

0. INTRODUCTION

1. **STEP 1**: PROBLEM IDENTIFICATION & INITIAL DATA COLLECTION

1.1 Case study No 1: Ikaria Island

1.2 Case study No 2: Troizina

1.3 Lesvos Island

1.3.1 **Case study No 3: Lesvos – Andissa**

1.3.2 Case study No 4: Lesvos – Polychnitos

2. STEP 2: IDENTIFICATION OF STAKEHOLDERS

3. STEP 3: CREATION OF ALTERNATIVES

4. STEP 4: ESTABLISHMENT OF CRITERIA

5. STEP 5: CRITERIA EVALUATION & PREFERENCE ELICITATION

6. STEP 6: SELECTION OF THE MCDA TECHNIQUE

7. STEP 7: MODEL APPLICATION

8. STEP 8: STAKEHOLDER ANALYSIS OF THE RESULTS – FEEDBACK

1.3 Lesvos Island

Lesvos Island is located in the Northeast of the Aegean Sea, opposite of the Gulf of Endermit – the sea border with the East (Figure 1.1). It is the third largest island in Greece after Crete and Evvoia. It has an area of 1,630 km² and a coastline length of 320 km. Most of the island is covered by olive trees, while the remaining land is fruit trees, grapevines, farms and grasslands.



Fig. 1.1. Map of Lesvos Island

Lesvos Island has a population of 90,436 people. The major occupation of the island’s inhabitants is agriculture. Other important economic activities comprise tourism and fishing. Table 1.1 presents the energy situation of the island.

Table 1.1. Energy data of Lesvos Island

| Diesel installed capacity [MW] | Annual energy demand [MWh] | Max energy demand [MW] | RES installed capacity [MW] | Maximum allowed RES installed capacity [MW] |
|-----------------------------------|-------------------------------|---------------------------|--------------------------------|--|
| 65 | 209,733 | 47.7 | 9.5 | 19.5 |

1.3.1 Case study No 3: Lesvos – Andissa

Regional data

Municipality of Andissa-Eresos covers an area of 291 km² and is located 89 km northeast of the capital city (Mytilene) of Lesvos, with a total population of 5,530 inhabitants. It consists of the following municipal departments (Table 1.2):

Table 1.2. Population of Eresou-Andissis municipality

| Population per Municipal Departments | | | | | | | Total population of Municipality of Eresou-Andissis |
|--------------------------------------|--------|----------|-----------|------------|-------|--------|---|
| Andissa | Eresos | Vatoussa | Mesotopos | Pterountos | Sigri | Hidira | |
| 1,340 | 1,581 | 570 | 1,039 | 150 | 402 | 448 | 5,530 |

Sigri is famous worldwide for its Petrified Forest and it is declared as a Protected Natural Monument. The creation of the monument is related to the ancient volcanic activities in the area and the age of the Petrified Forest is estimated to be around 20,000,000 years and occupies an area of 150 km².

Current state

Electricity supply in the area is covered by the autonomous conventional power station, which is located in Mytilene. Currently, in the area between the municipal departments of Andissas and Sigri, there is a private owned wind park that comprises of 12 wind turbines with a total capacity of 7,2 MW. There were no local opposition against the wind park. In the area of Sigri Public Power Corporation (PPC) owns also a wind park, consisting of 8 wind turbines, with a total capacity of 1.8 MW.

Type of R.E.S: Wind energy

In this case-study, the expansion of the existing private owned wind park is examined. “Elliniki Technodomiki Energiaki” S.A. will install another 3 wind turbines in the area by the end of 2004 with a total capacity of 1.8 MW. In this way, the overall capacity of the wind park will rise from 7.2 to 9 MW.