FIG WORKING WEEK 2023
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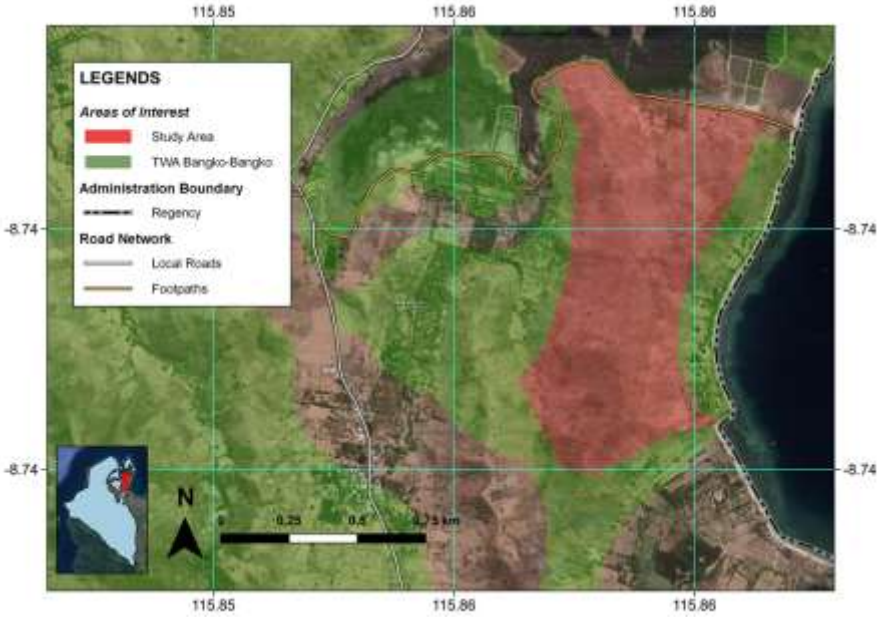
Protecting Our World, Conquering New Frontiers

Development of an Environmentally Friendly Tourism City in the Protected Forest of Lombok Using Integrated Geospatial Analysis (Case study: Sekotong, West Lombok, Indonesia)

Lalu Akhmad Farhan, Imam Buchori, Bambang Edhi Leksono
INDONESIA

Contact: l.farhan0815@gmail.com

Introduction



3 Functions of conservative forest:

1. **Protection**
2. **Reservation**
3. **Tourism** → Selected function in this study

Study Area

Batu Putih is a **village** in **West Lombok** that has a **conservation area** (**TWA Bangko-Bangko**). The study area is a plot of land that is privately managed within Batu Putih.

Issue

- The **conservation status** is constantly **ignored** by **local residents**.
- Areas that are supposed to be conservational forests were **transformed into agricultural lands and semi-permanent settlements**.

Violate the functions of conservation forest

Need to ***rebuild*** the environment

Introduction

Identified Opportunity

- **Tourism development** is one of the known **conservation approaches** (Chidakel, A., & Child, B., 2022).
- **Batu Putih** is a **suitable location to be developed as a tourism hub** since it has beautiful coastal scenery and ocean waves.

Method

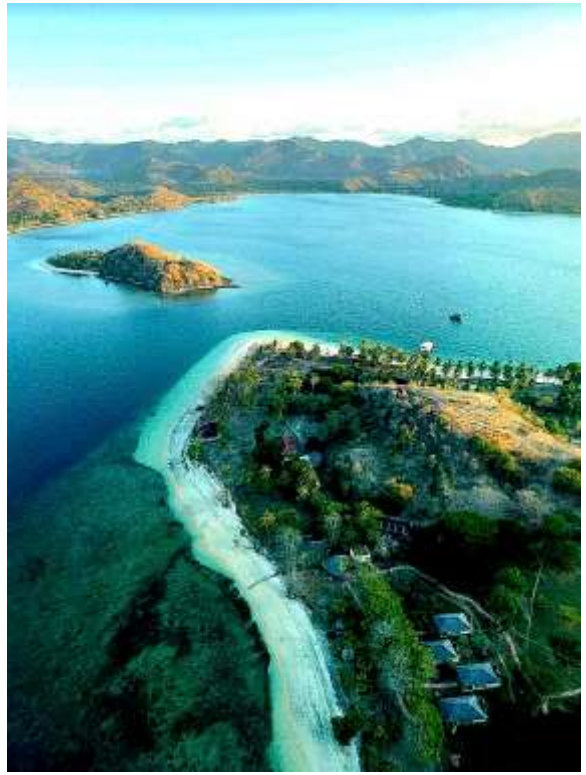
This study will utilize an **integrated geospatial method** to **locate suitable areas for tourism hub development** based on . **Geographical landscape analysis, topography, and terrain evaluation** with large-scale aerial photography maps

Study Objectives

1. Identify **how much conservation lands that were transformed** into agricultural lands and semi-permanent settlements.
2. **Maps priority areas** within the already transformed conservation lands that **should be developed first as a tourism city** based on slopes.

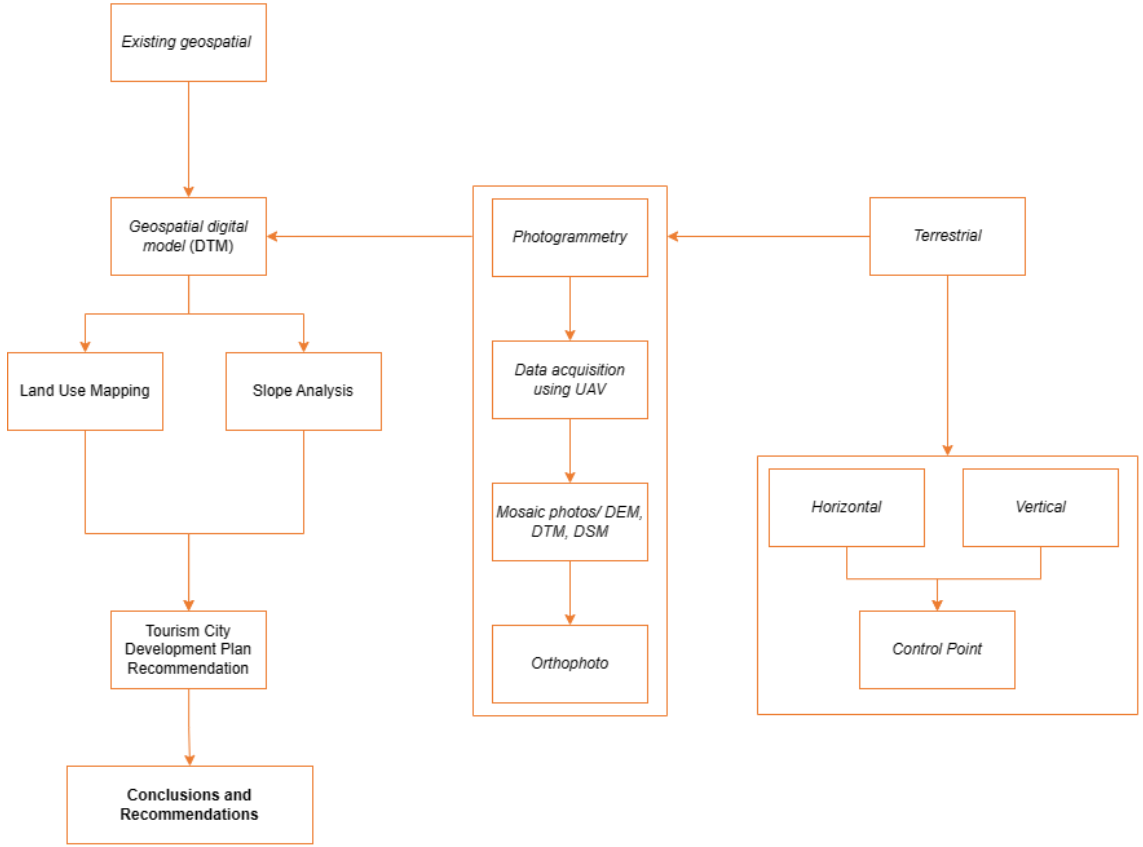
Expected Result

The results of this study are expected to **improve the local's social comunities, economic, cultural, and physical environment** positively.



source: https://www.ampenannews.com/2019/12/pesona-pariwisata-desa-batu-putih-kecamatan-sekotong-dengan-gili.html

Geospatial Analysis Approach



Tools/ Techniques

- **This study utilizes:**
  1. **UAV tools**
  2. **Orthophoto techniques**
  3. **Point-cloud acquisition**

Acquisition Target Information

1. **Land use types**
2. **Land slopes**

- Map the ideal location for tourism city development based on land use types and slopes.
- The land is **prioritized** if it has a **slope lesser than 15%**. Lands with said criteria are known to be easier to develop compared to lands with steeper slopes (Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2007).

Geospatial Analysis Approach

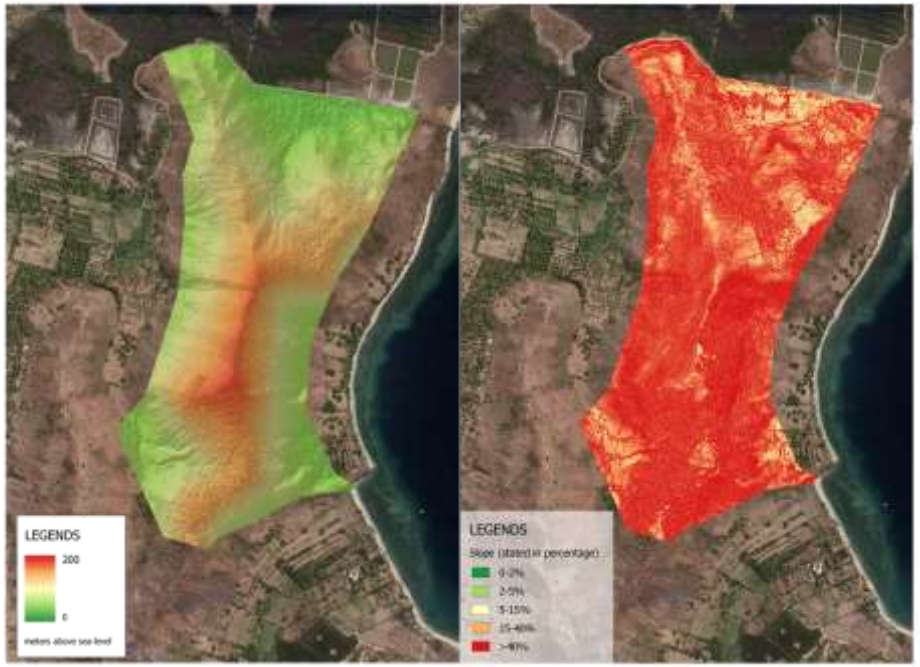
Tools

Product	Specifications
Foxtech Loong 2160 VTOL (V – Tail)	Wingspan 2160nm
	Max Takeoff Weight 8kg
	Material EPO, Plastic Film, PVC
	800kg max payload weight (excluding batteries)
	Up to 95 minutes flight time (without camera payload)
	Up to 10km control distance
	Stall speed 50 km/h
	Service Celling 3000m AMSL
	Wind resistance 28 km/h
	68-72 km/h Cruising Speed
Sony Cyber-Shot DSC-RX1 RII	42.4 MP Full-frame back-illuminated Exmor R CMOS sensor
	35mm F2.0 ZEISS Sonnar T lens with macro capability
	World's first user-selectable optical variable low-pass filter
	Fast Hybrid AF with 399 focal plane phase-detection AF points
	Retractable 2.4-million dot XGA OLED Tru-Finder w/ ZEISS T coating
	DIOPTRE ADJUSTMENT: -4.0 to +3.0m⁻¹

Results and Findings

- **Total land use changes** that occurred in the study area is **46,35 Ha.**
- Agricultural lands have the biggest change proportions compared to other land uses (29,2 Ha/58,91%).
- Barren lands are found to be related to agricultural land development. The barren lands in this area are formed from forest clearing. The cleared lands are then prepared to be agricultural lands.

Results and Findings



- The **study area** is **dominated** by **hilly topography**. The **hill forms a natural barrier** and separated the study area into three parts.
- The area consists mostly of >40% slopes. **Flat areas (0-15%) tend to be located in the periphery areas.**

Results and Findings

- Final analysis shows that there are a total of **3,76 Ha** of land **most suitable** for **tourism hub development.**
- Further observation shows that most suitable areas are **located on the peripheries** and tend to be **located behind the natural hill barriers.**

Conclusions & Recommendations

Conclusions

1. The **development of a new tourism city** should be done on the **periphery areas first.**
2. The **natural barrier** factor given from the **hill should be considered** in new tourism city development.
3. **Utilization of UAVs** is **enriching** the **analysis** because of its ability to identify certain phenomena and contributing factors surrounding it.

Recommendations

1. A **study** regarding **local natural disasters** should be **conducted in future** studies regarding tourism hub development.
2. **UAVs** should be **utilized** in **large-scale land-use monitoring in the future** by local conservation stakeholders.

THANK YOU

FOR YOUR KINDLY ATTENTION

Bibliography

- Chidakel, A., & Child, B. (2022). Convergence and divergence in the economic performance of wildlife tourism within multi-reserve landscapes. Land Use Policy, 120, 106252. https://doi.org/https://doi.org/10.1016/j.landusepol.2022.106252
- Kementerian Pekerjaan Umum dan Perumahan Rakyat (2007). Peraturan Menteri PU No. 20/PRT/M/2007 tentang Teknik Analisis Aspek Fisik dan Lingkungan, Ekonomi, serta Sosial Budaya dalam Penyusunan Rencana Tata Ruang. 20.