

Supplementary Data 1

Questionnaire for Gathering Energy Consumption Data of Schools

Energy is vital for the development of any sector of a nation and the education sector is no exception. Knowledge of the energy demand of buildings in commercial, industrial, residential and other non-residential buildings has lots of benefits and uses. It is used to provide evidence for policy makers and help government ministries when preparing building standards and codes. Knowing the energy demand of a building would also assist building operators reduce their energy costs and identify measures to reduce their energy consumption. Energy use data is lacking in Fiji and its collection has been identified as a priority in Fiji's National Adaptation Plan.

Even though the energy consumption in schools is small in comparison with the national energy consumption, this study aims to: (i) assess (identify, quantify and report) the different energy sources consumed in schools (grid-connected and off-grid) in Fiji, (ii) construct a linear regression model for energy consumption in schools and analyse the trend in energy consumption based on development in teaching techniques and technology use, (iii) identify and inform end-users on potential energy savings and (iv) raise awareness of energy saving in schools.

This questionnaire is designed to gather information and data of energy use in schools. It is part of a research titled "A comparative study analysis in the energy consumption of different clusters of selected Fijian Schools".

The researcher will use the data to create energy consumption regression models of schools in Fiji and categorise schools according to its energy intensity. All primary data collected using this form will be used in analyses and only analysed data and results will be presented in reports and similar. All data source will be properly acknowledged and primary data will be kept confidential. A copy of the final report will be shared with MEHA and Heads of School.

Higher Education and the SDGs Challenge Grant from the Association of Commonwealth Universities (ACU) supports this work and ethics approval was sought from the Fiji National University's Human Research Ethics Committee. Approval from Ministry of Education, Heritage and Arts (MEHA) have also been sought to carry out this study.

Thank you very much for your time and information provided. For any further information please feel free to contact me on Email: ravita.prasad@fnu.ac.fj, or Mobile: 9940870, or Landline: 3384777 (Ext: 4356)

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The survey will take approximately 25-40 minutes to complete if you have all the necessary information before filling out the online form. I humbly request you to please see the e-copy (word or pdf) of the printed Form, collect the necessary information and then start filling out the form.

Should you choose to fill the MS Word version of the questionnaire or pdf version, I request you to email the filled form to ravita.prasad@fnu.ac.fj or prasad_ravita@yahoo.com

Thanking you in advance.

1. This is a VOLUNTARY survey. I understand the purpose, and extent of this project. I agree to participate in the questionnaire survey.

☐Yes

☐No

Part A: General Information

2. Name of your school
3. Physical address of your school (where is the school located)
4. What is your school type? Please choose one option
- ☐ECE
- ☐Primary
- ☐Secondary
- ☐Vocational
- ☐Technical College
5. How will you categorise your school? Please select one option
- ☐Small
- ☐Medium
- ☐Large
6. In which year was your school established?
7. What was the number of enrolled students in 2018, 2019 and 2020? Please provide student numbers for each year.
8. What was the number of auxiliary staff in 2018, 2019 and 2020? Please provide auxiliary staff numbers for each year.
9. What was the number of teachers in 2018, 2019 and 2020? Please provide teacher numbers for each year.

Part B: Electricity Consumption Data

10. Who is the electricity provider for your school?

- ☐Energy Fiji Limited (EFL)
- ☐School's own diesel generator
- ☐Community diesel generator
- ☐School's solar photovoltaic (PV) system
- ☐Other

11. If you chose "other" in question 10, please specify the electricity source
12. Is ECE or kindergarten school electricity consumption also included in your electricity bill?
- ☐Yes
- ☐No
13. If "yes" to question 12, please indicate the average number of students enrolled in ECE over the past years and the operational hours for ECE.
14. Do you have a hostel/boarding at your school?
- ☐Yes
- ☐No
15. If "yes" to question 14, then is the hostel's electricity usage included in your school's electricity bill?
- ☐Yes
- ☐No
16. If "yes" to number 15, then what is the number of students that stay in the hostel?
17. Are there teacher's quarters at your school?
- ☐Yes
- ☐No
18. If "yes" to question 17, then does your school's electricity bill include the electricity usage from teacher's quarters?
- ☐Yes
- ☐No

19. If "yes" to number 17, how many teachers quarters are at your school?
20. How much was the total electricity bill for your school (cost) in 2019? Your answer will be in Fijian Dollars
21. How much was the total units of electricity consumption for your school in 2019? Your answer will be in kilowatt-hours (kWh). This information can be obtained from your monthly electricity bill.
22. What was the total electricity cost and units consumed in 2018? Your answer will be FJ\$ and in kWh.
23. What was the total electricity cost and units consumed in 2020? Your answer will be in FJ\$ and in kWh.
24. Has there been any recent (2015-2020) developments at your schools in terms of constructing new buildings, or structures, or renovating or maintenance or getting new technologies/equipment for teaching and learning?
- ☐Yes
- ☐No
25. If your answer in question 24 is "yes", can you please give details on the recent developments that took place at your school.

Part C: Building Characteristics and Activity

26. What is the total floor area of your school? Your answer will be in square meters (m²). [You will need to calculate the floor area by measuring the length and width of buildings or by getting the information from school building plan.]
27. What is the average length, average width and average ceiling height of a typical classroom in your school? [Please provide your answers in meters – you need to give three values here; length, width and height]

28. What is the total number of classrooms in your school?
29. How many classes are in your school? [For example: If your school has 4 classes for Year 9, 4 classes for year 10, 2 classes for year 11, 2 classes for year 12 and 2 classes for year 13, THEN the total number of classes in your school is 14. You will enter 14 as your answer for this question]
30. What is the number of staff rooms in your school?
31. How many science lab rooms are at your school?
32. How many library rooms are at your school?
33. How many computer lab rooms are at your school?
34. How many technical workshop rooms at your school?
35. How many buildings are there at your school?
36. What is the type of building structure at your school?
☐Concrete buildings
☐Wooden buildings
☐Concrete floor with wooden structure
☐Both (concrete and wooden buildings)
☐Other
37. If you chose "other" in question 36, please specify
38. How many storeys are buildings at your school?
☐Single storey buildings
☐Double storey buildings

- ☐Some buildings are single storey and some are double storey
- ☐Some buildings are single storey, some are double storey while some are triple storey
- ☐Other

39. Please specify "other" in question 38.
40. Any other comments you want to make about the building characteristics at your school.

Part D: Other Sources of Energy Supply

41. Is kerosene used at your school?
- ☐Yes
 - ☐No
42. If yes (to question 41), then please give (i) its usage purpose, (ii) the quantity (in liters) of fuel used every month or year and its associated costs (in FJ\$).
43. Is Liquified Petroleum Gas (LPG) or commonly known as gas used at your school?
- ☐Yes
 - ☐No
44. If yes (to question 43), then please give (i) its usage purpose, (ii) the quantity (in kg) of fuel used every month or year and its associated costs (in FJ\$).
45. Is premix used at your school?
- ☐Yes
 - ☐No
46. If yes (to question 45), then please give (i) its usage purpose, (ii) the quantity (in liters) of fuel used every month or year and its associated costs (in FJ\$).
47. Is diesel used at your school?
- ☐Yes
 - ☐No

48. If yes (to question 47), then please give (i) its usage purpose, (ii) the quantity (in liters) of fuel used every month or year and its associated costs (in FJ\$).

Part E: Electrical Appliances used in schools

49. What is the most common type of light at your school?
☐ 2 feet fluorescent tube light
☐ 4 feet fluorescent tube light
☐ LED lights
☐ Other
50. If you chose "Other" in question 49, please specify.
51. What is the total number of lights at your school and the number of LED lights? [Two values will be given here, total number of lights and the total number of LED lights]
52. Please select the **number** of different electrical appliances used at your school

	0	1	2	3	4	5-10	More than 10
2 feet fluorescent tube lights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 feet fluorescent tube lights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LED lights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laptops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TVs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Printer/Photocopier Machine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Refrigerator(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Projector(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intercom system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Freezer(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air-conditioner(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling fan(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stand fan(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electric kettle(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Hot water urn(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other type of lights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

53. Please write any other electrical appliance that is used at your school that is not mentioned in question 52. Please write the name of the appliance and its quantity.
54. If your school has air-conditioners, how many air-conditioners have the label for energy star rating on the appliance out of the total number of air-conditioners. [Please provide both; the total number of air-conditioners in your school and the number of air-conditioners that have energy star rating]

Part F: Other Information

55. Does your school have an incinerator?
☐Yes
☐No
56. If your school has an incinerator, how often is it used?
57. Does your school have a compost?
☐Yes
☐No
58. Does your school have a diesel generator or a back up generator?
☐Yes
☐No
59. If your answer to question 58 is yes, then please give details about the model and size of the generator, year its was installed, liters of fuel used per year and its cost.
60. What is the water source for your school? (Please select one)
☐Water Authority of Fiji (WAF) water supply
☐Bore hole
☐Rainwater collected in tanks
☐Desalinated water
☐Other
61. If you chose "other" in question 60, please specify.

62. What is the total water bill for your school in 2019? Your answer will be in FJ\$
63. In the event of water supply disruptions, what is the alternative water supply option at your school?
- ☐ No alternative option is available
 - ☐ Rainwater collected in tanks
 - ☐ Borehole
 - ☐ Desalinated water
 - ☐ Stored WAF water in tanks
 - ☐ Other
64. Please specify "other" for number 63.
65. Does your school have any renewable energy system (solar PV, solar water heater, solar lights, etc) installed?
- ☐ Yes
 - ☐ No
66. If yes to number 65, please give details such as when it was installed, its size and its cost.
67. Is your school aware of energy savings strategies that can be applied in schools?
- ☐ Yes
 - ☐ No
68. If you have chosen "yes" for question 67, please elaborate if your school has taken any initiatives of saving energy at school premises. Please give details on the different energy saving techniques currently used at your school and the time these initiatives first started.
69. Please give details about other green initiatives at your school.
70. Are there any future plan for building construction at your school or any capital project? If yes, please provide brief details and also state if the school management is thinking about energy efficient buildings/technologies.

71. Any other comments [Please include any other energy or building information that are not included in the questionnaire]
72. Informant Contact Details - please provide Name, Phone contact and email address of the staff filling this questionnaire. [Please note that this information will be only used in the case of any queries regarding answers provided in this questionnaire]
73. Please email/viber photos of your school - it can include photo of a electricity bill for a month of your school (if applicable), typical classroom, school building, learning and teaching materials that use energy, places where energy leakage is taking place such as room with air-conditioning but broken windows or windows not closed properly, etc. Please email it to ravita.prasad@fnu.ac.fj or prasad_ravita@yahoo.com. OR viber to 9940870. Please also include the name of your school in the email or viber message.

THE END

Thank you very much for your participation and time.