قالوا سبحانك

لا علم لنا الا ما علمتنا انك انت العليم الحكيم

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Land Suitability Assessment (LSA)

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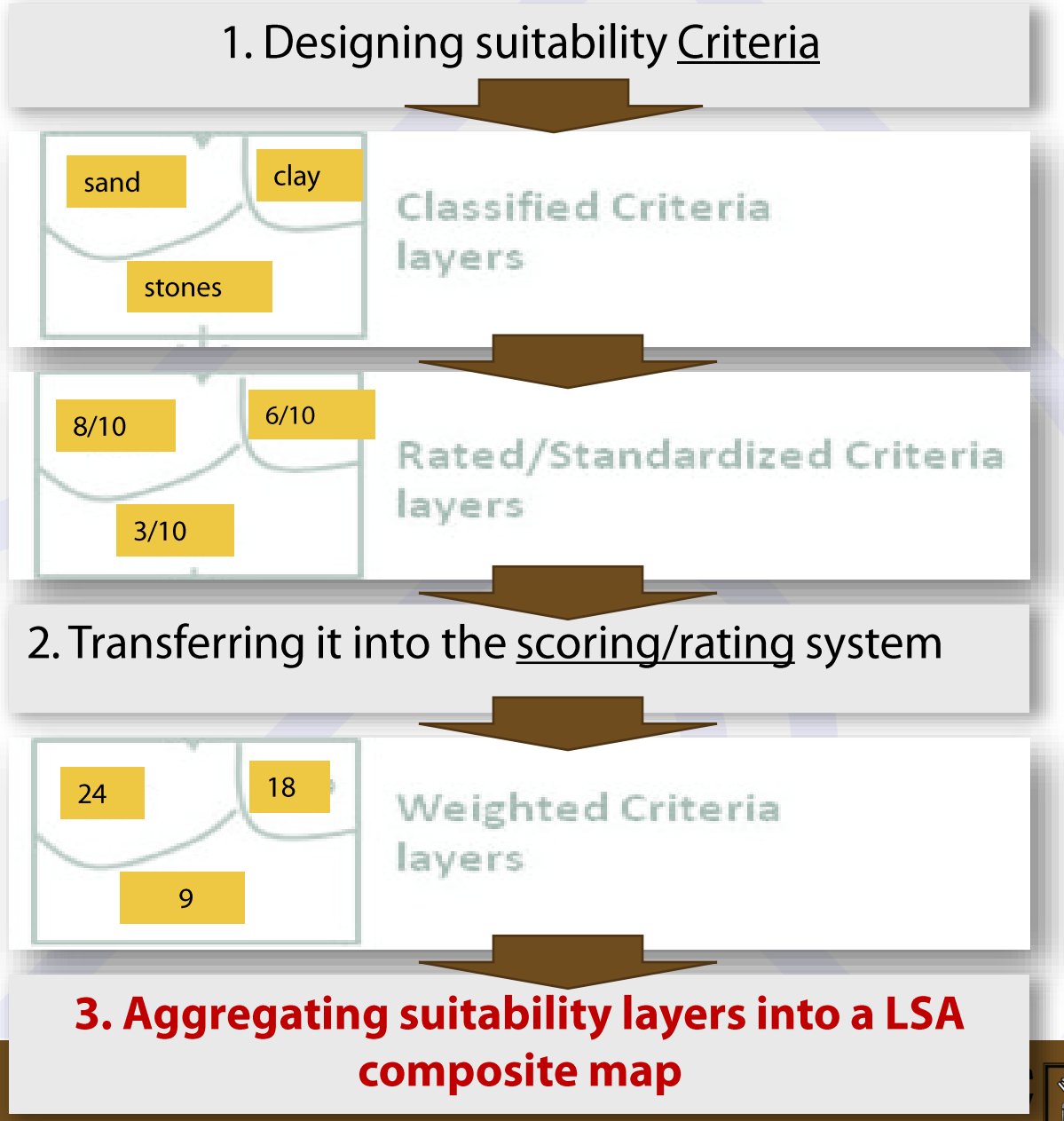
Land Suitability Assessment

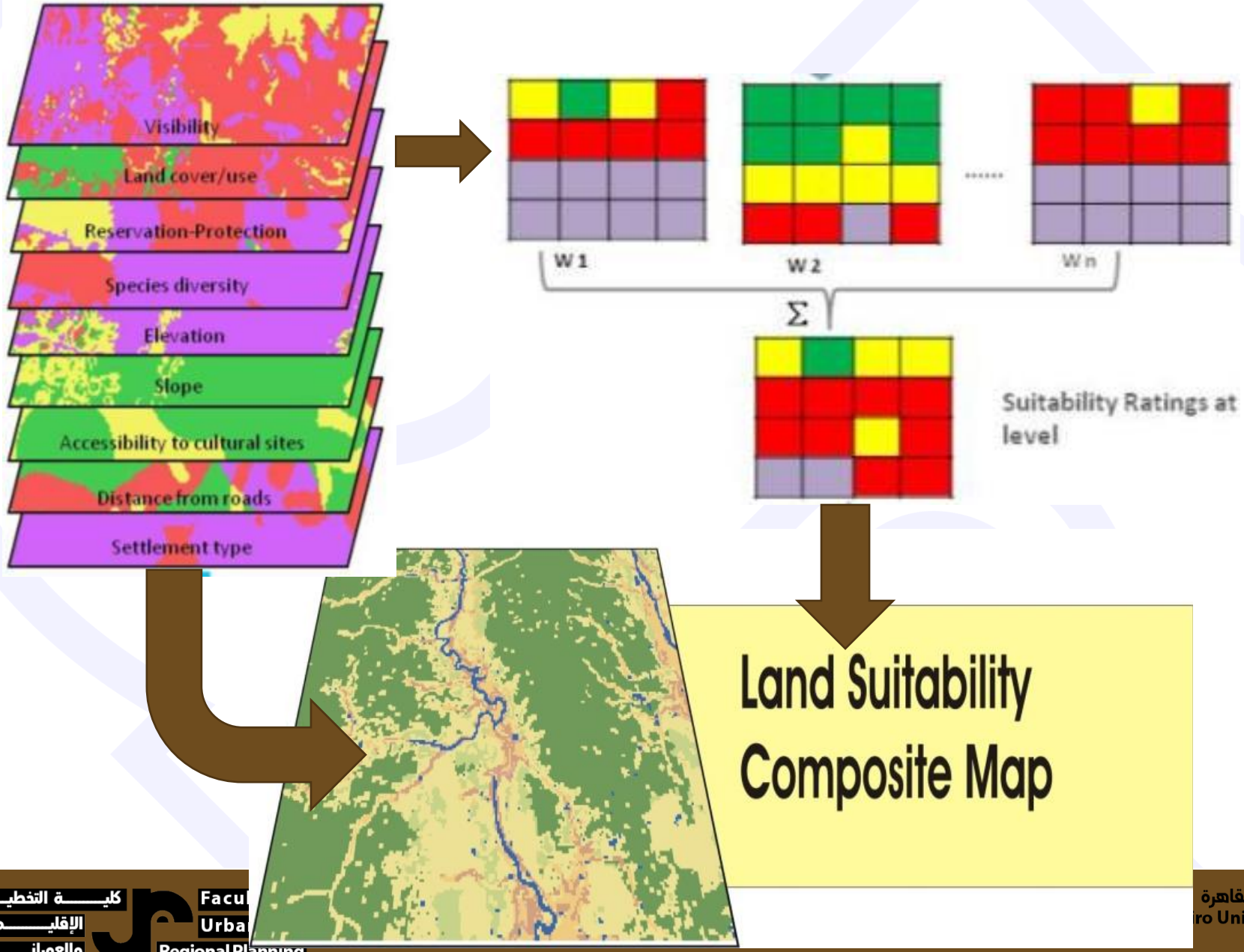
LSA Aims to:

- Maximize Benefits
- Avoid Hazards
- Minimize Impact
- Minimize Cost

General Steps of Land Suitability Assessment



Land Suitability Assessment



Examples of LSA

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Case 1:
LSA for Development
Miami Valley

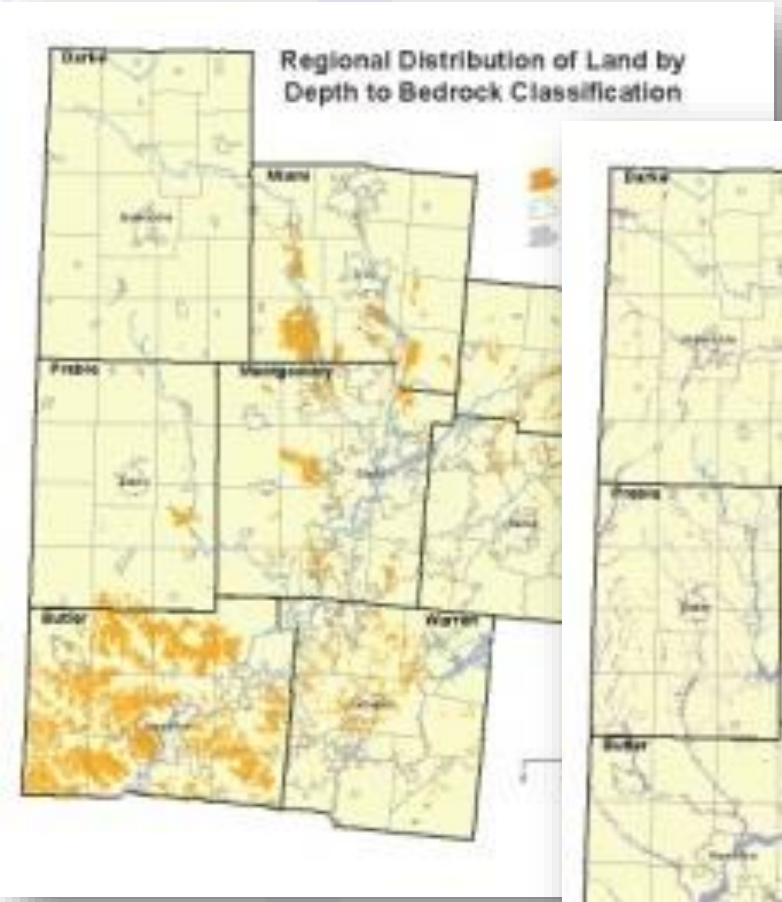
Criteria of 30 variables

15 related to Natural Environment

15 related to Built Environment

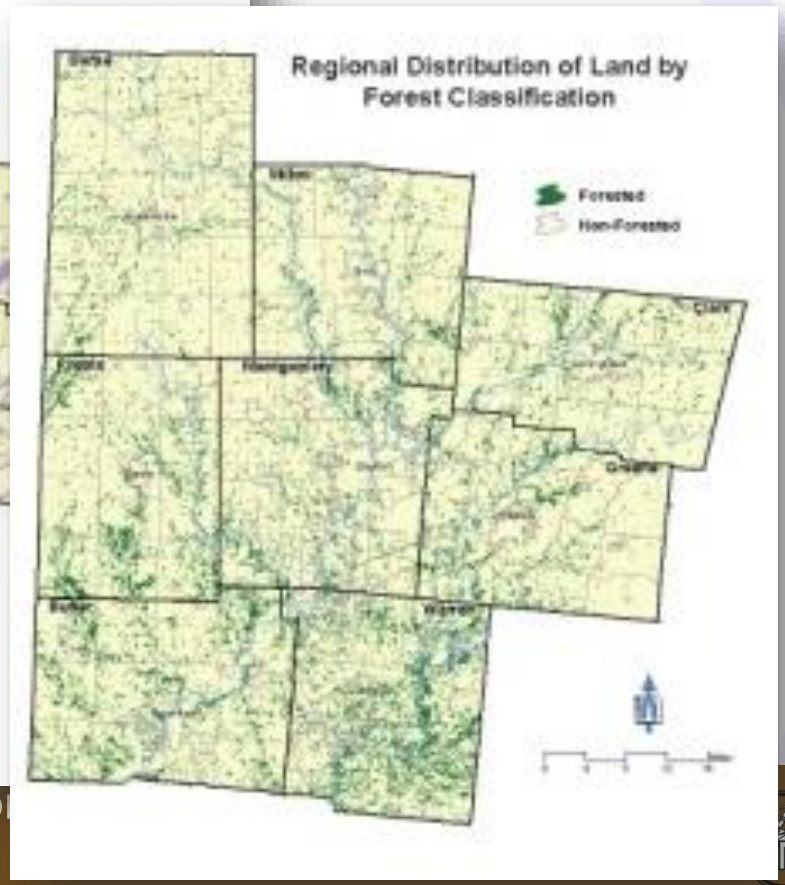
Natural Environment

Depth to bedrock



Flood plain

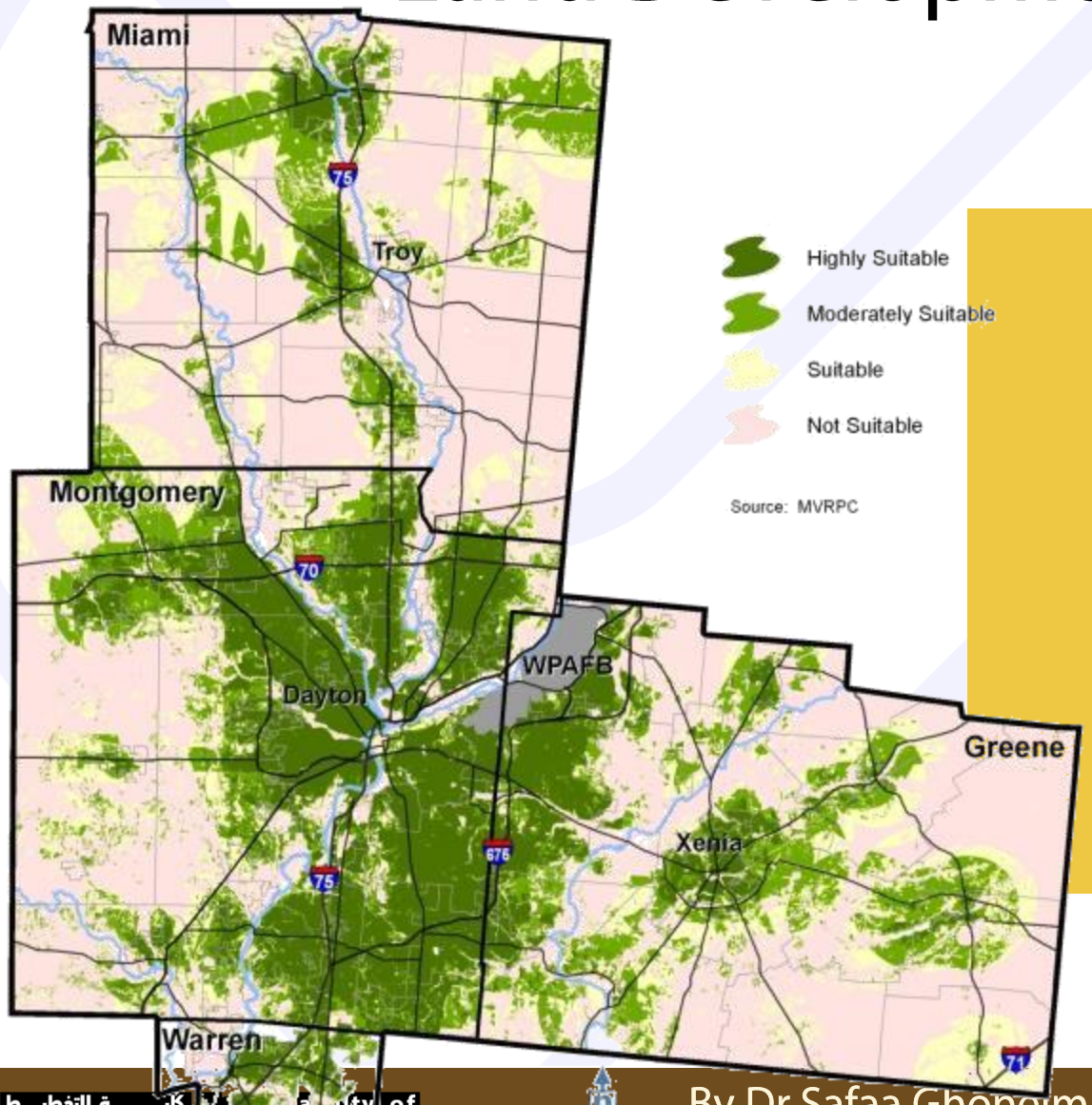
Forest classes

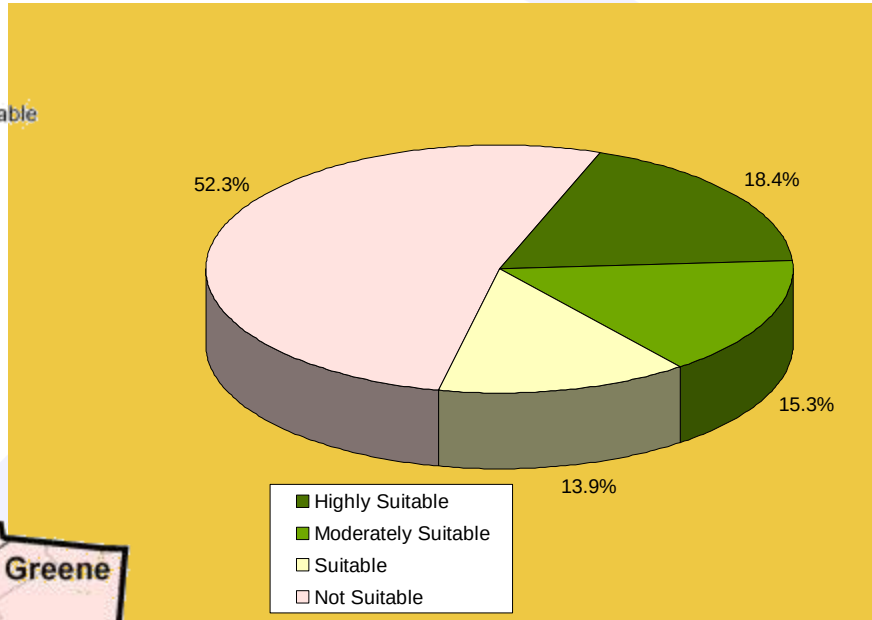


Land Suitability Scoring System

Environment Factors	Data Attributes	Suitability Measures	Attribute Score	Weight Factor	Suitability Score
Depth to Bedrock	Adequate Depth	Suitable	5	2	10
	Shallow Depth	Not Suitable	1		2
	Not Rated	NA	0		0
Floodplain	Outside Floodplain	Suitable	5	4	20
	500 Year	Somewhat Suitable	2		8
	100 Year	Not Suitable	1		4
Forested Areas	Non-Forested	Suitable	5	2	10
	Forested	Not Suitable	1		2
Ground Water Pollution Potential	Low Potential	Suitable	5	2	10
	Medium Potential	Somewhat Suitable	3		6
	High Potential	Not Suitable	1		2

Land Development Suitability

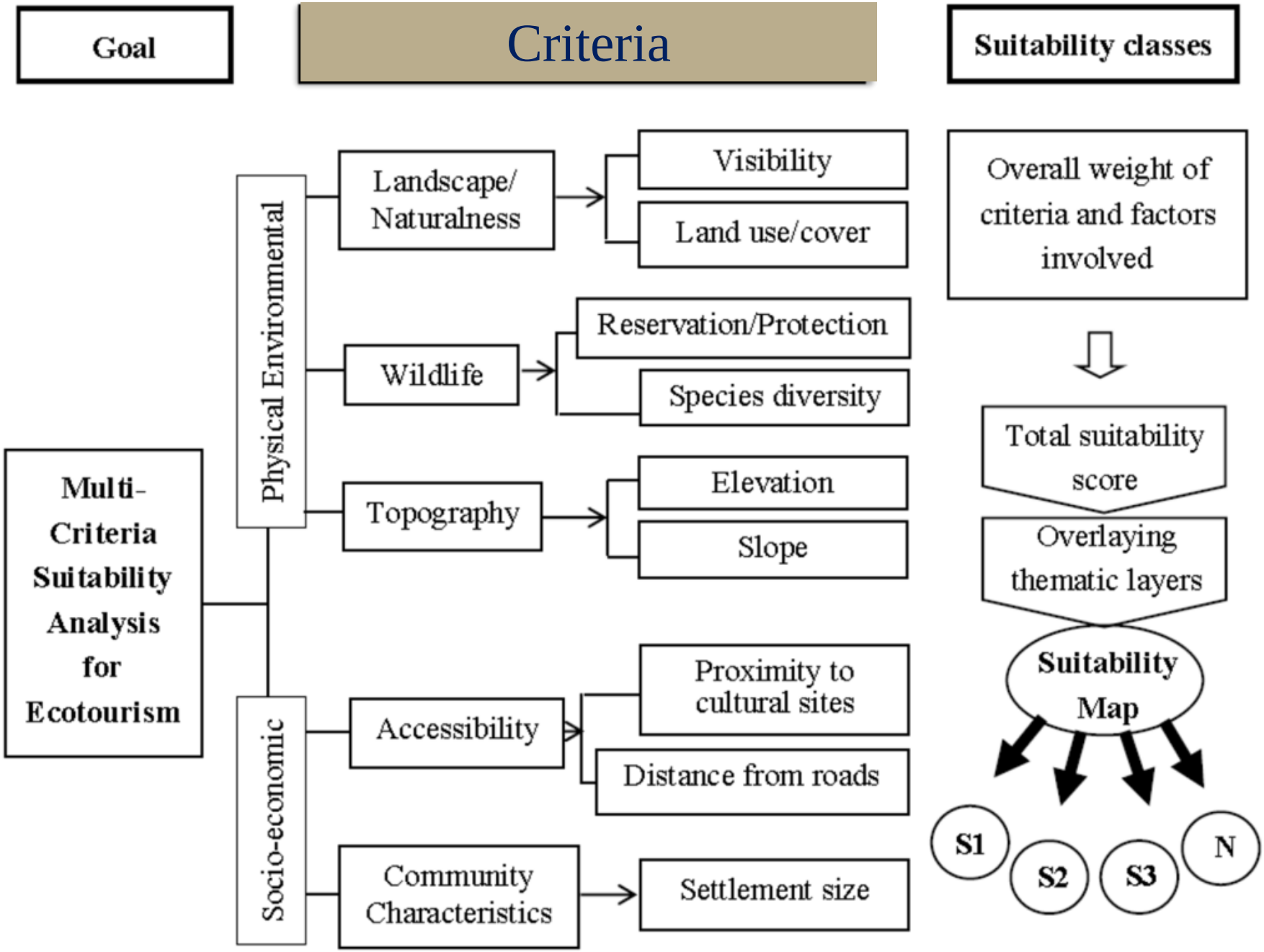




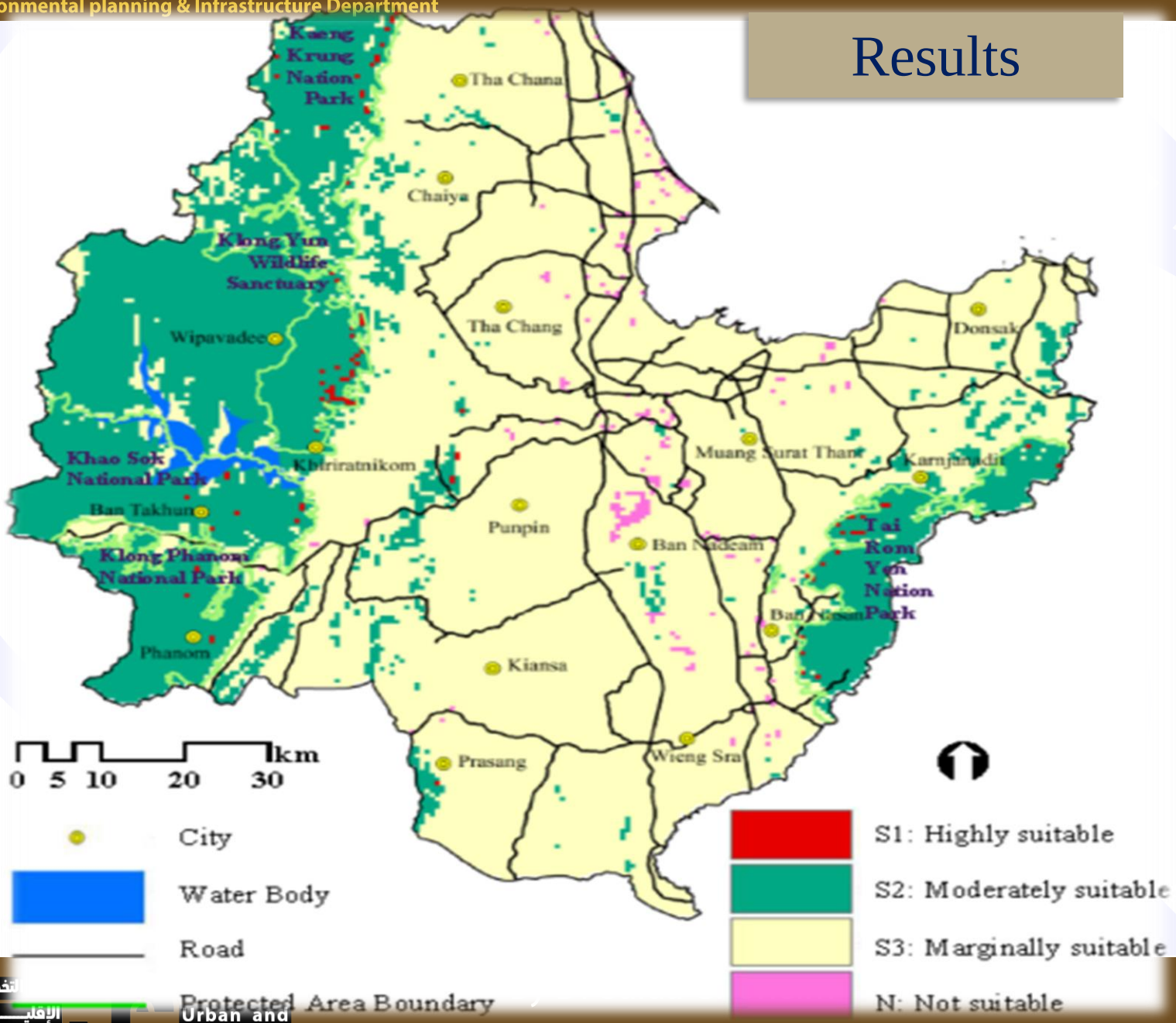
Case 3: LSA for tourism

Thailand

- Rich in nature: coastline of around 156 km & various islands.
- There are ferries providing transportation from main land to the islands.
- The topography is a combination of mountain ranges, valleys and river plains.
- The local climate is influenced by the monsoon from the Indian ocean.
- History , culture, and a number of parks;


Goal
Criteria
Suitability classes
Multi-Criteria Suitability Analysis for Ecotourism
Physical Environmental
Socio-economic
Landscape/ Naturalness
Visibility
Land use/cover
Wildlife
Reservation/Protection
Species diversity
Topography
Elevation
Slope
Accessibility
Proximity to cultural sites
Distance from roads
Community Characteristics
Settlement size
Overall weight of criteria and factors involved
Total suitability score
Overlaying thematic layers
Suitability Map
S1
S2
S3
N

Results

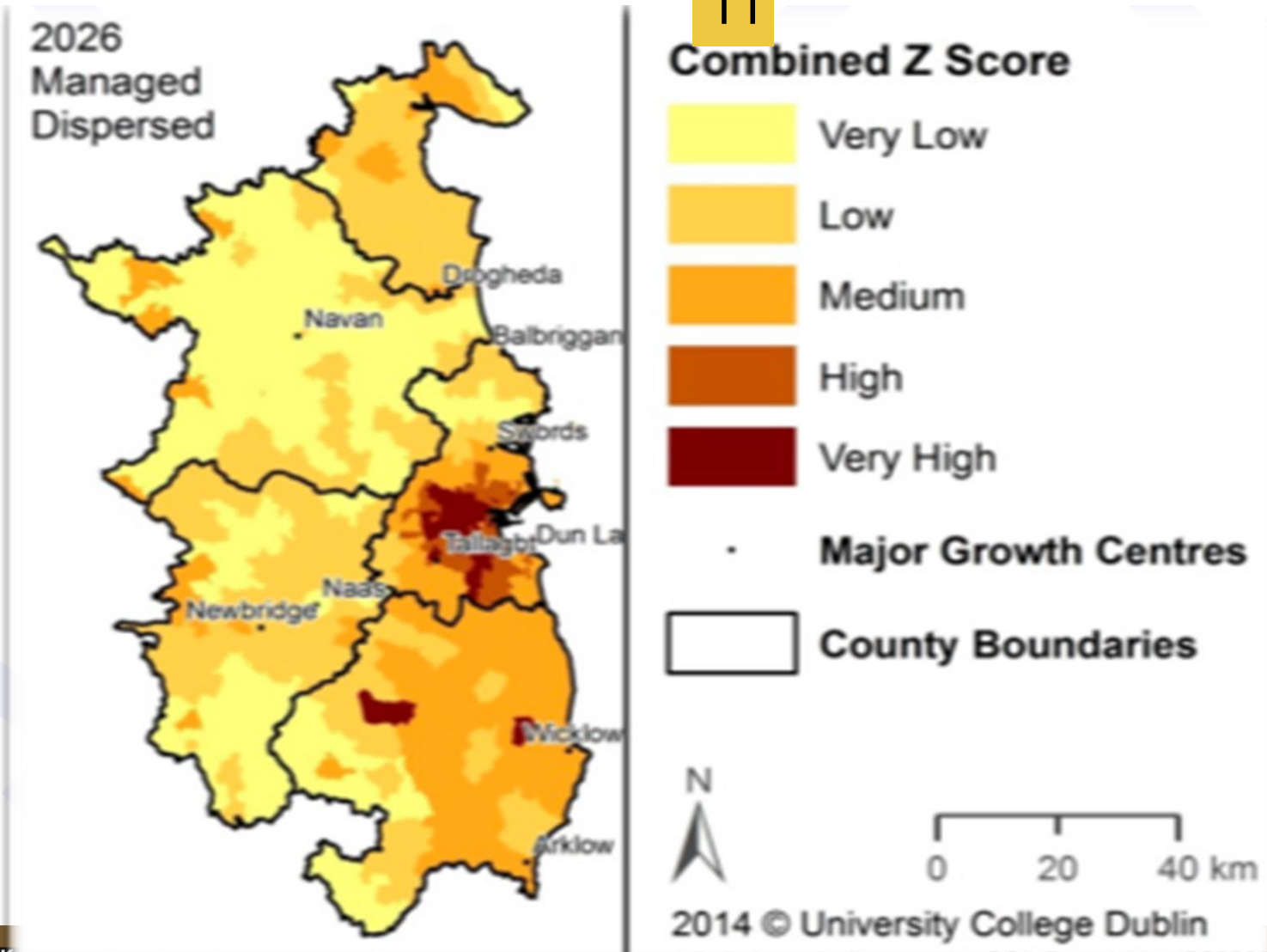

Kaeng Krung Nation Park
Tha Chana
Chaiya
Klong Yun Wildlife Sanctuary
Tha Chang
Wipavadee
Donsak
Khao Sok National Park
Khiriratnikom
Muang Surat Thani
Karnjanadit
Ban Takhun
Punpin
Tai Rom Yen Nation Park
Ban Nadeam
Klong Phanom National Park
Ban Ta Sen
Phanom
Kiansa
Prasang
Wieng Sra
km
0 5 10 20 30
City
Water Body
Road
Protected Area Boundary
S1: Highly suitable
S2: Moderately suitable
S3: Marginally suitable
N: Not suitable

Case 5: LSA for **Regional Development** - Ireland

An example of :

- +/- directions of variables
- Based on scenarios

Indicators of suitability

1. Distance to industrial areas → -
2. Proximity to commercial areas→ -
3. Proximity to services →-
4. Proximity to main roads → -
5. Proximity to railroad and light rail stations → -
6. Proportion of residential areas → -
7. Proximity to coast → +
8. Quantity of potential jobs →+
9. Quantity of nearby educational institutes →+
10. Quantity of nearby green areas → +
11. Ratio of green areas to built areas → +

$$Z_{comb} = \frac{-Z_1 + Z_2 - Z_3 - Z_4 - Z_5 - Z_6 - Z_7 - Z_8 + Z_9 + Z_{10} + Z_{11}}{11}$$