

INTISARI

Perkembangan Kabupaten Brebes dalam bidang industri berpotensi meningkatkan kepadatan penduduk yang dapat berdampak pada lingkungan seperti dalam hal efisiensi lahan, mobilitas, emisi dan konsumsi energi. Dalam mendukung program pemerintah mengenai kota hijau, Kabupaten Brebes kini tengah merencanakan dibangunnya fasilitas publik yang dapat menunjang kegiatan masyarakat. Oleh sebab itu diperlukan perencanaan fasilitas publik yang berkelanjutan dengan memaksimalkan nilai *Throughput* yaitu dengan memaksimalkan aspek *Welfare* dan meminimalkan *Environmental Damage*. UMI dengan 5 jenis simulasi di dalamnya yaitu *FAR*, *Operational Energy*, *Life Cycle*, *Mobility* dan *Daylighting* digunakan sebagai metode simulasi. Hasil studi kondisi eksisting menunjukkan bahwa aspek *Operational Energy* perlu diminimalkan sementara *mobility* dan *daylighting* perlu dimaksimalkan. Hasil simulasi menunjukkan nilai FAR sebesar 0.27 dengan nilai *Mobility Walkability* skor 51 dan *Bikeability* 60 pada berada pada lingkungan fasilitas publik dan sekitarnya. Sementara itu, intensitas nilai *Operational Energy* rata-rata pada kawasan fasilitas publik adalah (182 kWh/m²/Year) dan *Life Cycle* (*EE* (3051.71 kwh/m²); *EC* (224.38 kgCO₂/m²)). Sementara hasil simulasi *daylighting* rata-rata pada kawasan fasilitas publik menunjukkan nilai sDA 46%. Pada kondisi rekomendasi model menunjukkan tingkat keberlanjutan meningkat pada parameter *operational energy*, *mobility* dan *daylighting*. Hasil simulasi *Mobility* meningkat menjadi (*Walkability* (81), *Bikeability* (91) dan *daylighting* sDA meningkat hingga rata rata 56%. Sementara untuk rata-rata nilai *Operational Energy* kawasan turun menjadi (162 kWh/m²/Year).

Kata Kunci : Fasilitas Publik, Berkelanjutan, Urban Modeling Interface

ABSTRACT

The development of Brebes Regency in the industrial sector has the potential to increase population density which can have an impact on the environment such as in terms of land efficiency, mobility, emissions and energy consumption. In supporting the government's program on green cities, Brebes Regency is currently planning the construction of public facilities that can support community activities. Therefore, it is necessary to plan sustainable public facilities by maximizing the throughput value by maximizing the welfare and environmental damage aspects. UMI with 5 types of simulation in it, namely FAR, operational Energy, Life Cycle, Mobility and Daylighting is used as a simulation method. The results of the study of existing conditions indicate that aspects of mobility and daylighting need to be maximized. The simulation results show a FAR value of 0.27 with a Mobility Walkability score of 51 and a Bikeability score of 60 in public facilities and surrounding areas. Meanwhile, the intensity of the average Operational Energy value in the area of public facilities is (182 kWh/m²/Year) and Life Cycle (EE (3051.71 kwh/m²); EC (224.38 kgCO₂/m²)). Meanwhile, the average daylighting simulation results in the public facilities area show a natural resource value of 46%. Under the conditions of the model recommendation, the level of sustainability increases in operational energy, mobility and daylighting parameters. The simulation results increase Mobility to (81), Bikeability (91) and daylighting sDA increases to an average of 56% Meanwhile, the average value of Operational Energy in the area can be optimized at a value (162 kWh/m²/Year).

Keywords: *Public Facility, Sustainable, Urban Modeling Interface*