

**CHAPTER 8.**

**SECOA Territories and Processes:  
An Attempt of Conflicts' Interpretation**

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## 1. Introduction

The outputs generated by the Self-Organizing Maps (SOM) and Feed Forward Neural Networks (FFNN) related to the taxonomy and the model have been used, in the present study, to analyze and classify the SECOA territories and conflicts in a systematic and comparative way. An attempt has been made to interpret the SECOA realities. The present chapter provides an overview of the achieved results. A classification of the SECOA territories is provided, followed by a classification of the SECOA conflicts. Then, territories and conflicts are interpreted simultaneously and comparatively.

## 2. A Classification of Territories

### 2.1 The EU regions

Variables and data used for the SOM's SOM of the EU areas have been re-interpreted in order to achieve taxonomy of the SECOA territories. They are organized into four main categories: variables that explain characteristics related to individuals; variables related to enterprises; variables signifying positive environmental characteristics; and variables signifying negative environmental characteristics (Table 8.2.1).

*Table 8.2.1. Interpretation of the SECOA variables and associated data.*

Groups of variables		Data
<b>Individuals' related variables</b>		
Characteristics of the settled population	Families' economic prosperity	Number of residents Number of households
Area attractiveness: for daily activities, temporary mobility, permanent mobility	Families' economic difficulties	Average income Number of tourists Number of migrants
Residential-oriented land use		Unemployment rate Land use: residential mix

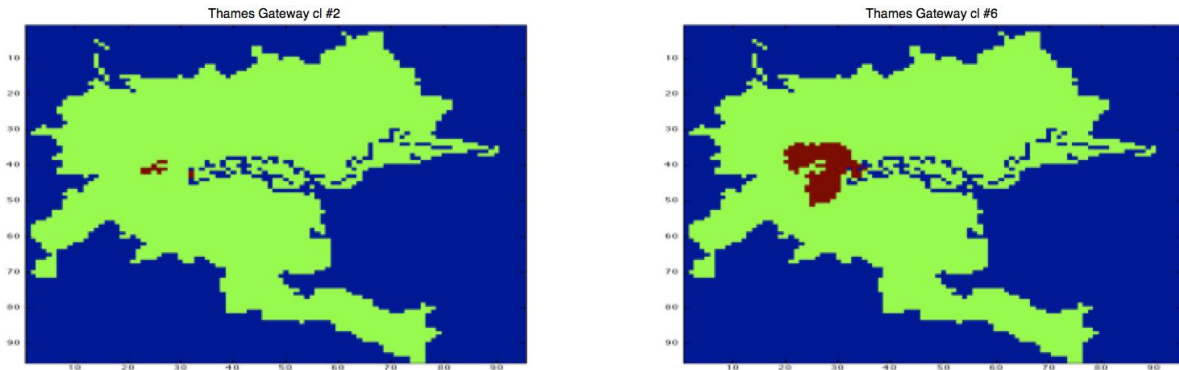
<b>Businesses' related variables</b>		
Enterprises' economic dynamism	Productive-oriented land use	Employees and local units of the enterprises Land use: industrial, commercial
<b>Environment related variables</b>		
Environment friendly land use	Agriculture-oriented land use	Land use: natural, open space, agriculture
<b>Environmental problems related variables</b>		
Natural hazards		
Pollution	Infrastructures with high impact	Flood hazard SLR Motorization rate

The first group includes variables that are able to describe individuals as well as households and their dwellings. The second group includes variables that are able to describe the economic activities, related to both enterprises and land use. The third group includes variables that are able to describe a positive environmental state. Agricultural land use has been interpreted as positive for the environment, since agricultural activity has been considered as a way to preserve the territory and the landscape. The fourth category includes variables that are able to describe a negative environmental state or environmental threats.

Following the outputs of the SOM's SOM, the territories of the metropolitan and urban regions located in the EU (except for Funchal) have been grouped in three main types: (i) central, urban areas; (ii) periurban and suburban areas; and (iii) rural and natural areas.

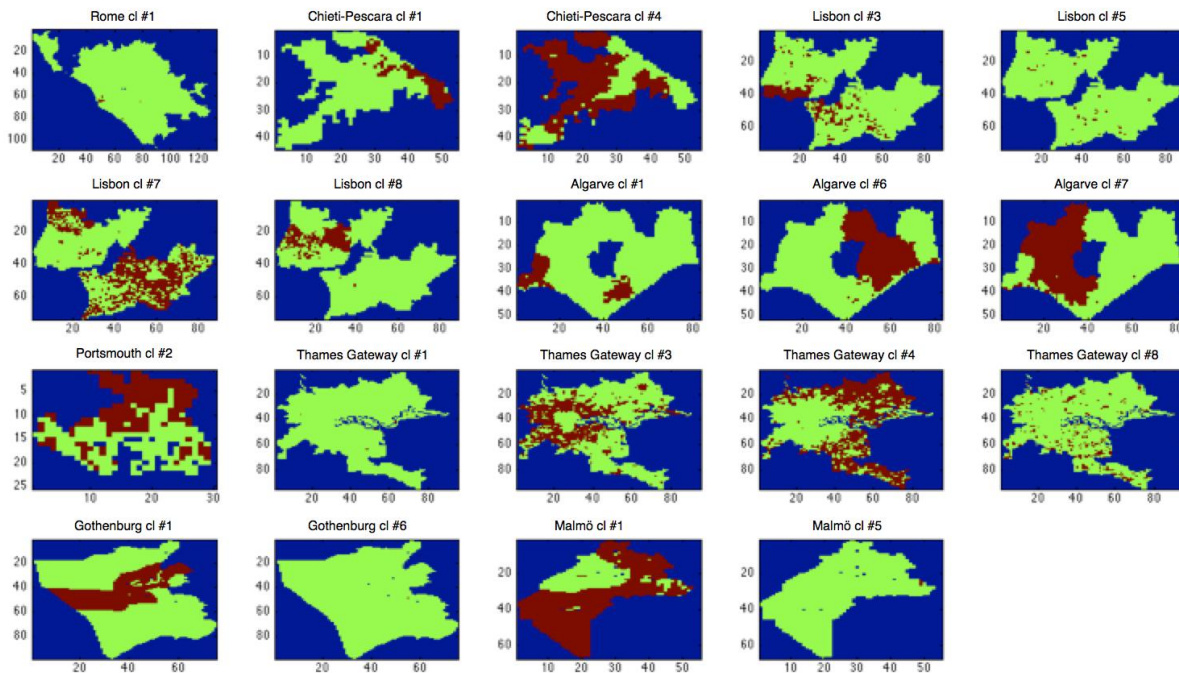
Central, urban areas could be further subdivided. There are, indeed, some areas that are characterized by high income, high unemployment, a high number of households and residential areas, a disproportionately low number of residents, high intensity of the services and industrial sector (no intensity of the agriculture sector), that are unattractive for the permanent component of human mobility, that present a low motorization rate and are particularly exposed to natural hazards; those areas show characteristics that can be found in central, gentrified urban areas (Figure 8.2.1.1);

Figure 8.2.1.1. EU areas: type i) – a).



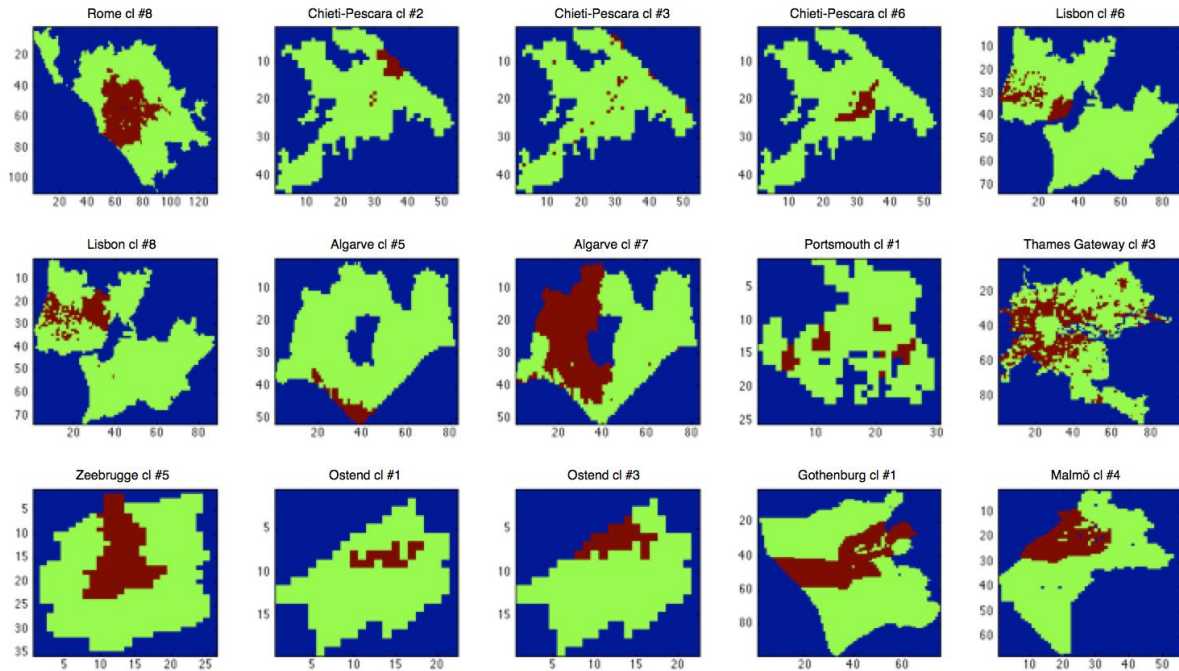
there are some attractive areas for both the permanent and temporary components of human mobility with important motorization rates and high impact of infrastructures and some traces of agriculture activity; those areas show characteristics that make them comparable to core areas (Figure 8.2.1.2);

Figure 8.2.1.2. EU areas: type i) – b).



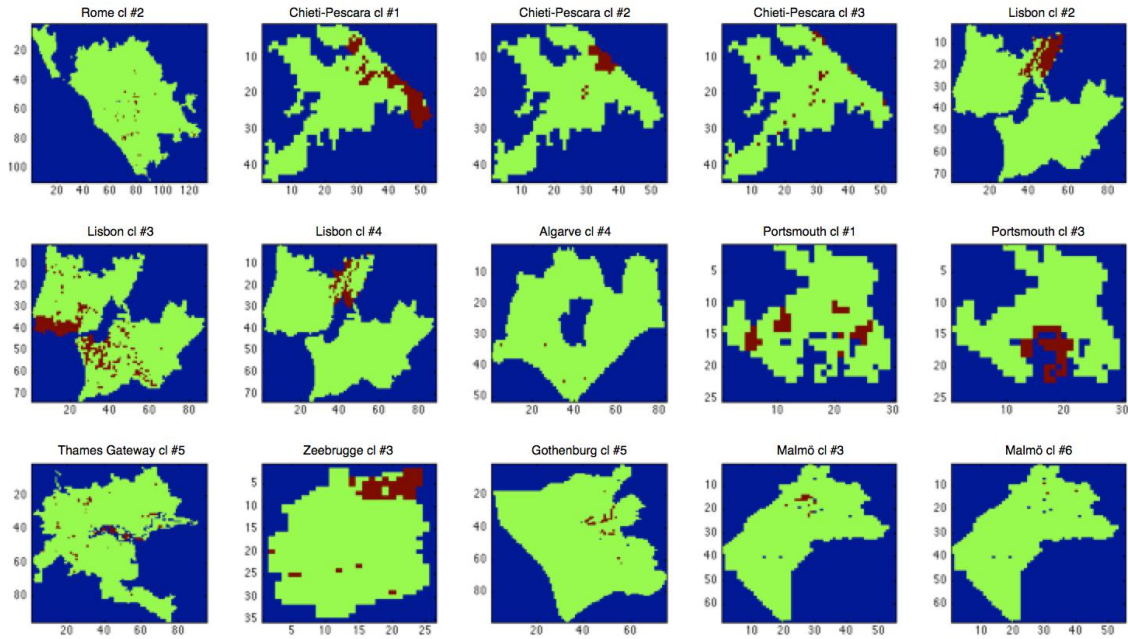
there are, finally, areas with an important presence of households and residents, attractive for tourists, with a high number of employees, that do not present unemployment problems, and have a high motorization rate; those areas show characteristics that can be considered similar to those of central, mature urban areas (Figure 8.2.1.3).

Figure 8.2.1.3 - EU areas: type i) – c).



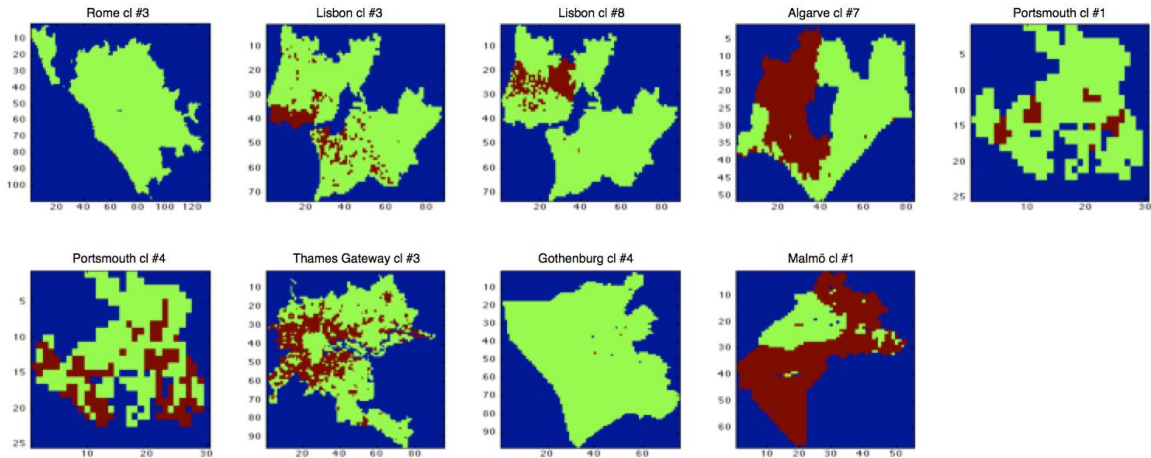
Among the periurban and suburban areas, different features can be highlighted. There are, indeed, areas with high intensity of commercial and industrial spaces (and no agriculture), dynamism of all economic sectors (but important unemployment rates), low presence of households, and subjected to natural hazards; those areas show characteristics that can be assimilated to those of peri-urban areas (Figure 8.2.1.4);

Figure 8.2.1.4. EU areas: type ii) – a).



there are other areas characterized by an important presence of residents and households, high motorization rate, that are attractive for the permanent component of human mobility, and subjected to the risks linked to the sea level rise; those areas present features that can be assimilated to those of suburban, residential, coastal areas (Figure 8.2.1.5);

Figure 8.2.1.5. EU areas: type ii) – b).



there are, finally, areas characterized by the importance of residential land use; they can be defined as residential, periurban and suburban (Figure 8.2.1.6).



Figure 8.2.1.6. EU areas: type ii) – c).

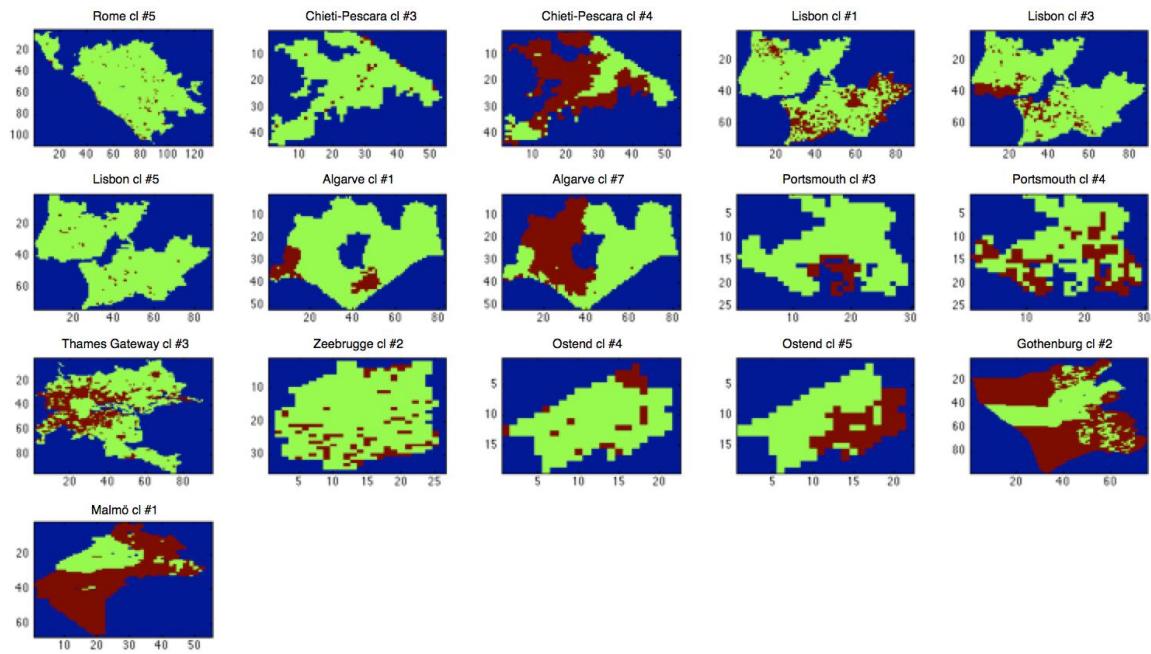
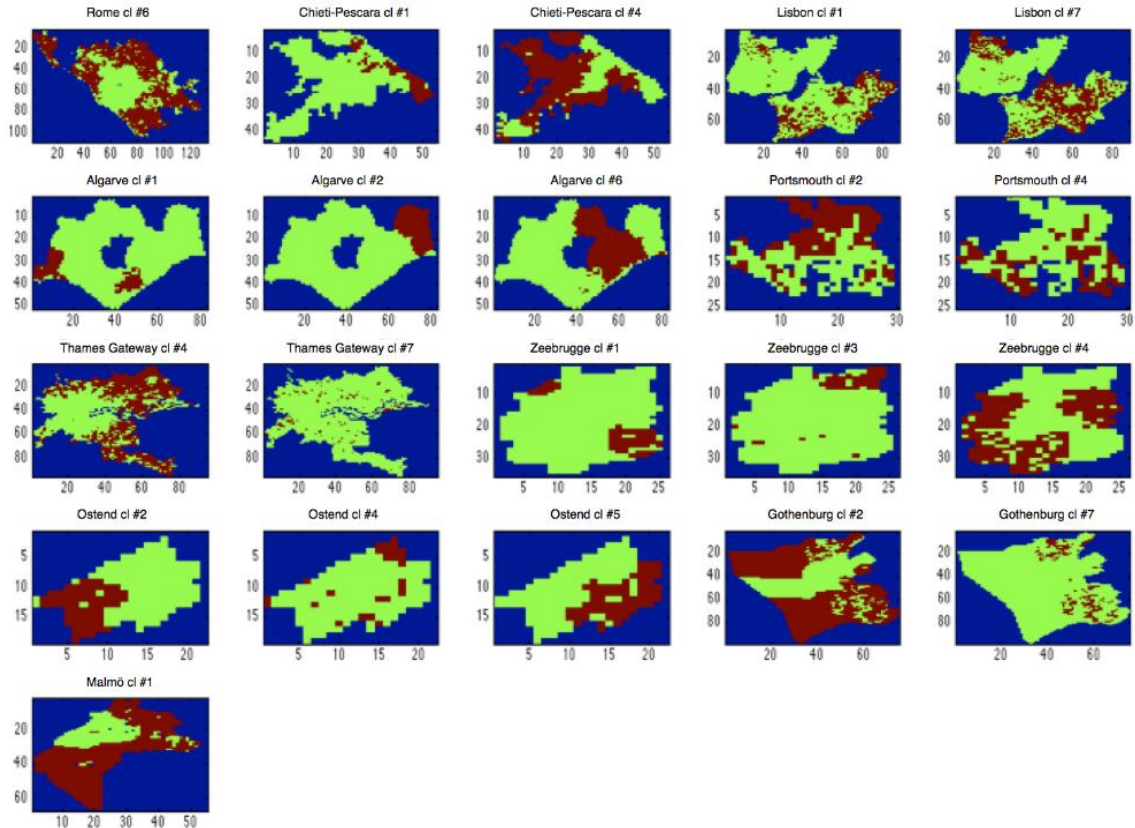
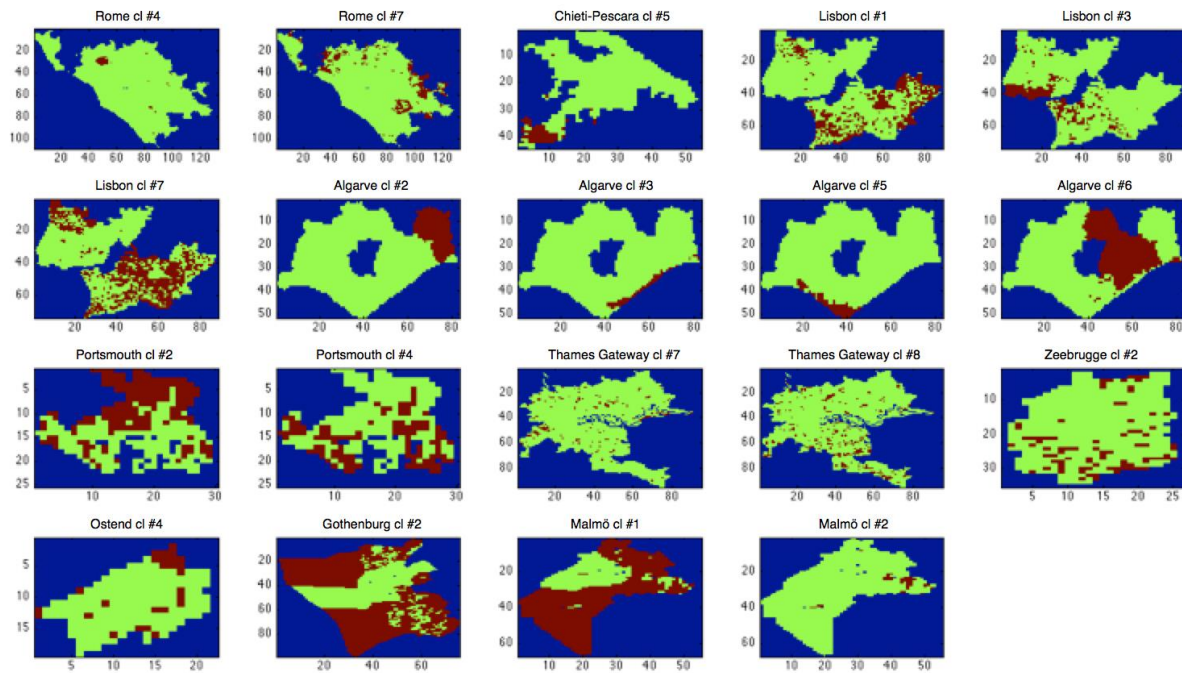


Figure 8.2.1.7. EU areas: type iii) – a).



Among the rural and natural regions, areas characterized by the dominance of agriculture over the other sectors of economic activities and low presence of households can be found (Figure 8.2.1.7) as well as areas characterized by an important presence of nature and open spaces (Figure 8.2.1.8);

Figure 8.2.1.8. EU areas: type iii) – b).



the first ones can be considered as peripheral, rural areas while the second ones can be considered as peripheral, natural areas.

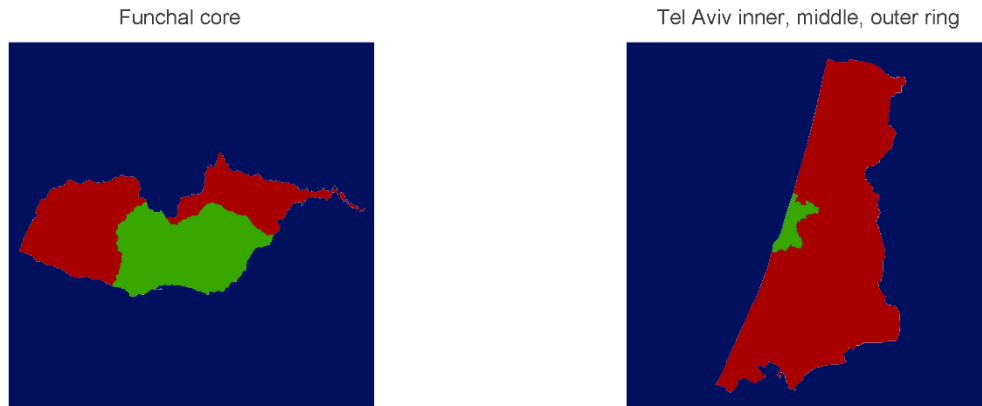
## 8.2.2 The Asian regions and Funchal

Given the difference among the variables and data used, a different classification was elaborated for the Asian regions and Funchal. Interpreting the variables according to the scheme provided in Table 8.2.1 and the outcomes of the SOM's SOM, those areas could be grouped into five main types.

In the core of Funchal and in the inner, middle and outer rings of Tel Aviv, areas characterized by a high concentration of population and dwellings, attractive for both tourists and migrants, with the presence of economic activities concentrated in the tertiary sector are found (Figure 8.2.2.1);



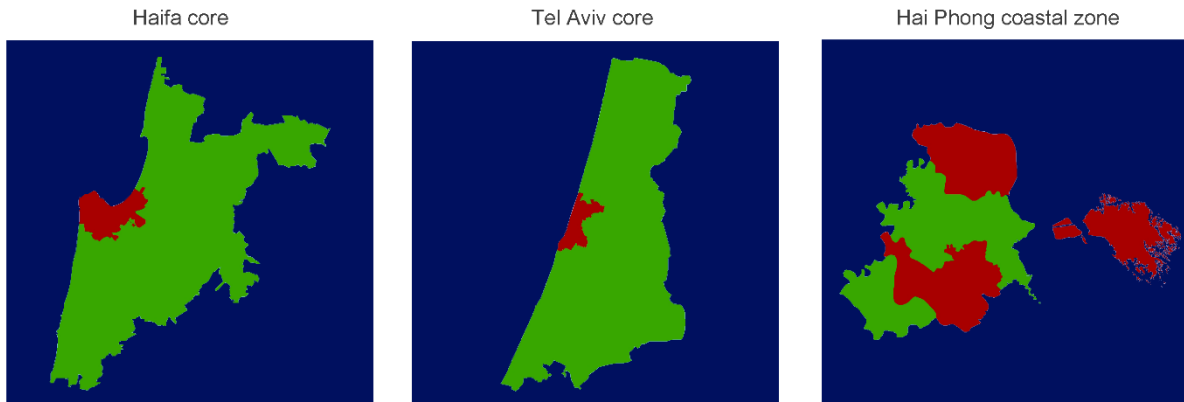
Figure 8.2.2.1. *Asian regions and Funchal: type a).*



they can be assimilated to the central, urban areas of the EU cases.

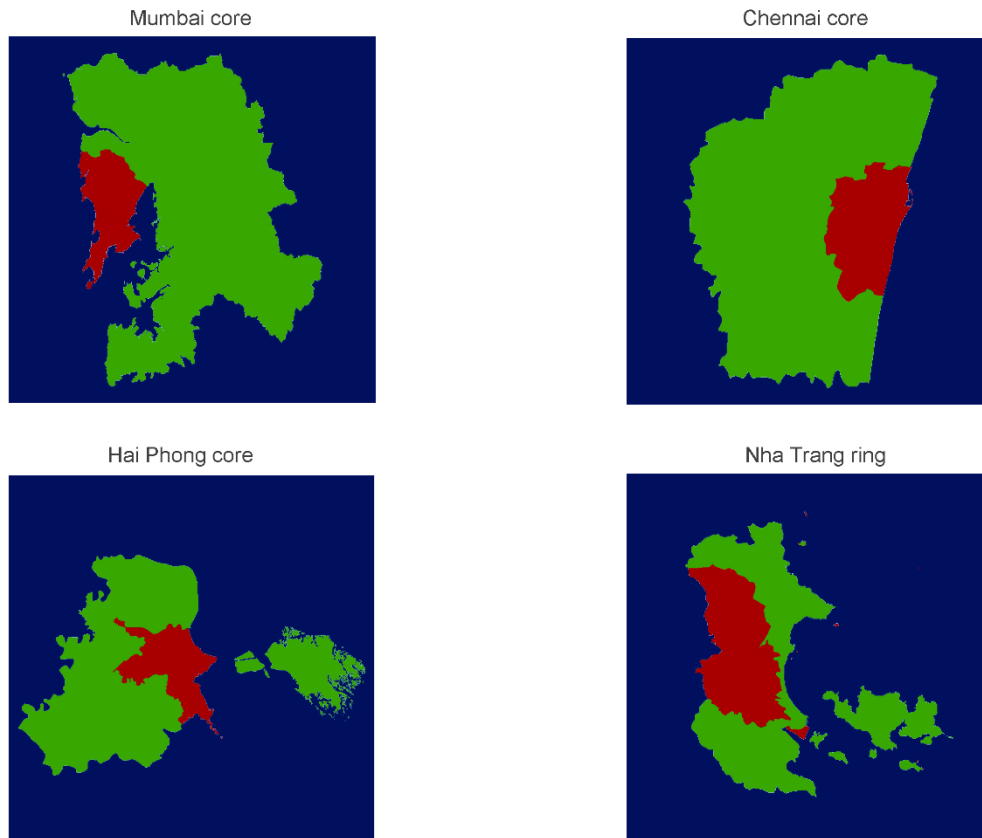
In the cores of Haifa and Tel Aviv and in the Hai Phong coastal zone there is the presence of areas with similar characteristics of the central, urban areas of the EU cases with high exposure to the damages of natural hazards (Figure 8.2.2.2).

Figure 8.2.2.2. *Asian regions and Funchal: type b).*



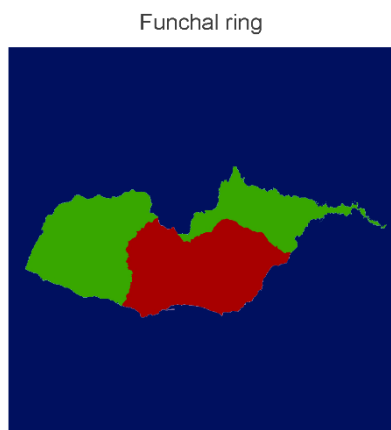
In the cores of Mumbai, Chennai and Hai Phong and in the ring of Nha Trang, there are areas with similar characteristics of the central, urban areas of the EU cases but with an important presence of informal and shanty dwellings (Figure 8.2.2.3).

Figure 8.2.2.3. *Asian regions and Funchal: type c).*



In the ring of Funchal, peri-urban and sub-urban areas characterized by a mixed use of residences and economic activities, high rates of motorization and commuting are recorded (Figure 8.2.2.4);

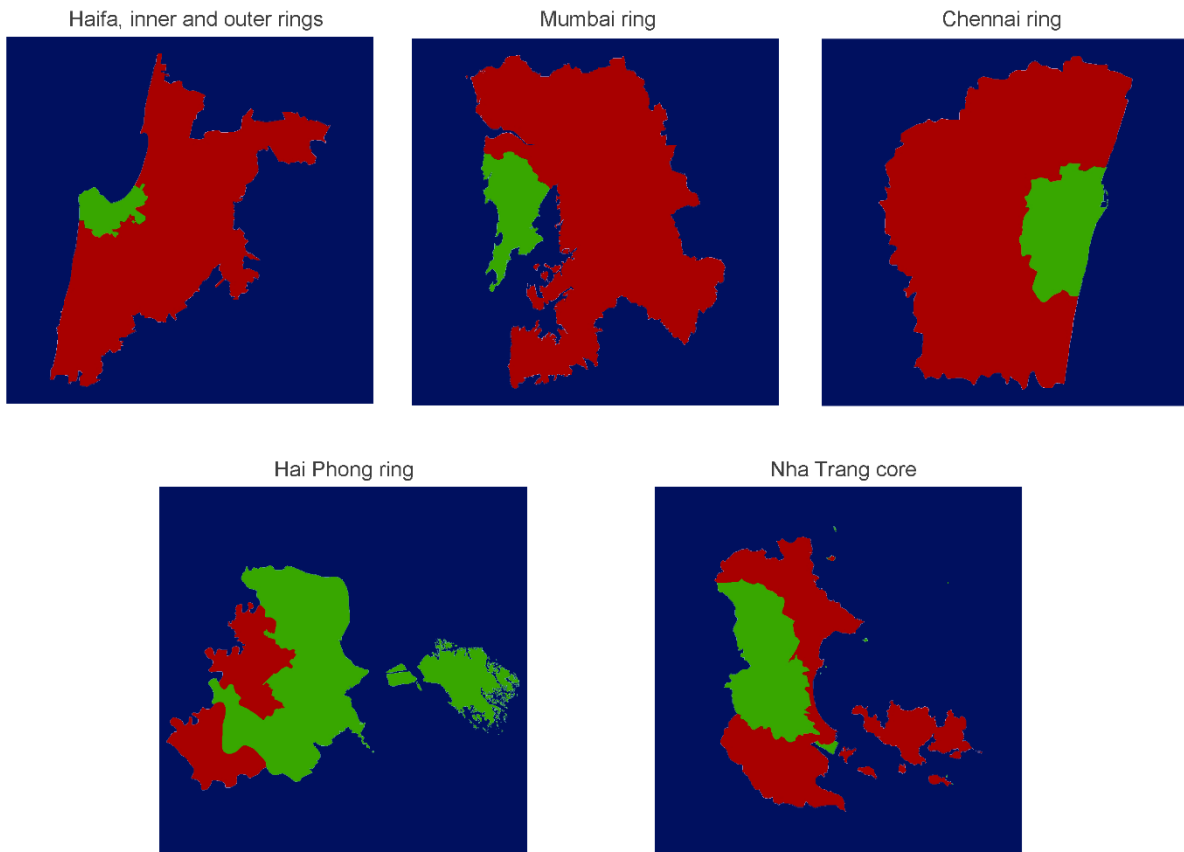
Figure 8.2.2.4. *Asian regions and Funchal: type d).*



they can be compared to the periurban and suburban areas of the EU cases.

Finally, rural and natural areas can be found in the inner and outer rings of Haifa, in the rings of Mumbai, Chennai and Hai Phong, in the core of Nha Trang (Figure 8.2.2.5).

Figure 8.2.2.5 - Asian regions and Funchal: type e)



### 3. A Classification of Conflicts

Conflicts have been classified using the variables and data described in chapter 4. Following the cluster analysis performed through the SOM, five groups of conflicts have been identified (Table 8.3.1).

Table 8.3.1 *Classification of the SECOA conflicts.*

Countries	Metropolitan/urban Region/areas	Conflicts	Types
BE	Ostend	Ostend airport	B
BE	Zeebrugge	Schipdonk canal	B
BE	Zeebrugge	Zeebrugge harbour	B
IL	Tel Aviv	Palmachim beach	D
IL	Tel Aviv	Netanya sandstone cliffs	A
IL	Haifa	Haifa port	E
IN	Mumbai	Sanjay Gandhi National Park	A
IN	Chennai	Pallikaranai marshland	A
IN	Mumbai	Mangrove forest	A
IT	Rome	Civitavecchia	B
IT	Chieti-Pescara	Costa Teatina National Park	A
IT	Rome	Ostia water-use and management	C
PT	Lisbon	Trafaria and Costa da Caparica	A
PT	Algarve	Barrier Islands (Ria Formosa Natural Park)	A
PT	Funchal	Funchal Bay (Madeira Island)	D
SE	Malmö	Managing urban sprawl	D
SE	Malmö	Falsterbo-Peninsula: Vellinge municipality	D
SE	Gothenburg	Torsviken	E
SE	Gothenburg	Kungsbacka	E
UK	Thames Gateway	Barking riverside	D
UK	Thames Gateway	Lower Thames crossing	A
UK	Portsmouth	Langstone Harbour/Farlington marshes	A
UK	Portsmouth	Tipner regeneration	A
VN	Haiphong	Haiphong port	B
VN	Haiphong	Industrial zone	B
VN	Haiphong	Cat Ba	C
VN	Nha Trang	Nha Trang	C

There are conflicts strongly marked by contrasts linked to the presence of natural parks, protected areas, and preservation of natural sites that urge a solution. There are, then, conflicts strongly marked by contrasts linked to the presence of impacting infrastructures (harbours, airports, industrial zones) and transportation systems supporting commuting and provoking pollution; some of them are chronic and long lasting, while others are in their formation stage. The scale of the conflict is between the micro and macro levels. In the third group we find conflicts linked to the competition between tourism development and nature protection and to resources management; the micro and macro levels are involved; they are chronic and long lasting and require an urgent response. The fourth category of conflicts grouped those mainly linked to legal or policy reasons or to infringements over access, that are in a stage of management, that are hushed, for which the solution is going to be deferred, or in which several territorial levels are involved. The fifth group, finally, includes conflicts characterized by high complexity, in which several issues, territorial and institutional levels, are involved; they are in a stage of formation or manifestation, they are neither chronic nor urgent and are not long lasting.

#### **4. An Attempt to Interpret Territories and Conflicts**

Taxonomy of the geographical spaces and conflicts studied by SECOA is reported in Table 8.4.1.

For each conflict, the typology according to the classification provided in section 8.3 is indicated; the typology of space in which that conflict takes place is identified according to the classification provided in section 8.2. Every conflict is associated with a type of space; each type of space has its own conflicts. The two colours used in the table provide an indication about the intensity of the relation between conflict and space: the stronger the colour is the more intense the relationship.



Table 8.4.1 Classification of the SECOA territories and conflicts.

Countries	Conflicts		Spatial typologies				
	Conflicts	conflicts' typologies	central, urban areas	periurban and suburban areas	rural and natural areas	core areas very sensitive to natural hazards (only in Asia)	core areas with an important presence of the informal city (only in India and Vietnam)
IL	Netanya sandstone cliffs	A	X				
IN	Sanjay Gandhi National Park	A					X
IN	Mangrove forest	A				X	X
IN	Pallikaranai marshland	A			X		
IT	Costa Teatina National Park	A	X	X	X		
PT	Trafaria and Costa da Caparica	A			X		
PT	Barrier Islands (Ria Formosa Natural Park)	A	X				
UK	Langstone Harbour/Farlington marshes	A		X			
UK	Tipner regeneration	A		X			
UK	Lower Thames crossing	A	X				
BE	Schipdonk canal	B			X		
BE	Zeebrugge harbour	B	X				
BE	Ostend airport	B	X				
IT	Civitavecchia	B			X		
VN	Haiphong port	B				X	X
VN	Industrial zone	B			X	X	X
IT	Ostia water-use and management	C	X				
VN	Cat Ba	C				X	X
VN	Nha Trang	C			X		
IL	Palmachim beach	D	X				
PT	Funchal Bay (Madeira Island)	D	X				
SE	Managing urban sprawl	D	X	X	X		
SE	Falsterbo-Peninsula: Vellinge municipality	D	X	X	X		
UK	Barking riverside	D		X			
IL	Haifa port	E		X		X	
SE	Kungsbacka	E			X		
SE	Torsviken	E	X				

The territories and conflicts studied by SECOA were modelled through a bottom-up approach using FFNN. The resulting model is coherent and consistent with the taxonomy. It is an interpretative model that aims at describing the relationships and interactions existing between the spatial patterns of the SECOA metropolitan/urban areas/regions and the features of the (analyzed) conflicts taking place in those areas. It establishes the degree and the importance

of each spatial variable in shaping the different aspects of each conflict and highlights the variables that are more likely to affect (positively or negatively) each conflicts' characteristic. The model indicates the weight of the influence of each variable on each aspect of each conflict and shows how the same variable has different effects on different aspects of the conflicts.

For each conflict, a sort of "fingerprint" has been obtained, given by the weight of the influence that each variable has on each parameter defining the conflict. The weight has to be considered in a relative sense. It can be positive or negative. In the first case, an increase in the value of the given variable provokes an increase of the value of the given parameter defining the conflict. In the second case, an increase of the value of the given variable determines a decrease in the value of the given parameter defining the conflict. It is important to note that the weight and influence of the variables on the parameters differ in each conflict; the weight and influence of the variables on the parameters are determined by the whole model; i.e. they are determined by all data and information considered in the model; those outcomes are specific to the SECOA model and cannot be generalized; the relationships between spatial variables and conflicts' parameters can be useful when, in defining appropriate policies, the policymakers have to decide which is the appropriate lever to use to bring a change in the conflict; the model outcomes can be used as a basis for building alternative future scenarios.

## 5. Conclusion

Developing taxonomy and a model from the variables and data available in SECOA is a great challenge. Extremely different territories as well as very heterogeneous availability and organization of data made the task difficult. The use of GIS and Artificial Neural Networks made the work possible. Taxonomy and model are tools to be used for other purposes such as the construction of scenarios. They explain and summarize complex situations but are unable to provide an interpretation of the diversities and specificities of the different realities. This interpretation should be made case by case and using specific disciplinary skills.

Taxonomy and model have been ways to synthesize and reduce the complexity of the results derived by different spatial analyses. Are ways to achieve general results - while still remaining within the given context – going over analytical details. Are ways to implement comparative research and to allow generalization. This inevitably leads to a loss of detailed information and a simplification of the analyzed realities. It is a way to create a logical bridge with further phases of research and of action, the ones involving the construction of alternative scenarios and dedicated policies.



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**ABSTRACT:** This chapter presents a systematic classification and comparison of the SECOA territories and conflicts. The variables and the associated data are interpreted and grouped into four main categories. The outputs generated by the Self-Organizing Maps and the Feed Forward Neural Networks, related to the taxonomy and the model, are interpreted from a territorial perspective. Five territorial typologies and five types of conflicts are identified. Different interpretative processes for EU and Asian regions are necessary due to differences in data availability. The 17 urban coastal regions and the 27 conflicts in SECOA are classified according to the identified typologies.

**KEYWORDS:** Classification, Territorial Typologies, Types of Conflicts, EU Regions, Asian Regions

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