

## STRATEGIES USING ALTERNATIVE ENERGY EFFICIENTLY IN UNIVERSITY BUILDINGS: CASE STUDY AT BANDUNG ISLAMIC UNIVERSITY

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### ABSTRACT

Energy efficiency has proven to be a cost efficiency strategy for building an economy without having to increase energy consumption. In some countries various publicly funded programs target the commercial building sector that uses electricity. The building sector absorbs 40% of the world's energy resources, even in Indonesia, this sector is responsible for 50% of the total energy expenditure, and more than 70% of overall electricity consumption. Unisba is a private Islamic educational institution, located in the city of Bandung. Currently it is trying to improve the of electricity consumption. In addition, Unisba is looking for a model of using electricity consumption efficiency for sustainable energy savings programs. The purpose of this study is to analyze the main elements that contribute to the improvement of energy consumption patterns in Private Universities; determine energy efficiency strategies suitable for reducing electricity consumption (kWh) and total electricity bill (IDR) per month; and estimating total energy savings (kWh and IDR) by implementing energy saving strategies at Private Universities. This research uses quantitative methods by conducting interviews and collecting secondary data. The efficiency step is done by combining the Energy Saving opportunities (ESO) model, as many as 6th models are used to get optimal results. The results of this study indicate that Unisba has carried out energy efficiency by applying the combination model to 6th. The efficient use of electricity with an average 207, 966 kWh/M2 per month and an average expenditure of IDR 157,014,683per month. This value including very efficient categories and their use is below office building standards based on ASEANUSAID research and use of energy in the Unisba office building environment is categorized as very efficient.

**Keywords:** Building, Islamic Educational Institution, efficiency, energy

### I. INTRODUCTION

Energy efficiency has proven to be a cost efficiency strategy for building an economy without having to increase energy consumption. In some countries various publicly funded programs target the commercial building sector that uses electricity. The USA uses one third (1,319 billion kilowatt-hours (kWh) of all electricity produced in the US [1]. At the ASEAN level, electricity consumption in Indonesia is still relatively low compared to ASEAN countries, including Malaysia and Singapore. At present, Indonesia's average electricity consumption has only reached 1,084 kWh/capita, Malaysia 4,000 kWh/capita, and Singapore 8,000 kWh/capita [2]. The building sector absorbs 40% of the world's energy resources, even in Indonesia, this sector is responsible for 50% of the total energy expenditure, and more than 70% of overall electricity consumption [3]. Bandung Islamic University (Unisba) is one of the building sectors that use electricity and is engaged in private education. Established since 1958 by a number of West Javanese Muslim leaders along with several Ulama (Islamic Scholars) who at that time were