

# Model kelimpahan dan pengendalian sampah di Pantai Kuta untuk pengelolaan pariwisata yang berkelanjutan = Modeling of abundance and litter controlling in Kuta Beach for sustainable tourism management

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## Abstrak

[<b>ABSTRAK</b><br>

Penelitian bertujuan untuk mengetahui kelimpahan, dampak serta alternatif pengendalian sampah di Pantai Kuta. Luas daerah asal sampah dihitung dengan sistem informasi geografis. Dampak kelimpahan sampah dihitung berdasarkan biaya penanggulangan dan hilangnya pendapatan para pelaku usaha di Pantai Kuta. Model kelimpahan dan pengendalian sampah menggunakan sistem dinamik dengan software PowersimConstructor 2.5D. Sumber sampah Pantai Kuta berasal dari aktivitas pariwisata di Pantai Kuta dan sampah yang terdampar di Pantai Kuta dari Selat Bali. Sampah Selat Bali berasal dari DAS Selat Bali dan interaksi dari laut sekitar. Luas DAS Selat Bali sekitar 4.470 Km<sup>2</sup> yang terdiri dari 2.419 Km<sup>2</sup> di Pulau Jawa dan 2.051 Km<sup>2</sup> di Pulau Bali. Berdasarkan kabupaten/kota, terdapat 3 kabupaten di Pulau Jawa (Banyuwangi, Jember, Bondowoso) dan 5 kabupaten/kota di Pulau Bali (Denpasar, Badung, Tabanan, Jembrana dan Buleleng) yang sebagian wilayahnya berada di DAS Selat Bali. Dampak sampah di Pantai Kuta pada Januari 2011 telah mengurangi pendapatan pelaku usaha hingga 71% dan meningkatkan biaya pembersihan sebesar 63%-75%. Pemodelan kelimpahan sampah menggunakan data fluktuasi sampah selama 72 bulan dari Mei 2007 hingga April 2013. Proyeksi pemodelan dilakukan selama 72 bulan dari Mei 2013 hingga April 2019. Hasil pemodelan kelimpahan sampah Pantai Kuta telah dinyatakan valid dengan nilai AME 0,127. Terdapat dua faktor penguangkit kelimpahan sampah di Pantai Kuta (KSPK) yaitu fraksi sampah yang dibuang ke sungai (F-SDS) dan fraksi sampah pertanian tak terkelola (FSPT). Hasil simulasi dengan 4 kondisi adalah sebagai berikut: 1) Simulasi model yang diperpanjang (business as usual/BAU) mengindikasikan terjadinya peningkatan rata-rata KSPK sebesar 7,16% dibandingkan data 72 bulan sebelumnya. 2) Simulasi model dengan skenario pesimis dengan asumsi FSPT menjadi dua kali lipat akan meningkatkan KSPK rata-rata sebesar 234,70% atau naik sebesar 2,34 kali lipat dibanding BAU. 3) skenario moderat dengan asumsi F-SDS dapat dikendalikan menjadi setengahnya akan dapat menurunkan KSPK sebesar 10,79% dibanding BAU. 4) skenario optimis asumsi F-SDS dan F-SPT dapat dikendalikan menjadi setengahnya akan dapat menurunkan KSPK sebesar 16,13% dibanding BAU. Pengendalian KSPK dapat dilakukan dengan peningkatan kerjasama antar pemerintah di DAS Selat

Bali dengan target utama adalah penurunan F-SDS dan F-SPT.

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<b>ABSTRAK</b><br>

The study aims to determine the abundance, impact and alternative of litter controlling in Kuta Beach. The area of litter source calculated with geographic information systems. The impact of litter is calculated based on the clean-up costs of litter and loss of income entrepreneurs in Kuta Beach. Models abundance and litter control using dynamic system with software Powersim Constructor 2.5D.

The litter source in Kuta Beach derived from activity of tourism and litter that stranded of Bali Strait. The litter Bali Strait is derived from the Bali Strait watershed and the interaction of the surrounding sea. Bali Strait watershed area around 4,470 km<sup>2</sup> consisting of 2,419 km<sup>2</sup> in Java and 2,051 km<sup>2</sup> in the island of Bali. Based on the district/city, there are 3 districts in Java (Banyuwangi, Jember, Bondowoso) and 5 districts/cities on the island of Bali (Denpasar, Badung, Tabanan, Jembrana and Buleleng) is partially of their area located in Bali Strait watershed. The impact of litter on Kuta Beach in January 2011 has reduced entrepreneurs income by 71% and increases cleaning costs by 63%-75%.

Modeling abundance using litter data for 72 months from May 2007 until April 2013. Projection conducted for 72 months from May 2013 until April 2019.

Modeling has been declared valid with the AME value of 0.127. There are two factors leverage abundance of litter on Kuta Beach (KSPK) is the fractions of litter dumped into the river (F-SDS) and fractions of unmanaged agricultural litter (F-SPT). The simulation results with 4 conditions are as follows: 1) The simulation model is extended (Business as usual / BAU) indicated an average increase of 7.16% KSPK than previous 72 months. 2) Simulation model of the pessimistic scenario assuming the F-SDS doubled, KSPK will increase by an average of 234.70%, up by 2.34 times compared to BAU 3) moderate scenario assuming the F-SDS can be controlled by half, KSPK will decrease by 10.79% compared to BAU 4) optimistic scenario assuming the F-SDS and F-SPT can be controlled by half, could decrease KSPK by 16.13% compared to BAU. KSPK control can be done with cooperation among governments in the Bali Strait watershed with the main target is the reduction of F-SDS and F-SPT., The study aims to determine the abundance, impact and alternative of litter

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