

**METHODOLOGY OF LAND USES A ANALYSIS BASED IN
THE MATRIX OF LOCATION-SPECIALIZATION**

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Abstract

This methodology has the aim of determining and describing the territorial structure of the Valencian Community (CV) in relation to the location of the current uses and the specialization of the territory. The information that has been used for the analysis is the surface occupied by the global uses of the land. The territorial unities which have been considered in this case are the townships and the functional areas. The methodology is included within the use of indicators of sectorial location and regional specialization. We use this methodology in the Valencian Community and make the cartographic representation of the indices which result from it.

1. Introduction

This methodology of analysis about the current uses of the land has been developed thanks to an agreement of collaboration between the Conselleria d'Obres Publiques, Urbanisme i Transport (COPUT) from the Generalitat Valenciana (GV) and the Universitat Politècnica de València (UPV), on the methodological advice, analysis and diagnosis of the CV, in accordance to the law 6/1989 dealing with the territorial planning of the CV and the 45/1991 of the Consell of the GV for the creation of the plan of the action territorial action, of comprehensive character, about the urban development of the CV. We start off with the global uses of the land within the CV, according to the Territorial Information System of the COPUT¹.

¹ COPUT (1991): Sistema d'Informació Territorial. G.V. València. ISBN 84-7890-563-4.

TABLE 1: GLOBAL USES OF THE LAND

1. URBANISED	2.1.2. Unirrigated land	
1.1. Residential	L. Herbal	
R1. Low density	V. Vineyards	
R2. Medium density	O. Olive trees	
R3. High density	F. Fruit groves	
R4. Very high density	ACS. Others	
R5. Camping-caravanning, prefabricated		
	2.2. VEGETATION	
1.2. Industrial warehouses, workshops.	2.2.1. Determined by the vegetal covering	Overload
I.1. Low-medium density	Holm oak wood	
I.2. High density		C
	Rubber tree wood	S
1.3. Equipments, services and substructure	Oak wood	R
	White savin wood	Sb
1.4. Tertiary	Pinus sylvestris	Ps
1.5. Mixed	Kermes oak wood	Cs
	Pinus nigra	Pn
1.6. Others and without definition	Pinus halepensis	Ph
	Pinus pinaster	Pp
	Shrubs	M
2. RURAL	Pine tree afforestation	Pr
2.1. Agriculture	Esparto field	E
2.1.1. Irrigable land	Grassland	Ps
H. Horticultural	Others and without determining (beechwood, palm trees wood,...)	
CE. Cereals		
AR. Rice fields	2.2.2. Not determined by the vegetal covering	
FR. Fruit groves	Beaches and dunes	
CI. Citric groves	Saltworks	
ACR. Others	Marsh	
	Rivers and streams	
	Masses of water	
	Other uses (stone quarry, dumping places....)	
	Cliffs	

2. Uses of the land in consideration.

The starting off information given by the COPUT about the uses of the land divides the space in three levels: urbanised uses, crops and vegetation. As a global use we understand the one which prevails upon others in a certain area. An hectare (=2,471 acres) is the smallest unit of surface which has been cartographed.

The cartographic base on which has been made is the National Topographic Map at a scale of 1:50.000 and therefore divided into the corresponding 71 pages which are necessary to cover the territory of the CV. The cartographical information is introduced in a digital way in the SIG Arc-Info, and referenced in coordinates UTM.

In addition the overloads of uses which coincide in the space which the global uses are represented, that is, *overloads and precise overloads*. These uses are compatible with the basic use assigned.

On the table number 1 we relate the basic uses determined by the COPUT, which will serve as a starting off point to make the analysis of location of uses and township specialization and for functional areas.

From the 44 initial global uses we have joined some of them for to give a more homogeneous vision, like the urban uses, resulting 29 different uses. At the same time we have obtained all the possible combinations of global uses, overloads and puntuals overloads, making individual each resulting tiphology as an independent use and giving as result a total of 107 combinations of different uses existing in the CV.

3 Territorial analysis units.

On township level we use the administrative division given by the COPUT, the CV has actually 539 township administratives entity.

The functional areas of the CV have been established by the COPUT itself after a sequence of analysis based in interrelation representatives variables, index in functional centrality, functional size, accesibility, etc., divides the territory in 24 territorial units. Some of them has been subdivided in subareas I, II and III it depends in the case. If the functionals subareas are considered we got a total of 36 territorials units.

4 Methodology

The methodology consists to realize a descriptive analysis of location-specialization from land uses. we are trying to obtain the QUOCIENT and coeficients of location and specialization on township level and from functional areas, over the classification of global uses established by the COPUT.

Later on we do the matrix of location-specialization, the characterisation at a township level and according to functional areas and the corresponding typological map drawing.

The methodology used for the treatment of the information of the global uses would be within the use of indicators of sectorial location and regional specialization. This

TABLE 2: INDICATORS, MAGNITUDES, QUOTIENTS AND COEFFICIENTS USED IN THE MATRIX OF LOCATION-SPECIALIZATION		
NAME	Formula	expression
A	$\frac{SU \cdot UT}{SU \cdot CV} (x)$	Percentage which represents each use in each UT respect to the total that occupies each use in the CV
C	$\frac{SU \cdot UT}{ST \cdot UT} (x)$	Percentage that represents each use of the UT respect the total of each UT
B	$\frac{SU \cdot UT}{ST \cdot CV} (x)$	Percentage that represents each UT respect the total of the CV
D	$\frac{SU \cdot CV}{ST \cdot CV} (x)$	Percentage that represents each use respect the total of the CV
QUOCIENT OF LOCATION (QL)	$\frac{A}{B}$	Shows the weight of each use in each UT (0 ≤ QL ≤ ∞)
QUOCIENT OF LOCATION (CL)	$\frac{\sum_{j=1}^m (A_j - B_j)^2}{100}$	The relative importance of the distribution of the uses at the CV. (0 ≤ CL < 1)
QUOCIENT OF SPECIALIZATION (CE)	$\frac{\sum_{j=1}^m (C_j - D_j)^2}{100}$	Specialization grade of thuses in each UT (0 ≤ CE < 1)

SU: Surface of each use. UT: Territorial unit (township or functional area). CV: Valencian Community. ST: Total Surface. i: use. j: Territorial unit. m: number of uses.

methodology is proposed by Walter Isard²(1973) and taken in consideration by J. Coll and A. Perez³(1985) with the aim of searching a way of representation which facilitates the global reading of the results, when you have to face the problem of making a global analysis. The result is the Matrix of Location-Specialization turning out very useful in those studies in which a static regional analysis is needed.

On the second table we summarise the expression of the different indicators, magnitudes, quotients and quoefficients which have been estimated.

The matrix of Location-Specialization use the representation in a matricial way of the Quotients of Location (QL) and of the vectors Quoefficients of Location (CL), the indicator D, Quoefficient of Specialization (CE) and the indicator B. On the table number three we can see an example of the basic structure of the matrix of Location-Specialization.

²ISARD, W.: métodos de Análisis Regional. Ed. Ariel. Barcelona, 1973.

³COLL, J. y PÉREZ, A.: Análisis Regional: Matriz de Localización y Especialización. Rev. Estudios Territoriales, 20: 111-119. Barcelona, 1985.

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5. Analysis of the results

For a correct interpretation of the results we have done a series of operations so as to establish the characterisation at the level of UT and the subsequent typological map drawing.

On the table number four we can see the different ranks established for the values of the different ratios. The analysis that we have realised facilitates the representation of the results and is a source of vital information for the detection of territorial processes. With the matrix we can easily know which is the structure of the land uses at the CV, is the same if we face the study from the UT, as we do it from the land uses considered.

The cartographical representation of the different indexes reflects without doubt which is the distribution at the territorial units level of the actual land uses. The ranks we have established for the different indexes, based in the distribution of the frequency of the results gives an easier interpretation and classify the land uses and the territorial units. This way they are easily represented through the cartography.

TABLE 4: BASIC CLASSIFICATION OF THE OBTAINED VALUES IN THE APPLICATION OF THE METHODOLOGY	
RESULTING VALUE	INTERPRETATION
QUOCCIENT OF LOCATION (QL)	
> 1.5	High concentration of the use in the considered UT
> 0.5 - ≤ 1.5	The distribution of the use in the UT respect to the CV is equal to the distribution of the UT respect the CV
0 - ≤ 0.5	Limited importance of the use in the corresponding UT
QUOCCIENT OF LOCATION (CL)	
= 1	Concentration of the use in determined UT
MEDIUM VALUES	
= 0	The use is present, but his concentration is not relevant
	Relative absence of the use or it is not present in the UT
QUOCCIENT OF SPECIALIZATION (CE)	
= 1	UT specialized in a determined use or uses
< 1	Limited specialization in determined use or uses
= 0	