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Electricity Consumption and Food Production in Malaysia: Implication for the Sustainable Development Goal 2

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ABSTRACT

The need to seek sustainable solutions to end hunger in all its forms by 2030 motivated the implementation of the Sustainable Development Goals. Against this backdrop, this study seeks to fill the existing gap by unraveling the underexplored dimension of escalating electricity consumption and its potential effects on the broader spectrum of Malaysia's food productivity, with a view to assessing the capacity or otherwise of Malaysia in achieving the SDG 2 (food and nutrition security) by 2030. To achieve the stated objectives, data from World Development Indicators (WDI) of the World Bank for the period 1990 to 2022 were collected for Malaysia. The collated data were analyzed within the framework of Fully Modified Ordinary Least Squares (FMOLS) method. The negative coefficient suggests that an increase in arable land is associated with a decrease in food production. Electricity consumption did not support expansion of food production in the country. Employment in agriculture, based on results, the study concludes that; electricity consumption did not support expansion of food production in Malaysia. In the same vein, arable land in Malaysia did not support sustainable food production in the country. Employment in agriculture did not drive food production changes in the country. Therefore, it could be submitted that electricity consumption only may not ensure a sustainable food production in Malaysia. Therefore, the study recommends that the policymakers and other concerned stakeholders in Malaysia should emphasize the importance of managing and utilizing arable land effectively in order for the country to experience a sustainable food production. Similarly, the policymakers in Malaysia should be given priority to food production when distributing electricity for both domestic and industrial consumptions in the country. If these policies are well implemented in Malaysia, the achievement of the Sustainable Development Goal 2- food security and sustainable agriculture will be tremendously facilitated before 2030.

Keywords: Electricity Consumption, Energy Access, Food Production, Food and Nutrition Security, Sustainable Development
JEL Classifications: L66, Q01, 013, P13, P28

1. INTRODUCTION

The continuous surge in the global population has significantly heightened the demand for food, positioning it as an essential requirement for human survival. Beyond water and air, food stands as a fundamental necessity (Silver, 2019; Ebere et al., 2021; Edafe et al., 2023; Khor et al., 2023; Oteh et al., 2023; Osabohien et al., 2023; Enilolobo et al., 2022). The need to seek sustainable solutions to end hunger in all its forms by 2030 motivated the implementation of the SDG 2, which its aim is to ensure that everyone everywhere has enough good-quality food to lead a healthy life (United Nations, 2015).

As the world contends with the imperative to meet the escalating demand for food, nations face the formidable task of enhancing agricultural productivity (Osabohien et al., 2022; Osabohien et al., 2022). This pursuit is particularly crucial for Malaysia, a country situated in the densely populated Asian continent. Despite its favorable climate, Malaysia heavily relies on food imports, a trend that has raised concerns about the sustainability of its agricultural practices and overall food security (Hunter, 2020; Khor et al., 2023). This essay explores the intricate factors affecting Malaysia's agricultural productivity, with a specific emphasis on the underexplored influence of electricity consumption. The paradox of Malaysia's heavy dependence on food imports despite its favorable agricultural conditions highlights the complexities surrounding its food security. Over the years, the nation's total food imports have seen a continuous rise, reaching approximately RM5 5.5 billion in 2020 from RM45 billion in 2015 (Hunter, 2020; Khor et al., 2023). This trend prompts an in-depth investigation into the determinants shaping Malaysia's agricultural landscape.

Various factors have been identified as contributors to the challenges in Malaysia's agricultural productivity. Existing studies have delved into aspects such as population growth, land fertility, and climate conditions, among others (Siwar et al., 2009; Smith and Smith, 2015; Chiong, 2022; Food Security Malaysia, 2022; Haini et al., 2022). However, a critical gap remains in understanding the impact of electricity consumption, a factor that has undergone a significant transformation from a historical luxury to an integral component of modern living (Ishak et al., 2022). This essay aims to address this void by shedding light on the escalating levels of electricity consumption and its potential implications on Malaysia's general food productivity.

While numerous studies have explored different dimensions of Malaysia's agricultural productivity, many have focused on specific crops or examined the influence of other factors. This study seeks to fill the existing gap by unraveling the underexplored dimension of escalating electricity consumption and its potential effects on the broader spectrum of Malaysia's food productivity. This study is very imperative in Malaysia in the recent times because achieving SDG 2 in this country would require a better availability of food in a sustainable manner, in which findings of this study would provide valuable insights that can inform policymakers, researchers, and stakeholders in the pursuit of sustainable agricultural practices. In view of the above, this study is structured as follows; introduction section contains the problem of the study. Whereas, section two provides empirical literature review. Section three houses methodology, discussion of results, summary and policy implication of the study.

2. LITERATURE REVIEW

Dimnwobi et al. (2023) investigated the association between energy deficiency, environmental deterioration, and agricultural output in 35 SSA countries. For the aggregate SSA framework, the instrumental variable generalized approach to moment (IV-GMM) methodology was used, and for the sub-regional analysis for the Central, East, West, and South African blocs, the IV-two stage least square approach was utilized. The main outcomes from the SSA framework showed that, while the greenhouse gas emissions had a major adverse effect on agricultural output, the measure of energy scarcity had a substantial beneficial effect. The Central, East, West, and South African simulations, on the other hand, produced contrasting outcomes due to geographical differences in a flourishing economy, geographical differences in agricultural output, and a disparity of resources at hand.

Farthing et al. (2023) evaluated the ultimate usage of electricity consumption for a variety of farming productive use of power throughout Sub-Saharan Africa, utilizing detailed geographic data. The cost and system scaling effects of implementing farming productive consumption of power into microgrid layouts in Kenya and Zambia were examined using REopt, a techno-economic optimization concept of energy systems. According to the study, Sub-Saharan Africa's maximum annual agricultural productive use of power requirement for farming, grinding, bombing, cooling, and hatching eggs was 16.8 TWh. Implementing localized farming productive usage of power into the layouts of microgrid systems was shown to raise the necessary system scale with no effect on the standardized price of power for these systems.

Nugroho et al. (2023) examined the association between global warming and agrarian productivity in both industrialized and emerging nations. From 1990 to 2020, the research utilized data from 24 advanced nations and 71 emerging nations. Having employed the three-stage least squares technique, it was discovered that farming productivity caused humidity to rise in emerging nations while falling in wealthy nations. In both emerging and industrialized nations, climate change had the same result, a decline in farming productivity. However, advanced nations' farming productivity was more susceptible to temperature variations.

Tagwi (2023) analyzed the impact of South Africa's availability of green power, greenhouse gas emissions, and trade liberalization on agrarian growth in the economy from 1990 to 2021. To analyze the relationship, a canonical cointegrating regression (CCR) econometric analysis, a fully modified ordinary least square (FMOLS) test, an autoregressive distributed lag (ARDL) limits evaluation, and a dynamic ordinary least square (DOLS) test were all utilized. The findings demonstrated that while global trade improves the agriculture sector, development in the sector worsens ecological conditions. The farming sector declined due to the size of the green power source.

Chidiebere-Mark et al. (2022) examined the relationship between African farming productivity, green power, foreign direct investment (FDI), and greenhouse gases, using panel information from the FAOSTAT and World Development Indicators databases that cover 31 African nations. The panel autoregressive distributed lag model was employed for analysis in the study. The findings demonstrated that both short- and long-term greenhouse gases were substantially boosted by net FDI, fertilizer use, and livestock output. Long-term as well as short-term greenhouse gases were greatly reduced by the use of green power. The results advocated for a substantial adoption of climate-savvy farming as well as ecologically focused foreign direct investments in Africa. They also called for expenditure on green energy production and utilization.

Chopra et al. (2022) studied the function of biodiversity and green power for agricultural sustainability in ASEAN nations. Having utilized the Mean Group (MG) class estimators, it was found that deterioration of the environment lowers agricultural output in the area. While the utilization of green power sources benefits crop production, both the forest area and environmental factors have a detrimental impact on the output of the industry. The findings indicated that ASEAN countries' globalization does not increase their agricultural output, albeit representing one of the most linked areas in the globe. The causality analyses supported the evidence of unidirectional causation among several other variables and bidirectional causality between agricultural output and green power use.

Czyzewski and Michaowska (2022) investigated the relationship between economic development, agricultural value-added, and carbon emissions in the Visegrad Group nations. Between 2008 and 2019, the Czech Republic, Hungary, Poland, and Slovakia were all examined. The study, which spanned the years 2008 to 2019, revealed a favorable correlation between agricultural value added and economic expansion and carbon dioxide emissions. The research on the ecological effectiveness of carbon dioxide emissions in farming, regarding the gross added value generated, revealed that Slovakia was closely surpassed by Hungary as the nation with the lowest amount of emissions.

Sibanda and Ndlela (2022) investigated the association between greenhouse gases, crop production, and manufacturing production in South Africa, using data from 1960 to 2017 determined by a yearly rate and produced a total of 58 yearly reports. The approach was bivariately estimated using the Autoregressive Distributed Lag method. The data demonstrated that output from agriculture and industry has little impact on greenhouse gases. In contrast, manufacturing production and greenhouse gases have an impact on crop production. The findings indicated that decreasing agricultural productivity as an outcome of global warming brought on by carbon emissions had negatively impacted food availability.

Tagwi (2022) assessed the effects of environmental degradation, green power use, and greenhouse gas pollution on South Africa's farming industry from 1972 to 2021. An econometric method called the Auto Regressive-Distributed Lag (ARDL) Bounds test was used to analyze the association. The research's conclusions showed that greenhouse gas pollution rises as agrarian economic output drives up while environmental degradation decreases agrarian economic expansion. In the persistent and short terms, the usage of green power was modest. Granger caused climate and green power unilaterally due to greenhouse gas pollution.

Zang et al. (2022) studied the connection between China's trade in agriculture, economic growth, and farming greenhouse gas concentration. The study built a time-series framework for evaluation and used appropriate data from China from the years 2002 to 2020. According to the study, China's rising farming greenhouse gas emissions would eventually restrict agrarian commerce, which will ultimately result in a decrease in the rate of farming economic growth as a whole. Additionally, the study indicated that although the influence is minimal, the growth of the farming sector leads to a general rise in agriculture exports and a reduction in the level of farming carbon emissions.

Adeleye et al. (2021) investigated the effects of fossil fuel-generated electricity and ecological deterioration on agricultural output in Nigeria, utilizing yearly time series data from 1980 to 2018. The research applied the Johansen cointegration and impulse response functions (IRFs) methods inside the vector autoregressive (VAR) structure as the estimation technique. Findings showed that non-renewable power increases agro-productivity, but greenhouse gases considerably lower it. Other findings indicated that farmland, home credit, and farming communities all have unequal impacts.

Golasa et al. (2021) studied the sources of carbon dioxide pollution associated with farming and identified the kinds of farmlands where it was feasible to minimize carbon dioxide pollution through efficient consumption of power. Having used the FADN (Farm Accountancy Data Network) data, the research utilized the IPCC's (Intergovernmental Panel on Climate Change) approach and analyzed the carbon footprint volume. When contrasted with different sources of pollution, it was discovered that pollution from the manufacturing of power was of minimal significance. The power category's emissions are the main source of GHG emissions only in the horticulture crop category. The manufacturing of cattle is the source of the most emissions. Hence, the renewable energy industry shouldn't be the focus of efforts to reduce pollution because, except for some types of horticulture farms, there isn't much room for improvement.

Naseem et al. (2020) investigated the unbalanced impact of the agricultural sector, energy use, and food availability on greenhouse gases in Pakistan from 1970 to 2019. The research used an asymmetric Autoregressive Distributed Lag (ARDL) co-integration technique. As an estimating method, many unit root tests (ADF, PP, KPSS, Z, and A) were employed. The results of the research showed that farming had an uneven impact on greenhouse gases in both the short- and long term.

Rehman et al. (2019) established the causal association between greenhouse gases and output from agriculture in Pakistan from 1987 to 2017. Having utilized the Augmented Dickey-Fuller and Phillips-Perron unit root tests as well as autoregressive distributed lag (ARDL) bounds-checking methods, the analysis outcomes showed that enhanced supply of seeds and overall grain production have an adverse relationship with greenhouse gas emissions in Pakistan, while the persistent proof showed that cropped area, energy use, fertilizer offtake, GDP per capita, and water accessibility have a substantial and beneficial relationship with greenhouse gas emissions.

Calzadilla et al. (2014) evaluated the possible effects of warming temperatures on global agricultural production and looked at two different South African adaption models. Water was explicitly integrated as a component of manufacturing for agricultural irrigation in the study, which utilized an improved GTAP-W model that discriminated between humid and irrigation-based farming. According to the research, it was found that South Africa would need yield increases over benchmark expenditures in farming research and development to adjust to the negative effects of worldwide environmental degradation.

Kebede et al. (2010) investigated how utilization of power affected economic growth in Sub-Saharan Africa's Central, East, South, and West areas. Utilizing time series longitudinal data for 20 nations over 25 years, the findings of the regression analysis demonstrated that the price elasticity of power demand was below one and that it was oppositely connected to oil costs and industrialization, but significantly linked to GDP, increase in demographic rate and farming advancement. Additionally, the analysis's findings indicated that local variations in electricity consumption exist. Additionally, there are geographical variations in the usage of industrial renewable power and GDP growth, and the combination of increased demographic rates by countries produces inconsistent effects.

The study by Liu et al. (2020) investigated agricultural productivity in 15 south and southeast Asian countries from 2002 to 2016 using stochastic frontier analysis (SFA). Findings indicated an overall decline in agricultural productivity, with technical progress being a major contributor, albeit slowing down in recent years. Scale change and technical efficiency change experienced declines. Variable productivity performances across countries were observed, with Southeast Asia demonstrating more stable growth. Human capital, urbanization, and development flow positively influenced agricultural total factor productivity (TFP), while economic development and agricultural import had negative associations. Policy recommendations by the authors included increased investment in human capital, technological innovation, and collaboration among frontier countries for sustained agricultural productivity.

Mahmud and Chong (2022) addressed the challenges faced by palm oil-producing countries in Southeast Asia due to the rapid expansion of industrial oil palm cultivation. Soil acidity and nutrient depletion emerge as critical constraints, impacting tropical soil fertility. The review emphasized that while acidic soil is less fertile, liming, especially with appropriate materials, enhances soil fertility, nutrient retention, and resistance against diseases like Ganoderma. However, the selection of suitable lime depends on factors such as soil type, cost, and neutralizing value. The study underscored the need for a holistic approach, evaluating not only soil impacts but also the effects of liming on oil palm growth, yield, and soil biodiversity. This comprehensive review contributed valuable insights into the biogeochemical properties of tropical soil and their implications for oil palm cultivation amid increasing global demand for edible oil.

The study by Khor et al. (2023) focused on the importance of fertility rate on food security in Malaysia having the independent variables-Carbon Dioxide Emission, Gross Domestic Product, and Fertility Rate-that contribute to the food security problem in Malaysia from 1990 to 2019. Emphasizing the Fertility Rate, the study aligns with three supporting theories: Neo Malthusian Theory, Anthropogenic Global Warming Theory, and Keynesian Theory. Employing tests such as ADF, ARDL Bounds, Error Correction Model, ARCH, LM, CUSUM, VIF, and Normality, the study establishes a significant long-term relationship between all independent variables and the dependent variable (food security in Malaysia). The study recommended that the government should foster collaborations between researchers and organizations, offering incentives for data prioritization and supporting new methodologies. Mandating data sharing enhances transparency, aids verification, and promotes research productivity by eliminating the need for gathering fresh data for each study.

3. METHODOLOGY

An ex-post facto research design is used in this study. Ex-post facto design is a type of quasi-experimental study that looks at the effects of an independent variable that was already present in the participants before the investigation on a dependent variable. Essentially, a quasi-experimental study does not allocate individuals at random. The major goal of this study is to investigate the link while outlining how the explanatory variable forecasts fluctuation in the dependent variable, hence the ex-post facto research approach is suitable.

3.1 Model Selection

The model specification is adapted from Aderemi et al. (2022), Opele et al. (2022), Oguntegbe et al. (2018), Ajibola et al. (2021) and Osabohien et al. (2021). Therefore, the modified model is stated as follows;

$$FA = f(PGR, AL, EIA, EC) \tag{1}$$

Econometrically, it is written as:

$$FP = \beta 0 + \beta 1PGR + \beta 2AL + \beta 3EIA + \beta 4 \ln EC + Et \tag{2}$$

Where: FP is Food Production index, which is used to proxy food production, PGR is Population Growth Rate, AL means Arable Land, EIA means Employment in Agriculture, LNEC means Log of Electricity Consumption, E_t is Error term.

3.2. Scope and Sources of Data

The study focuses on Malaysia covering the period of 31 years (1990-2022). The data used for this study was sourced from the World Development Indicators (WDI) of the World Bank (World Bank, 2020). The variables employed in the analysis of the study are agricultural productivity proxied by Food Production Index (FP) as the dependent variable while the natural log of electricity consumption is the independent variables. Population growth rate, Arable land and employment in agriculture were used as control variables.

3.3. Data Management and "A Priori" Expectation

The study analyzed the nature of the datasets using descriptive statistics analysis. To test for the stationarity of the variables, the study employed the Augmented Dickey-Fuller unit root test. To achieve the objective of the study which is to determine the impact of electricity consumption on agricultural productive in Malaysia, the study employed the Fully Modified Ordinary

Least Square (FMOLS). This regression method was employed as a result of the nature of the variables and their stationarity property. It is expected that all the coefficients of the independent variables are positive.

4. RESULTS AND DISCUSSION

The summary statistics of variable is presented in Table 1.

The nature of the datasets is shown in the descriptive result in the Table 1 below

The provided table presents descriptive statistics for five variables-arable land (AL), electricity consumption (EC), employment in agriculture (EIA), food production index (FP), and population growth rate (PGR). These statistics are based on a sample of 31 observations. This essay aims to explore and interpret the key features of the data, including measures of central tendency, variability, skewness, kurtosis, and other relevant insights.

The mean, or average, provides a measure of central tendency. In this dataset, EC has the highest mean at 3184.461, indicating a relatively high average electricity consumption. FP follows with a mean of 77.00229, while AL, EIA, and PGR have mean values of 2.671480, 15.29811, and 1.978239, respectively. The median, representing the middle value, closely aligns with the mean for each variable. Standard deviation measures the dispersion around the mean. EC and FP have higher standard deviations, suggesting more variability in electricity consumption and food production. On the other hand, AL, EIA, and PGR exhibit lower standard deviations, indicating less variability in arable land, employment in agriculture, and population growth rate.

The range is indicated by the maximum and minimum values. EC has the widest range (4651.951-1157.360), highlighting significant variability in electricity consumption. AL and EIA also show considerable ranges. In contrast, PGR has a relatively narrow range (2.817285-1.294285), suggesting more stability in population growth rate. Skewness measures the asymmetry of the distribution. AL, EIA, FP, and PGR have positive skewness, indicating a longer right tail. EC, however, has a slight negative skewness (−0.170713), suggesting a shorter left tail. Kurtosis measures the heaviness of the tails. AL, EIA, FP, and PGR exhibit moderately heavy tails, while EC has a slightly lighter tail. FP and PGR show similar kurtosis values, suggesting similar tail characteristics. The Jarque-Bera test assesses whether the data follows a normal distribution. In this dataset, all variables have $P > 0.05$, indicating that the data does not significantly deviate from a normal distribution. Table 2 presents the unit root text.

The results of the stationarity test reveal that AL is a stationary series (I(1)), supported by a substantial negative coefficient (−5.730966) and a low P-value of 0.0001. This suggests that introducing a first-order difference in the series leads to stationarity, a crucial characteristic for accurate time series modeling. Similar to AL, EC is identified as a stationary series (I(1)) with a significant negative coefficient (−4.752504) and a low P-value of 0.0007. This indicates that after a single differencing, the statistical properties of EC remain constant over time. The results strongly suggest that EIA is a stationary series (I(1)), demonstrated by a substantial negative coefficient (−6.988790) and an exceptionally low P-value of 0.0000. The first-order differenced series is considered stationary, facilitating more robust time series analyses. FP also displays characteristics of stationarity (I(1)), as indicated by a significant negative coefficient (−4.195035) and a P-value of 0.0028. This underscores the importance of differencing to achieve stationary behavior in the series. PGR is demonstrated to be stationary in its original form (I(0)), implying that further differencing is unnecessary to achieve stationarity. The significant negative coefficient for I(1) (−4.498190) and a P-value of 0.0017 confirm the stability of the first-order differences. The result of the FMOLS is presented din Table 3.

Firstly, all the parameters did not follow the *a priori* expectation. Meanwhile, the high R-Squared (0.893742) and Adjusted R-Squared (0.876032) values indicate that the model explains a substantial proportion of the variation in food production. This robustness suggests that the chosen variables collectively contribute to a comprehensive understanding of the factors influencing food production. The Standard Error of Regression (S.E. of regression) is 5.937689, reflecting the precision of the model's predictions. The Long-run variance (40.10229) provides insights into the variability of the dependent variable, and the Mean (78.34900) and Standard Deviation (16.86410) of the dependent variable offer context on the central tendency and dispersion of food production in the dataset. The Sum Squared

Table 1: Descriptive analysis

	AL	EC	EIA	FP	PGR
Mean	2.671480	3184.461	15.29811	77.00229	1.978239
Median	2.662304	2984.362	14.59500	70.48000	1.970824
Maximum	2.944757	4651.951	22.49000	107.4200	2.817285
Minimum	2.443159	1157.360	10.28000	57.38000	1.294285
SD	0.144888	1136.323	3.610149	17.10593	0.502163
Skewness	0.178959	-0.170713	0.514170	0.701341	−0.001480
Kurtosis	1.896730	1.803127	2.066287	1.983237	1.576702
Jarque-Bera	1.737692	2.000891	2.411629	3.876708	2.616641
Probability	0.419435	0.367716	0.299448	0.143941	0.270274
Sum	82.81589	98718.28	458.9433	2387.071	61.32540
Sum Sq. Dev.	0.629776	38736910	377.9621	8778.385	7.565023

Source: Authors' computation

Table 2: Unit root test (augmented dickey-fuller)

Variables	I (0)	I (1)
AL	-	−5.730966* (0.0001)
EC	-	−4.752504* (0.0007)
EIA	-	−6.988790* (0.0000)
FP	-	−4.195035* (0.0028)
PGR	−4.498190* (0.0017)	-

Source: Authors' Computation (2023)

Table 3: Model estimation (Fully modified ordinary least squares method)

Dependent Variable: FP (Food production)			
Variables	Coefficient	T-Statistics	Probability
AL	−53.11999*	−3.686771	0.0012
LNEC	−33.44676*	−2.222070	0.0360
EIA	−1.232207	−0.789437	0.4376
PGR	−39.17244*	−4.731950	0.0001
C	583.7080*	3.528864	0.0017
R-Squared	0.893742		
Adjusted R-Squared	0.876032		
S.E. of regression	5.937689		
Long-run variance	40.10229		
Mean dependent var	78.34900		
S.D. dependent var	16.86410		
Sum squared resid	846.1477		

Source: Authors' Computation (2023)

Residuals (846.1477) signifies the overall goodness-of-fit of the model.

Consequently, the dynamics of food production are central to ensuring food security and sustaining populations. In this study, a comprehensive examination of the impact of key variables—Arable Land (AL), Log of Electricity Consumption (LNEC), Employment in Agriculture (EIA), and Population Growth Rate (PGR) - on food production (FP) was conducted using Fully Modified Ordinary Least Squares (FMOLS). The results, detailed in Table 3, provide valuable insights into the intricate relationships between these factors and food production.

The negative coefficient for AL, −53.11999, is indicative of a substantial impact on food production. The corresponding T-Statistics of −3.686771 and a notably low probability of 0.0012 underscore the significance of this relationship. The negative coefficient suggests that an increase in arable land is associated with a decrease in food production. This suggests that the current level of arable land in Malaysia did not support sustainable food production in the country. As such, this study emphasizes the importance of managing and utilizing arable land effectively in order for the country to experience a sustainable food production.

LNEC reveals a negative coefficient of −33.44676, with a T-Statistics of −2.222070 and a probability of 0.0360. This suggests that higher electricity consumption is linked to a reduction in food production. This indicates that electricity consumption did not support expansion of food production in the country. Employment in agriculture, EIA, with a coefficient of −1.232207, exhibits a negative impact on food production. However, the T-Statistics of −0.789437 and a probability of 0.4376 suggest that this relationship is not statistically significant. The weaker statistical significance implies that employment in agriculture might not be a major driver of food production changes in this context.

The negative coefficient for PGR is −39.17244, with a robust T-Statistics of −4.731950 and an exceptionally low probability of 0.0001. This indicates a significant negative relationship between population growth rate and food production. The high statistical significance emphasizes the importance of considering population dynamics when analyzing food production trends. The positive coefficient for the constant term, C (583.7080), with a T-Statistics of 3.528864 and a probability of 0.0017, suggests a baseline level of food production. The statistically significant T-Statistics underscores the significance of this constant term in explaining variations in food production.

5. CONCLUSION AND POLICY RECOMMENDATION

This study seeks to fill the existing gap by unraveling the underexplored dimension of escalating electricity consumption and its potential effects on the broader spectrum of Malaysia's food productivity, with a view to assessing the capacity or otherwise of Malaysia in achieving the SDG 2 by 2030. In order for this study to achieve its stated objective, data from 1990 to 2022 were collected from Malaysia. The collated data were analyzed within the framework of Fully Modified Ordinary Least Squares Method with the following conclusion; electricity consumption did not support expansion of food production in Malaysia. In the same vein, arable land in Malaysia did not support sustainable food production in the country. Employment in agriculture did not drive food production changes in the country. Therefore, it could be submitted that electricity consumption lacks the capacity to ensure a sustainable food production in Malaysia.

In the light of the above submissions, the policymakers and other concerned stakeholders in Malaysia should emphasize the importance of managing and utilizing arable land effectively in order for the country to experience a sustainable food production. Similarly, the policymakers in Malaysia should be given priority to food production when distributing electricity for both domestic and industrial consumptions in the country. If these policies are well implemented in Malaysia, the achievement of the Sustainable Development Goal 2-food security and sustainable agriculture will be tremendously facilitated before 2030.

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