Thesis Title	:	The Efficiency of Sustainable Development Policy for Energy Consumption under Environmental Law in Thailand: Adapting the SEM-VARIMAX Model
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ABSTRACT

This research is incorporated as a mixed methods research aimed; 1) To establish a causal factor model for sustainable development policy in energy consumption under environmental law in Thailand. 2) To analyze the direction impact of the model and evaluate the future trends of policy efficiency in sustainable development for the next seventeen years (2020-2036) and 3) To examine future environmental management using quantitative and qualitative methods laid upon the environmental laws for sustainability. To this extent, quantitative research is carried out by applying a structural equation modeling/vector autoregressive model with exogenous variables (SEM-VARIMAX Model). The result of such research is used to build regulatory measures for the environmental law. Furthermore, this model ensures the absence of heteroskedasticity, multicollinearity, and autocorrelation. In fact, it meets all the standards of goodness of fit. With the implementation of the sustainable development policy for energy consumption under environmental law $(S.D.EL)$, the forecast results derived from the SEM-VARIMAX Model indicate a continuously high change in energy consumption from 2020 to 2036the change exceeds the rate determined by the government. In addition, energy consumption is predicted to have an increased growth rate of up to 185.66% (2036/2020), which is about 397.08 ktoe (2036). The change is primarily influenced by a causal relationship that contains latent variables, namely, the economic factor $(ECON)$, social factor $(SOCI)$, and environmental factor $(ENVI)$. The performance of the SEM-VARIMAX Model was tested, and the model produced a mean absolute percentage error (MAPE) of 1.06% and a root-mean-square error (RMSE) of 1.19%. A comparison of these results with those of other models, including the multiple linear regression model (MLR), back-propagation neural network (BP model), grey model, artificial neural natural model (ANN model), and the autoregressive integrated moving

average model (ARIMA model), indicates that the SEM-VARIMAX model fits and is appropriate for long-term national policy formulation in various contexts in Thailand. This study's results further indicate the low efficiency of Sustainable Development Policy for Energy Consumption under Environmental Law in Thailand. The predicted result for energy consumption in 2036 is greater than the government-established goal for consumption of no greater than 251.05 ktoe.

Hence, the findings are analyzed within a context of new policies scenario in enforcing the law to control the energy consumption, and that results with an estimated future growth rate up to 88.19% (2036/2020). Besides, qualitative research is also analyzed by using economic measures under the law in Thailand. Those measures are seen most suitable in the national planning of Thailand. Therefore, a determination of policies and planning of Thailand should be highly accounted for both law enforcement and economic measures in order to create a sustainability in the future.