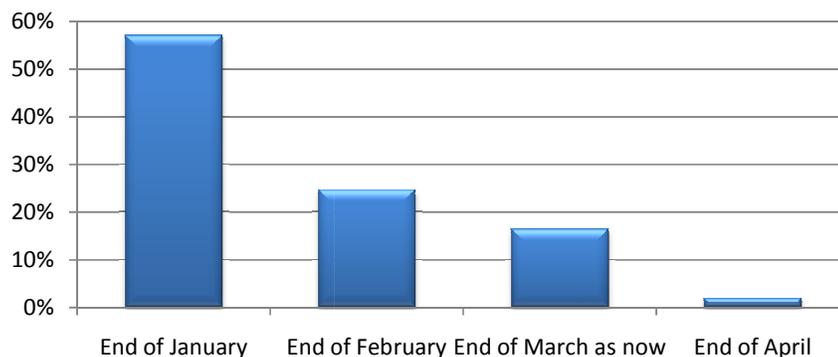
This is evidence of what the results showed; that the return to school in the New Year is really the time when people resent having to get up and sort themselves out during the dark mornings. But the longer evenings are enjoyed in the long holiday period that, in many ways begins at the end of October for many of the older school children who are at home revising for exams and ends at the beginning of the new school term in January.

Figure 3.21: Summary of opinions of Summertime



Respondents were also queried on when they would like Summertime to end if the exercise was to be repeated. The majority of respondents, some 57 per cent would like Summertime to end at the end of January (Figure 3.22).

Figure 3.22: When Summertime should end?



The general understanding, use and approval of Summertime shows clear difference between respondents in the different personal income groups. Those respondents in the lowest income group showed an approval percentage of 19 per cent but this rises through 22 per cent of those in the middle income group to 38.5 per cent of respondents in the highest income group. This agrees with the results that were presented earlier on the use of the extra hour of daylight during Summertime and how those respondents from the upper income groups were more likely to use this time effectively and more likely to enjoy their use of this time. Similar results were obtained from the respondents as to repeating Summertime either permanently or on a long trial basis with the higher the personal income the more likely the response was positive.

Table 3.66: In general, the introduction of Summertime has been a positive thing - By Personal Income Group

	Personal Monthly Income Group								All Respondents	
	Rs5,000 or less		Rs5,001 - Rs30,000		Rs30,001 or more		No Response		No.	%
	No.	%	No.	%	No.	%	No.	%		
Agree	138	19.3%	128	22.0%	35	38.5%	2	9.1%	303	21.5%
Neither Agree nor Disagree	123	17.2%	89	15.3%	7	7.7%	3	13.6%	222	15.8%
Disagree	453	63.4%	364	62.7%	49	53.8%	17	77.3%	883	62.7%
Group Total	714	100.0%	581	100.0%	91	100.0%	22	100.0%	1408	100.0%

Table 3.67: Summertime should be repeated every summer as it was implemented this year- By Personal Income Group

	Personal Monthly Income Group								All Respondents	
	Rs5,000 or less		Rs5,001 - Rs30,000		Rs30,001 or more		No Response		No.	%
	No.	%	No.	%	No.	%	No.	%		
Agree	120	16.8%	109	18.8%	29	31.9%	1	4.5%	259	18.4%
Neither Agree nor Disagree	97	13.6%	60	10.3%	9	9.9%	2	9.1%	168	11.9%
Disagree	497	69.6%	412	70.9%	53	58.2%	19	86.4%	981	69.7%
Group Total	714	100.0%	581	100.0%	91	100.0%	22	100.0%	1408	100.0%

What becomes apparent through these results is that there is some confusion over Summertime with many respondents stating that they are not happy with it although they are clearly also enjoying the opportunity of longer, lighter evenings to enhance their quality of life. There is also a difference across personal income groups with those in the higher brackets seeming to enjoy Summertime more and, therefore, more likely to agree to its repeat or permanent implementation in some form. Where the results are unambiguous is that people would generally prefer the period of Summertime to end earlier rather than to continue to the end of March if the scheme is to be repeated.

Chapter Four - Conclusion

4.1 Conclusion

The enacting of Daylight Saving, or Summertime as it is referred to in Mauritius, is a simple concept with clear benefits in mind. Longer and lighter evenings during the period of summer bring noted social and economic benefits for individuals, households, business and, by extension, the country. However, the concept of time itself is complex and most people never consider time other than to check what time of day it is. For many in Mauritius they do not even do this given that their activity markers during the day are based on cues from the sun rising and the sun setting and the activities of others around them such as children arriving home from school or the start of their favourite programme on the television. For others it is the regular announcement of the time of day on the radio that is their reference. It is easy to underestimate the role that radio plays in the daily lives of Mauritians.

Investigations conducted as part of the background to this study made it clear that in the period leading up to the introduction of Summertime in Mauritius there were many misconceptions about what exactly the process would be, what would be the likely effects and what the main motive was. Many ill-informed commentaries were published on the likelihood of there being major changes to people's lives because of the introduction of Summertime including potential health problems. In fact, the available literature makes it clear that there are few health problems that can be solely associated with Summertime and, in Mauritius, the change was minimal with just one extra hour of darkness in the morning exchanged for one extra hour of light in the evening.

The issue was clouded by the fact that the social benefits seem to have been little mentioned in the lead up to the introduction of Summertime. Inadequate stress was placed on the social and health benefits of extended daylight in the evening while it was perhaps over-stressed that the implementation of Summertime was primarily, and in some people's eyes, solely, to assist in the reducing of energy expenditure by encouraging less use of electricity.

As evidenced in this report this gave a one dimensional image to Summertime, making it appear to some that it was being imposed simply to save electricity. In reality, this report highlight the many social and physical benefits that pertain to the use of daylight saving with many people reporting an increase in physical activity, longer periods spent in the evening with children and family and the chance to enjoy the remains of the day after completing work or education as there was still daylight available rather than trudging home in darkness.

Unfortunately, from the scientific aspect, the opportunity of implementing an appropriate *pre* and *post* event scientific study on opinion and presumption was not taken before the introduction of Summertime. This was an opportunity missed and any future implementation of Summertime should include such a study that would also have as part of the methodology a diary keeping exercise by a sample of the population during the period of implementation.

Nevertheless, the implementation of this full scale social study did come up with some key findings regarding the experiences and opinions of a representative sample of the Mauritian population regarding Summertime.

The Focus Groups held with senior representatives of primary and secondary school teachers showed that, contrary to fears expressed by many leading up to Summertime, there was little effect on school activities or student performance. The actual period of implementation coincided, to a large part, with the main school summer holiday, making the lighter evenings a bonus to those enjoying their vacation and, where some difficulty with coping with Summertime did arise, was on the return to school in the first term of 2009 when some did not appreciate having to rise out of bed and start out for school while it was still dark. However, many of the same people did appreciate coming home to a long light evening, giving them time to enjoy outside activities for longer.

Nonetheless, the overall effect was positive in that there was more time available in the evenings for more outdoor and recreational activities and this was particularly appreciated by girls and young women who could feel safer about going home in the evening when it was still light. This aspect of greater safety for women in the evening was a point that was clearly stressed.

Even upon the return to school in the new term some initial adjustment meant a slight increase in lateness but there was no real noticeable change in lateness or absence with the pattern of school activities quickly adjusting to normal. The advantages of the later evenings were also enjoyed by members of staff who found themselves with time and daylight to enjoy after school.

This was also the case for many working people who, ordinarily would return home just before dark set in but who now, during the period of Summertime, had a period of daylight to enjoy at the end of the working day. The results show that a significant proportion of people put this to good use in a way that created extended benefits such as with extra input with children and other family members and physical activities outside of the home.

In the main body of the study some of the key issues were around awareness of Summertime. It was noted that the information campaigns on Summertime, did not appear to introduce or adequately reinforce either the reasons for introducing Summertime or the social and leisure benefits that were likely to be associated with it. If the people had been more adequately informed about such benefits then it is more likely that they would have been more adequately prepared to make the best use of the longer, lighter evenings. However, it should be remembered that this was the first implementation period of Summertime and it is unlikely that people will fully adapt and prepare themselves for the first occurrence. It is likely that after consecutive implementation periods, where it becomes established as part of the yearly routine, then people will be more prepared and able to better use and appreciate the associated benefits of Summertime. A single event trial is never likely to produce overly positive results given peoples' general resistance to change however small it may be.

The final word on the necessity of good and effective promotion is that more than one quarter of respondents stated that they did not know why the Government had decided to implement Summertime. Some were also unaware of what the effects would be except that it would be lighter in the evenings; the dark mornings came as a surprise.

It is quite clear from the results that the majority of those respondents aware of the implementation of Summertime were made aware through the use of the radio and television and this again indicates the opportunity missed to convey the main social benefits so that

people were looking forward to the introduction of Summertime rather than dreading its arrival. Good effective information was the key.

Only around half of the respondents who were aware of Summertime in advance were not in favour of it so it would not have been difficult to increase the number of those looking forward to its arrival.

Some people found it difficult to adapt but, in reality, there was not really that much to adapt to given that there was a shift of only one hour and one can suspect the role of rumour and hearsay at play here. What is clear though is that the later mornings were more problematic later in the season and that it might well be that Summertime would be more welcomed, and therefore more socially effective, if it lasted for a shorter period of time. The results do show that, in fact, over half of all respondents did enjoy having the extra daylight available.

The results indicate a pattern relate to age in that older respondents were generally less likely to be positive about the phenomenon. However, deeper investigation of the results showed logical reasons underpinning such reaction together with other factors that were not necessarily linked to Summertime *per se*. For example, of those respondents expressing an incidence of feeling less fit and more tired they were, in fact, the same respondents who were going to bed later in the evening. However, the blame tended to be put on Summertime rather than their changed sleep routine. Notwithstanding such results, the general picture is that a large proportion of respondents of all ages were engaged in activities during the longer evenings that are linked to fitness and health and that this was particularly so with those in the middle age group, aged roughly from 30 to 50 years old.

Apart from leisure activities the corresponding effects, if any, on work were investigated and the overall results showed that there was little impact on the social activities related to work, such as absence or lateness, but that many people enjoyed being able to come home in the daylight of the extended evening, particularly women; but, not necessarily enjoying getting up in the dark of the morning.

In summation, it would appear that the approach to the implementation of Summertime could have been better utilised to inform people of the social benefits of longer evenings with suggestions on how to best utilise such time. There were no real negative effects reported that can be directly linked to Summertime other than some people not liking having to get out of bed in the dark.

Some points as to how to better implement Summertime in a way that is more suited to the majority of the people of the country are presented in the following section, but in short, it would seem as if there is a repeat of Summertime it should be for a shorter duration and with better public information on its social benefits.

4.2 Policy Implications

It is clear from examples of daylight saving being implemented in other countries that there is usually resistance to any change that affects people's personal routines. Mauritius is no different and although there have been recognisable benefits associated with implementing Summertime, as evidenced by the results of the study, some people remain unconvinced as to its long term viability. In fact, implementing such a radical change for just one trial period was ambitious in that it was unlikely that people would make the adjustment quickly or make the necessary preparations for them to make the best use of the time available to them. It would also appear that what information campaigns were mounted were not successful in putting a clear message across, particularly about the social benefits of Summertime. If Summertime is permanent, or is repeated for a longer period of time as a trial, then it is more likely that most people will make these adjustments will most likely become attuned to making the best use of Summetime.

If Summertime is not made permanent then at least the trial period should be extended to sufficiently long period period of time so that there is an ability for people to make adjustments and preparations.

For most people the negative aspect of Summertime is the darker mornings but even that, for most of them, this is only really problematic in the latter part of the implementation period. There are several reasons for this, not least being the beginning of the new school term in January. Therefore, it is quite likely that Summertime will be viewed and experienced more positively by a greater number of people if it were to end at an earlier date than the current end of March. The results of the study show that ending Summertime at the end of January would be more in line with peoples' wishes as there would not be the darker mornings once schools had resumed in the new term.

It is also clear from the results of this study that people need to be both prepared for the effects of Summertime and to be informed of the reasons for its implementation, the benefits and the possible drawbacks. This can only be achieved by a good quality and effective information campaign. Given that the majority of people stated that they relied on the radio and television for information on the implementation of Summertime, these media should be the predominant means of supplying information and education on this subject. Written media can also be used but should not be relied upon to adequately convey the information to the maximum number of people in the country.

It would be beneficial, if Summertime is implemented in 2010 that a full and informative information campaign in Kreol, English, French and other languages be disseminated using the radio and television as the primary media backed up with information in the written press and leaflets on all aspects pertaining to the implementation of Summertime; what it is, how it works, the benefits, the drawbacks, the myths and fallacies and the opportunities pertaining to its implementation. Such campaigns should concentrate on stressing the social benefits of Summertime and give advice as to the beneficial activities that people can become involved in during Summertime.

Another key finding of this study was that a large number of people did use the longer and lighter evenings for social, leisure and health based activities. Such activities should be both supported and encouraged as it is a key component of encouraging a healthier lifestyle in country where the warning signs of non-communicable diseases, quite often linked with poor exercise, are becoming increasingly prevalent. In this respect it would be beneficial if all public bodies and services encouraged and promoted the continuation and development of the use of longer and lighter evenings during the period of Summertime for exercise and sport

activities by extending and adapting the opening hours of public facilities and by initiating new activities and events that will enhance social, leisure and health and fitness related activities for the maximum number of people. This would fit with the concept of *Mauritius Ile Durable* and would also encourage increased health and efficiency and an increase in the market for sports and leisure goods for local consumption.

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Appendix I - Technical Details of the Study

Sampling Methodology

The study population

This study was a full scale fieldwork based exercise that covered the whole Republic of Mauritius¹¹. The target population was all adults, that is persons aged 18 or above, living in private households in Mauritius and Rodrigues. To achieve this, the survey was conducted on a random sample of 1,440 respondents in the Republic of Mauritius comprised of some 1,200 respondents selected in the Island of Mauritius and 240 respondents in the island of Rodrigues.

A proportionate stratified sample was drawn using a three-stage sampling design. The sampling unit at the first stage was determined as the Primary Sampling Unit (PSU) in line with the PSUs defined and used officially by the Central Statistics Office in Mauritius. The secondary sampling unit was individual households and, finally, the third and final sampling stratum was the ultimate sampling unit, and this was a person aged 18 or above in a selected household and individually selected using a system whereby all adults in that household had the same chance of being selected.

In the Island of Mauritius, the first stage was the selection of eighty (80) PSUs. This was followed by the second stage where fifteen (15) households were selected from each of the 80 PSUs giving a total of 1,200 households. In the third stage one adult was selected from each of those households that had been selected at the second stage giving the required sample size of 1,200 individual adults. ($80 \times 15 \times 1 = 1,200$ individuals)

For Rodrigues, the same process was repeated using a selection of eight (8) PSUs at the first stage and thirty (30) households per PSU at the second stage with 1 adult selected from each household at stage three resulting in the required sample size of 240 individual adults. ($8 \times 30 \times 1 = 240$)

Detailed Methodology

¹¹ Except for Agalega

Island of Mauritius

Stage 1 - Selection of Primary Sampling Units (PSUs)

Sampling frame

The sampling unit at the first stage was the PSU. The Island of Mauritius is divided into 1,073 PSUs, obtained by grouping two or more Enumeration Areas containing approximately 300 households each. The sampling frame used to draw the sample of 80 PSUs in the first stage was a list of the 1,073 PSUs, which was obtained from the CSO.

Stratification and selection of PSUs

The PSUs were then stratified using the Relative Development Index (RDI). The RDI is published by the CSO and is a composite index that measures the relative achievement of sub-regions of the island in dimensions of development based upon the known characteristics of Village Council Areas. The RDI is computed according to the same methodology used for the compilation of the Human Development Index (HDI) of the United Nations Development Programme and is based on twelve variables encompassing housing and living conditions, literacy, education and employment. The RDI can take a value between 0 and 1, where index values near 0 indicate a lower developed area and index values nearer to 1 indicate the more developed areas.

For the purpose of the present study, the RDI was broken in 4 main groups (<0.65, 0.65 to <0.70, 0.70-0.75, and >0.75) and PSUs were cross-stratified by the four (4) RDI groups and the nine (9) geographical districts. In this way the island of Mauritius was broken down into 36 regional strata. The number of PSUs required to be selected from each stratum were allocated proportionately to the population size of the stratum; that is the total sample size was allocated between the 36 strata by proportionate allocation. The final selection of the PSUs within each stratum was by systematic sampling.

Stage 2 – Selection of households

Sampling frame

The construction of the frame for each of the eighty (80) PSUs constituted a sizeable part of the work of the survey. Prior to the sampling of the PSUs a listing process was carried out in each of the 80 selected PSUs whereby the details of household characteristics of all private households in the PSUs were systematically listed by field staff following visits to the properties concerned. The listing sheet used is attached at Annex 1.

The list obtained by this exercise served as the frame for the selection of the fifteen (15) households in each of the eighty (80) selected PSUs. The listing and sampling process are of a mammoth scale but absolutely necessary for ensuring that the sampling process is as rigorous as possible and is suitable for the needs of implementing the probability sampling of households in each selected PSU.

Selection of households

For each of the eighty (80) listings for the selected PSUs, the households were stratified by household size, expenditure class and ethnic group and following this a sample of fifteen (15) households was selected from each of the eighty (80) listings using systematic sampling techniques resulting in the sample size of twelve hundred (1,200) households.

Selection of individuals

Subsequent to the sampling procedure giving a selection of twelve hundred (1,200) households one individual from each selected household was identified through the use of the Kish Selection Grid. This is a technique whereby the interviewer was given simple and rigorous rules for selecting one person from each selected household based on a system so devised that all individuals belonging to the target population within a household had an equal chance of selection. This technique uniquely and scientifically determined the person to be interviewed and ensured randomness by eliminating at the final stage any interviewer bias as to the selection of the individual respondent.

Rodrigues

The same methodology was utilised for the island of Rodrigues where the number of PSUs selected at the first stage was eight (8) and the number of households selected in each PSU at the second stage was thirty (3) resulting in a sample of 240 individual adult respondents.

A qualitative component was used to ascertain any identified or presumed effects on education as is outlined in Chapter Three of the report.

Appendix II - Questionnaire

Region



MAURITIUS RESEARCH COUNCIL

CENTRE FOR APPLIED SOCIAL RESEARCH

Survey of Attitudes and Lifestyle Implications of the
Pilot Implementation of Summer Time in Mauritius 2008-2009

Interviewer to read out:

Your involvement in this study is very important. The contents of this return are CONFIDENTIAL and will not be divulged to any person or institution outside of the Centre for Applied Social Research, which has been commissioned to undertake this survey for the Ministry of Renewable Energy and Public Utilities. All questionnaires will be destroyed on the completion of the study.

Questionnaire Number

--	--	--	--

Name of Interviewer

Interview Start Time

Interview Completion Time

--	--	--	--

--	--	--	--

Date of Interview (dd/mm/yy)

--	--	--	--	--	--

Signature of interviewer upon completion.....

Supervisor

Signature of Supervisor if present at the interview

Coded by

Mark here with initials when data has been entered

4. Education (highest level achieved) Please **Circle** one number only

Education								
No Formal Education	Incomplete Primary Education	Passed CPE /Std VI	Lower Secondary Incomplete	SC or Equivalent	A Level or Equivalent	Degree or Equivalent	Post Graduate Degree or Equivalent	Other (specify below)
1	2	3	4	5	6	7	8	9
Other								

5. Religion

Put the respondent's religion in Box A.

If respondent does not have a religion tick box B.

If respondent does not wish to disclose his or her religion tick box C.

A	B	C
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6. Ethnicity

Circle One Number Only to indicate the respondent's ethnic group

Ethnicity					
Hindu	General Population	Muslim	Sino Mauritian	Other (please state below)	Prefers not to say
1	2	3	4	5	6

7. Income and Expenditure

7a) Income	
i) In total what is your gross PERSONAL monthly income?	Rs
ii) In total what is the gross HOUSEHOLD monthly income?	Rs

7b. Circle one number only to indicate			
(i) Personal Monthly income category of respondent and			
(ii) Household Income			
		i	ii
		Personal Income	Household Income
A	None	1	1
B	Less than Rs2,000	2	2
C	Rs 2,001 – Rs3,000	3	3
D	Rs 3,001 – Rs4,000	4	4
E	Rs 4,001 – Rs5,000	5	5
F	Rs 5,001 – Rs10,000	6	6
G	Rs 10,001 – Rs15,000	7	7
H	Rs 15,001 – Rs20,000	8	8
I	Rs 20,001 – Rs30,000	9	9
J	Rs 30,001 – Rs50,000	10	10
K	Rs 50,001 or more	11	11

7c Expenditure	
i) In total what is your average PERSONAL monthly expenditure?	Rs
ii) In total what is your average HOUSEHOLD monthly expenditure	Rs

8(a) What is your current Occupation?

At DATA ENTRY stage occupations to be categorised

9. Household Composition

Apart from yourself how many other adults and children (under 18) are there in your household																											
(9a) Male Adults							(9b) Female Adults							(9c) Male Children							(9d) Female Children						
1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7

SECTION A – AWARENESS

Question 10:		
10a) Did you know that the clocks were moved forward by an hour at the start of summer in October last year?	Yes	1
	No <i>(go to Q18)</i>	2
10b) If yes, from where did you hear about the clocks being moved forward?		

Question 11:		
11a) Do you know why the government decided to do this?	Yes	1
	No (go to Q12)	2
11b) If yes, please give your reason why you think this decision was taken.		

Question 12: Please indicate how much you agree with the following statement				
I was aware that it would remain dark until later in the morning during Summertime				
Strongly Agree	Agree	Neither Agree nor disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 13: Please indicate how much you agree with the following statement:				
I was aware that it would remain lighter until later in the evening during Summertime				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 14: From where did you hear about the implementation of Summertime?				
From Friends	From Family	From Newspapers	From the Radio and Television	Overheard people talking about it
1	2	3	4	5

Question 15: When did you hear about Summertime?		
When it was announced in the Budget for 2008	Just before it started	After it started
1	2	3

Question 16: Please indicate how much you agree with the following statement:				
Enough information on how Summertime would be implemented was provided to me in advance of it being introduced				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 17: Please indicate how much you agree with the following statement:				
Prior to the introduction of Summertime I was in favour of its introduction				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 18: Please indicate how much you agree with the following statement:				
It was generally easy to adapt to Summertime				
Strongly Agree	Agree	Make no difference	Disagree	Strongly Disagree
1	2	3	4	5

Question 19: Please indicate how much you agree with the following statement:				
It was easier to adapt to Summertime in the period January to March 2009 as compared to the period October to December 2008				
Strongly Agree	Agree	Make no difference	Disagree	Strongly Disagree
1	2	3	4	5

SECTION B - USE OF TIME

Question 20: Did any of your usual MORNING routines change during the period of summertime?		
No not at all	Yes a little	Yes a lot
1	2	3

Question 21: Did any of your usual EVENING routines change during the period of summertime?		
No not at all	Yes a little	Yes a lot
1	2	3

Question 22: How much use did you make of the extra hour of daylight in the evening?				
A lot	Some	Don't Know	Not much	None
1	2	3	4	5

Question 23: Did the extra hour of darkness in the MORNING make any difference to you?				
A lot	Some	Don't Know	Not much	None
1	2	3	4	5

Question 24: Please indicate how much you agree with the following statement:				
I enjoyed having an extra hour of daylight in the evening				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

SECTION C – USE OF EXTRA HOUR OF DAYLIGHT IN SUMMERTIME

Question 25: Please indicate how much you agree with the following statement:				
In general I got more things done because of the extra hour of daylight in the EVENING				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 26: Please indicate how much you agree with the following statement:				
In general I got more household work done because there was daylight for longer				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 27 Please indicate how much you agree with the following statement:				
I spent more time on childcare at home because there was daylight for longer				
Strongly Agree	Agree	Disagree	Strongly Disagree	Not applicable
1	2	3	4	5

Question 28 Please indicate how much you agree with the following statement:				
I spent more quality time with the children because there was daylight for longer				
Strongly Agree	Agree	Disagree	Strongly Disagree	Not applicable
1	2	3	4	5

Question 29: Please indicate how much you agree with the following statement:				
I spent more time with the rest of the family because there was daylight for longer				
Strongly Agree	Agree	Disagree	Strongly Disagree	Not applicable
1	2	3	4	5

Question 30: Please indicate how much you agree with the following statement:				
I spent more time relaxing because of the longer hours of daylight				
Strongly Agree	Agree	Neither Agree not Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 31: Please indicate how much you agree with the following statement:				
I took up new fitness activities because of the extra hour of daylight in the EVENING				
Strongly Agree	Agree	Neither Agree not Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 32: Please indicate how much you agree with the following statement:				
I stopped doing some fitness activities because of the extra hour of darkness in the MORNING				
Strongly Agree	Agree	Neither Agree not Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 33 :		
33a) Did you shift any of your MORNING activities to the EVENING because of Summertime?	Yes <i>(go to Q33B)</i>	1
	No	2
33b) If yes, how did this affect your lifestyle?		

SECTION D – USE OF ELECTRICITY

Question 34: How much did you use the lights in your house in the MORNING during Summertime

A lot more than usual in summer	More than usual in summer	Same as usual in summer	Less than usual in summer	A lot less than usual in summer
1	2	3	4	5

Question 35: How often did you have on the lights in the EVENING during summertime?

A lot more than usual	More than usual	Same as usual	Less than usual	A lot less than usual
1	2	3	4	5

Question 36: Please indicate how much you agree with the following statement:

My household used more electricity during Summertime from beginning November to end of December 2008

Strongly Agree	Agree	Don't know	Disagree	Strongly Disagree
1	2	3	4	5

Question 37: Please indicate how much you agree with the following statement:

My household used more electricity during Summertime from beginning January to end of March 2009

Strongly Agree	Agree	Don't know	Disagree	Strongly Disagree
1	2	3	4	5

SECTION E – WORK RELATED IMPACT

<i>Question 38: Please indicate how much you agree with the following statement:</i>				
I was able to get a lot more done at work during Summertime				
Strongly Agree	Agree	Don't know	Disagree	Strongly Disagree
1	2	3	4	5

<i>Question 39: Please indicate how much you agree with the following statement:</i>				
I was able to get a lot more work done at HOME in the EVENING during Summertime				
Strongly Agree	Agree	Don't know	Disagree	Strongly Disagree
1	2	3	4	5

<i>Question 40: Please indicate how much you agree with the following statement:</i>				
I enjoyed being able to return home from work in daylight during Summertime				
Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

<i>Question 41: How often have you been absent from work because of Summertime</i>				
More often than usual	Same as usual	Less often than usual	Don't know	Not Applicable
1	2	3	4	5

Question 42: How often have you been late for work because of Summertime				
More often than usual	Same as usual	Less often than usual	Don't know	Not Applicable
1	2	3	4	5

SECTION F – SOCIAL IMPLICATIONS

Question 43: Please indicate how much you agree with the following statement:				
I used my free time in the EVENING more for leisure activities during Summertime				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 44: Please indicate how much you agree with the following statement:				
I went out more during the EVENING during Summertime				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 45: Please indicate how much you agree with the following statement:				
I went out more for walks or fitness activities such as jogging in the EVENING during Summertime				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 46: Please indicate how much you agree with the following statement:				
I did more sporting activities in the EVENING during Summertime				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 47: Please indicate how much you agree with the following statement:				
I went out more in the evening with the children during Summertime				
Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

Question 48: Please indicate how much you agree with the following statement:				
The children played outside for longer during Summertime				
Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

Question 49: During the first term of 2009 how much studying at home did your children do?				
More than usual	Same as usual	Don't know	Less than usual	Not Applicable
1	2	3	4	5

Question 50: Please indicate how much you agree with the following statement:				
My consumption of alcoholic drinks increased in the EVENING during Summertime				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 51: Please indicate how much you agree with the following statement:				
My consumption of alcoholic drinks increased in the EVENING during Summertime				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Question 52: Please indicate how much you agree with the following statement:				
The consumption of alcoholic drinks by other members of the household increased in the EVENING during Summertime				
Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree
1	2	3	4	5

Question 53: Please indicate how much you agree with the following statement:				
There was an increase in the incidence of family conflicts during Summertime				
Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree
1	2	3	4	5

<i>Question 54: Please indicate how much you agree with the following statement:</i>				
In my opinion there has been a general decrease in the incidence of crime in my area				
Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree
1	2	3	4	5

SECTION G – PHYSICAL EFFECTS

<i>Question 55: Please indicate how much you agree with the following statement:</i>				
During the period of Summertime I found it more difficult to go to sleep at the time I usually do				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

<i>Question 56: Please indicate how much you agree with the following statement:</i>				
During Summertime I found it harder to get up in the morning				
Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

<i>Question 57: Please indicate how much you agree with the following statement:</i>				
Summertime had an effect on the sleeping habits on the children in the house				
Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

Question 58: Please indicate how much you agree with the following statement:				
Summertime had a negative effect on the performance of my children at school				
Strongly Agree	Agree	Strongly Disagree	Disagree	Not Applicable
1	2	3	4	5

Question 59: Please indicate which of the following most closely applies to you		
<i>Over the Summertime period compared to the same period last year</i>		
I felt fitter	I felt the same	I felt less fit
1	2	3

Question 60: Please indicate which of the following most closely applies to you		
<i>Over the Summertime period compared to the same period last year</i>		
I felt less tired	I felt the same	I felt more tired
1	2	3

Question 61: Was there any change in the amount you slept during Summertime				
I slept much more	I slept more	I slept the same amount	I slept less	I slept much less
1	2	3	4	5

Question 62: Was there any change in the time that you went to bed during Summertime		
Yes	No	Don't Know
1	2	3

Question 63: Please indicate how much you agree with the following statement:				
There was a change during the time that I ate meals during Summertime				
Strongly Agree	Agree	Neither Agree nor Disagree	Strongly Disagree	Disagree
1	2	3	4	5

Question 64: Please indicate how much you agree with the following statement:				
I feel that I made the physical adjustment to the lighter evenings quickly after Summertime began				
Strongly Agree	Agree	Neither Agree nor Disagree	Strongly Disagree	Disagree
1	2	3	4	5

Question 65: Please indicate how much you agree with the following statement:				
I feel that I made the physical adjustment to the darker mornings quickly after Summertime began				
Strongly Agree	Agree	Neither Agree nor Disagree	Strongly Disagree	Disagree
1	2	3	4	5

SECTION H – APPROVAL OF CONTINUATION OF SUMMERTIME

Question 66: Please indicate how much you agree with the following statement:				
In general, the introduction of Summertime has been a positive thing				
Strongly Agree	Agree	Neither Agree nor Disagree	Strongly Disagree	Disagree
1	2	3	4	5

Question 67: Please indicate how much you agree with the following statement:				
Summertime should be repeated every summer as it was implemented this year				
Strongly Agree	Agree	Neither Agree nor Disagree	Strongly Disagree	Disagree
1	2	3	4	5

Question 68: Please indicate how much you agree with the following statement:				
Summertime should be repeated on a trial basis for a longer number of years starting with the coming summer.				
Strongly Agree	Agree	Neither Agree nor Disagree	Strongly Disagree	Disagree
1	2	3	4	5

Question 69: Summertime is repeated then it should be for a shorter period of time than this time				
Strongly Agree	Agree	Neither Agree nor Disagree	Strongly Disagree	Disagree
1	2	3	4	5

Question 70: Please indicate how much you agree with the following statement:				
If Summertime is repeated when do you think it should end				
End January	End February	End March like now	End April	Don't know
1	2	3	4	5

<i>Question 71: Please indicate how much you agree with the following statement:</i>				
I know the date that Summertime will end				
Know the exact date	Know the rough date	Not Sure but know that it will end	Do not know the date it will end	Do not know that it will end
1	2	3	4	5

<i>Question 72: Would you propose any changes to how Summertime is implemented?</i>

Appendix III – Focus Group Discussions

Attitudes & Lifestyle Implications Of The Pilot Implementation Of Summer Time In The Republic Of Mauritius

Focus Group Discussions

Discussion Guide

March 2009

1. OBJECTIVES

(for Moderator's reference only if necessary during discussions)

- To discuss with senior teaching staff any observed effects of the implementation of Summertime on the performance and activities of primary and secondary school children.

2. INTRODUCTION

The Moderator reads the following:

The objective of this Focus Group Discussion is to discuss with senior teaching staff representing both primary and secondary schools any observed effects of Summertime on the behaviour, activities or performance of pupils during the time that Summertime was in force. There should be a discussion of comparisons with other similar times of the academic year in periods when Summertime was not in force.

Moderator explains purpose of the discussion:

The Time Act of 2008 was enacted to provide for the introduction of Summer Time in Mauritius between 26 October 2008 and 29 March 2009. The main objective of the introduction of Summer Time was to reduce energy consumption and associated carbon emissions. However, the extended period of daylight also has a social impact in that it affects the daily routines of people during the period in which it is in force. One of the key areas that could be impacted by the change in time is school activities and performance.

As the implementation of Summer Time in Mauritius was of the nature of a pilot project the results of the study will give valuable insight into the social impact of any continuation of the project in the future.

This is why you have been invited here today to represent your own and school with a similar profile in the discussions of the effects, if any, of the implementation of Summertime. We are interested in your perceptions and your experiences.

Main Objectives of the Full study

To study and assess the impact of summer time on the social behaviour of individuals and any changes to the normal pattern of behaviour in summertime brought about by the introduction of summertime. In particular the aims to investigate the individual perceptions of the influences that summer time has had on such issues as health, leisure and other social factors and to ascertain how people have used the additional daylight available.

The **Moderator** tells participants:

- These are not questions with any right or wrong answers but are discussion topics
- It is important to hear everybody's opinions.
- Please do not all speak at the same time
- Every thing you say is confidential and your name will not be associated with anything you say.
- Please try to be as concise as possible. Further comments or notes may be sent in writing or followed up in individual interviews, if needed.
- The discussions are recorded on digital audio equipment to help us with the analysis afterwards and to enable the moderator to focus on the conversation without being distracted by taking notes. Nevertheless, written notes are also taken to support the audio recording. All recordings are erased and all written records destroyed at the end of the study

3. DISCUSSION TOPICS

Moderator explains that:

We will now try to systematically cover the main topics. It is likely that there will be some natural deviation from the list of set questions but I will make sure that at some point all of the main question topics are covered. I propose that we start with a general question such as:

Topic 1:

Moderator

1. In your opinion were there any noticeable effects on the pupils activities and performance at school that could be seen as being directly related to the implementation of Summertime

Any Subsidiary questions arising (to be written in)

Topic 2:

Moderator

- Were there any discussions among the staff about any effects of Summertime on school performance, whether positive or negative, during the period of the implementation of Summertime?

Any subsidiary questions arising (to be written in)

Topic 3:

- Do you think that it would be better if any repeat implementation of Summertime ended before the return to school in January?

Any Subsidiary questions (to be written in)

Topic 4:

- Did you pick up any of the opinions of the pupils regarding Summertime, such as on the return to school whether or not they had been more active in the evenings because of the extra daylight?

Any Subsidiary questions (to be written in)

Topic 5:

- Could you give us some positive and negative aspects of Summertime and its effect on school activities and performance? These should be generalized and not just your own personal opinions.

Topic 6:

- Finally, could you state whether or not the general opinion in your school is that Summertime should be continued on a permanent basis?

4. WINDING UP

Moderator to check that all of the topics have been covered, either in sequence or by natural tangential deviation and development in the discussion and if any topics remain un-discussed the Moderator to assess whether they are still relevant to the discussion in light of what has been previously discussed.

If they are then the Moderator to ensure that such questions are put to the participants at this point. When all of the topics have been covered the Moderator to begin to winding up the proceedings.

Moderator says that this is almost the end of the FGD, and asks if there is anything else that the participants would like to add or briefly discuss before the discussion ends.

5. CONCLUDING

Moderator thanks participants for taking part in the discussion and closes meeting. Offers participants snacks and drinks.
