

# URBANISATION OF COASTAL IN MEDITERRANEAN AREAS AND RENEWABLE NATURAL RESOURCES

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The theme under analysis, Urbanisation of coastal areas and renewable natural resources, poses the conflict as well as the complementarity, between urban and rural set-ups.

The present analysis refers to current real situations in the Mediterranean countries where there is an urgent need to take up the challenges and the negative and deep effects caused by the uncontrolled spread of urbanisation on soils that were mostly used for agricultural purposes.

In the Eastern and Southern Mediterranean countries, but formerly also in the Northern ones, the uncontrolled expansion of urbanisation caused a regression of land and of irrigated areas. Urbanisation is thus viewed as a further threat to the agricultural and rural development, already affected by desertification and soil degradation, caused by salinity and erosion processes.

The assessment of the physical and financial impact of urban and industrial development projects should also reflect the social and economic impact, notably in the Southern and Eastern Mediterranean countries where the scarcity of renewable resources (land and water) threatens even the possibility to produce food.

Actually, the various experiences of the Mediterranean countries show that industrial and tourist investments are associated with labour flows from the countryside towards coastal areas or urban agglomerations.

At the same time, it is also necessary both to assess the impact of rural development policies and quantify their effect as a means to prevent rural depopulation and

## ABSTRACT

In many Mediterranean countries, the rapidity and extent of urbanisation in coastal areas produce negative impacts on the quality of life in those areas. If one adds also the scarcity of available resources it becomes extremely difficult to manage towns and plan their change. The presented analysis deals with those situations in the Mediterranean countries basin where the need to face the challenges and negative impacts and deep changes provoked by the expansion - sometimes spontaneous - of urbanisation on lands previously used essentially for agriculture is stronger. It is then necessary to develop new low cost tools for the analysis and forecast of urban and territorial transformations, to allow governments to take the most efficient and equitable decisions.

## RÉSUMÉ

*En plusieurs pays méditerranéens, la rapidité et l'étendue des processus d'urbanisation des littoraux produisent des effets négatifs sur la qualité de vie dans les zones côtières. S'il s'ajoute la pénurie des ressources disponibles, il devient extrêmement difficile de gérer les villes et planifier leur changement.*

*L'analyse exposée porte sur des situations présentes dans les pays du pourtour méditerranéen où l'exigence de faire face aux défis et aux impacts négatifs et profonds provoqués par l'extension, parfois spontanée, de l'urbanisation sur des terres dont l'utilisation était essentiellement agricole est plus forte.*

*Il est ainsi nécessaire de développer de nouveaux outils à faible coût pour l'analyse et la prévision de transformations urbaines et territoriales rapides, afin de permettre aux gouvernements de prendre les décisions les plus efficaces et équitables.*

their degree of integration with urbanisation policies.

## RISKS OF URBANISATION

Soil urbanisation, which is largely associated with building expansion, has both direct and indirect effects.

Ignoring the latter, that is, the effects resulting from urban development, (like air and water table pollution, greenhouse effect, ozone layer, eutrophication, soil salinisation, etc...) it is necessary to make reference to the direct effects we analyse in relation to the risks deriving from the decline of agricultural ecosystems.

The most significant indirect effects include:

### 1) Desertification

Building is one of the factors contributing to desertification as a source of natural depopulation of marginal

al fertility reduction and lands.

The drift from the land subsequent to the coastalisation of population and to the productivity decline of less favoured areas involves the lack of maintenance of important hydraulic works with subsequent disruptions in hilly areas and soil loss.

It is noteworthy that the Mediterranean banks are the areas where agriculture was born and its practices have been for thousand years an important component of the physical and cultural environments.

Due to this long symbiosis with man in the concerned area, the environment is now dependant on man-induced disturbances and on the change (dynamic equilibrium) of the agro-ecosystems. This suggests the notion of "resilience", that is the ability to survive through the incorporation of the change.

### 2) Competition for water

One of the main aspects of urbanisation impact on de-

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certification is the growing need for drinking water that causes very severe problems of water supply for agriculture and for the keeping of soil fertility. Due to the coastal population growth, the water demand for domestic uses, in competition with other uses, makes supply a priority.

### 3) *Obstacle to extensive agriculture*

Soil extension is per se a valuable resource because it is the unique practical possibility to apply, on a significant land scale, extensive agriculture methods that enable to produce at competitive costs, to reduce the dangers of pollution and of the hydro-geological imbalance, safeguard the soil agronomic fertility. By varying the degree of crop intensification or extensive farming appropriately, it allows a proper and more flexible management of the farm to market trends and to environmental policies. Urbanisation reduces sharply such beneficial effects for it occupies agricultural soils.

### 4) *Destruction of soil organic matter*

This factor is the most important indicator of desertification for it is related to general fertility (keeping of soil structure and of water holding capacity), partly caused by re-filling, cutting, fire, excavation of quarries, erosion, etc...

### 5) *Change in water regime*

Diffuse and generalised artificial impermeabilisation conditions can induce a change in the water regime, which results, in terms of probability, both in a reduction of total rainfall and in an increase of floods. This means that as urbanised areas expand, floods and droughts are more likely to occur.

### 6) *Biomass reduction*

The loss of agricultural soil involves a reduction in yield volume or biomass production potential whose results can be easily detected.

### 7) *Reduction in carbon dioxide fixation*

This is a consequence of a reduction of the cropped area able to intercept light energy for photosynthesis. This process makes use of the carbon dioxide contained in the air.

### 8) *Increase in albedo*

The albedo is the part of the solar radiant energy that reaches the earth's surface and is reflected in the atmosphere without being intercepted by plants, soil and water.

## IMPACT OF POPULATION GROWTH

Another consequence of urbanisation is the population growth. Actually the population dynamics of the coastal area of the Mediterranean countries shows clear signs

of a "human pressure" on this area. Following the forecasts made within the research for the Blue Plan, around the year 2025, 160 to 210 million people could live in this belt, with a high population density not only on the Northern shore but also on the Eastern and Southern shores of the Basin: over 300 people/km<sup>2</sup> in Israel and in the coastal area of Algeria and Egypt, 500 in Lebanon and in coastal Syria.

This population pressure upsets the social, economic and political balance of the region.

In particular, the Northern countries, that were initially more populated and where a low population growth is currently observed, have become, as known, an area of official or illegal immigration.

In the Southern and Eastern countries, which are overpopulated, the population pressure implies high food requirements that the traditional system is not able to meet. Due to these difficulties, massive amounts of food are imported from the international market since the consumption and the exploitation of renewable natural resources (water pollution and consumption, loss in soil fertility, etc...) threaten the possibility to produce food. Another important aspect of these social-demographic changes, related to the previous one but with its own components, is the evolution of the localisations and movements of the represented populations:

- the displacement towards the coastal area, which tends to get saturated and urbanised
- the massive rural exodus and the dramatic growth of urban areas, some of which are megalopolis of the Third World.

There is a deep difference between the rural depopulation of Europe of the XIX century, related to the economic growth and the general industrialisation of the time, and the present urban development in Southern countries, which occurs in a context of under-employment and which generates the population marginalisation. These permanent flows are then aggravated by the considerable temporary fluxes related to tourism (<sup>1</sup>), a real transhumance that implies, every year, alternate movements of tens million people, thus increasing the population pressure in the Mediterranean coastal areas and causing consequences in terms of alternative use of resources (land and water) and pollution.

These phenomena, notably the movement to the town, in the Southern countries, have not only detrimental consequences on infrastructures and on the environment, but then also accentuate the breaking of the traditional agri-food system that is unable to supply the new urban areas. It is obvious that such a situation forces the political authorities of the countries concerned both to import food for preventing social tur-

(<sup>1</sup>) The residential pressure is aggravated by a "tourist pressure" that is estimated at 200-250 million visitors every year, within the next 25 years.

moil, and to change the mode of supply and distribution. The pressures concerned involve of course a large expansion of both residential and service built areas: first and second houses, accommodation utilities, ways and nodes of communication, any type of infrastructure. The growth of urbanisation is then supposed to be amplified by the growth in the consumption of per capita urbanised space that is typical of the most recent urbanisation models. Actually, reference is often made to "consumption" to emphasise that the present phase of urban development is not related to the population dynamics tending to zero and is poorly correlated to the economic development that has a trend close to zero, but is basically function of the available income.

This means that, despite the complex problems of industrial civilisation, aspiration after welfare and life quality results in an extension of public and private uses. This entails land set-up problems, that space planning has long neglected or even ignored in many Mediterranean countries; only recently the protected coastal areas have increased and international events, such as the Mediterranean Action Plan have been developed (2). The notion of sustainable development is crucial to understand how the knowledge of the relation between population growth and ecosystem capacity is an essential tool to carry out urban and rural development actions.

**THE NOTION OF SUSTAINABILITY**

The notion of sustainable development involves two distinct steps. The *sustainable* component refers to the ecological scope and concerns the ecosystem and thus the renewable natural resources.

The development component is instead related to the existing economic social, political and cultural actions in the ecosystem concerned.

The notion of sustainability is also used for references to specific human activities, like the "sustainable agricultural or rural development" or for the industrial one. According to some authors, notably Conway, the sustainability of the agricultural activity should be defined as the ability to keep the agricultural productivity, at the level of a region, a country or a farm, under stress or shock conditions. Such a definition does not take into account the sustainable term only in its environmental or ecological meaning, but envisages the possibility that other positive or negative externalities might be in-

involved in the management of the agricultural or rural development sustainability.

According to some experts (Hardoy, Mitlin, Satterwaite, 1992), the disaggregated vision of the sustainable development notion makes also the discussion about towns simpler. These authors define the sustainable component as "the impact of any town, or rather of the producers and consumers of an urban centre, on the environment capital, the latter including, in turn, the renewable and non renewable natural resources".

The development component is instead "the ability of any town and of its institutions, to meet the development requirements of its inhabitants".

Such a definition of sustainability applied to urban development draws the attention on the ecosystem and on the reproductive capacity of the latter when development actions are undertaken, that is when the producers' and consumers' requirements of an urban cen-

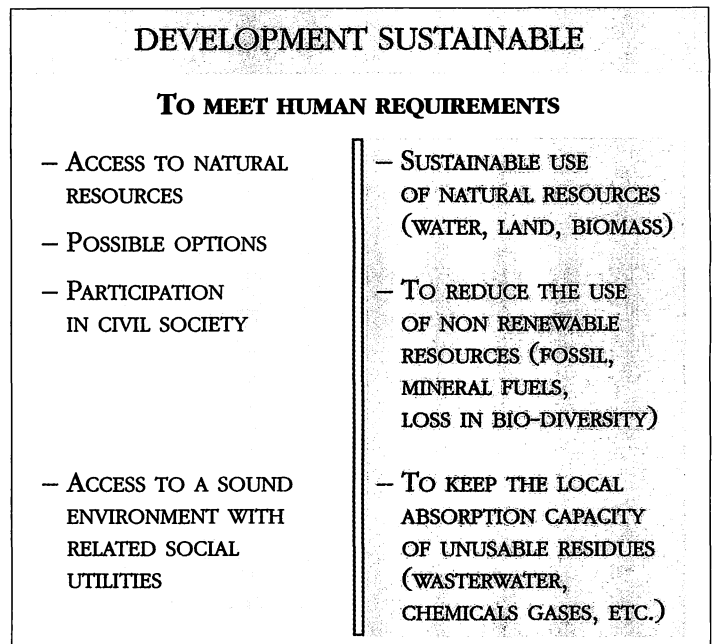


Figure 1 - Components of sustainable development.

tre are met. In this connection, based on a recent study (Di Giulio, 1995) on the evolution of agricultural systems (3) in two mountain villages of Basilicata, it has been demonstrated that there has always been a close correlation between the crisis of the agricultural system and of the ecosystem, and a negative impact on population growth. The high degree of soil fertility loss and the difficulty to return and then to keep soil fertility has been the cause of the severe crises of the regional agricultural system.

Actually, the high population pressure (development) on a given ecosystem, can trigger off an imbalance so as to reduce the per capita agricultural production below the subsistence level, and the need to produce food induces farmers to expand the cultivated areas be-

(2) The United Nations Environmental Programme (UNEP) has co-ordinated the Mediterranean Action Plan (Map) that has produced many technical and scientific documents to give a general overview of the present state of the Mediterranean.

(3) An agricultural system is above all a way to cultivate the ecosystem that has historically formed under sustainable conditions; it involves a system of production forces that have adapted to the bioclimatic conditions of a given space and reflect the economic and social conditions of the time (Mazoyer, 1998).

yond the limit allowed to balance the system. A re-equilibrium and a possible population growth are observed whenever there is a renewal of fertility due both to the recovery of new lands substracted by continuous deforestation and the introduction of new crops.

Actually the analysis of the demographic, social and historical evolution of the area under study largely confirms the argument presented.

Between the end of the Roman empire and the arrival of the Normans in the XI century, in the mountain and hilly areas of Southern Italy, some monastic orders (X century) settled on lands they had mostly received from private gifts, and on other virgin ones, that they had put under cultivation after hard-working deforestations.

The populations of that region that had lived till that time wandering through mountains and plains, were induced to stabilise around monasteries attracted by emphyteusis contracts, characterised by long duration and very low and fixed taxes of product withdrawals.

Everything turned around the fertility of tilled soils that was preserved by special agronomic practices such as, for instance, manuring.

By creating optimal conditions, such a fertility attracted more and more people, thus causing a considerable population growth in the region.

At the beginning of the Middle Ages, but already in the XIII century, some famines and food deficits occurred in all the Italian peninsula with a subsequent increase in wheat price.

A crisis of the wool industry was observed due to product diversification (flax and cotton) and to the competition of the English wool.

The wooded areas reduced and the subsequent source of soil fertility decreased progressively.

This gradually resulted in a yield decrease and in a parallel increase in wheat price that induced land owners to change the type of contract at the end of the XVI century from the emphyteusis to the lease, to increase their income.

During the XVII and XVIII centuries, land cultivation was characterised by both a progressive reduction of woodlands and an increase in arable land.

Woods were indeed used to find timber as an energy source, on one hand, and were destroyed by farmers' deforestation, on the other, because there was an increasing demand of farmers for virgin lands due to a latent fertility crisis.

While arable land increased, favoured by clearing, a population growth was also observed at that time. It was interrupted in the middle of the XVIII century due to a famine that reflected an overload of the agricultural system of the region.

This latent crisis of fertility and the subsequent low yields were limiting factors for the population growth. Once the natural fertility of tilled lands was exhausted, the latter experienced a fertility crisis and subsequent

severe drops in cereal yields. This spiral characterised the agricultural history of the region under study where most of the regional population (about 90%) consisted of farm labourers, farmers and shepherds, whereas the remaining 10% included doctors, chemists, notaries, craftsmen and merchants.

The power groups that ran the society in the XVII and XVIII centuries were three, that is, the *feudatories*, the *University*, a popular institution that can be defined as the ancestor of the modern Municipality, and the *Church*.

An important portion of the rural space of that time was actually constituted by the Church property that accounted for nearly 30% of arable land and woods, located in the uplands and plains in the area under study, that is 3,000 hectares (2,000 of woodland and 1,000 of arable land).

Such lands were then leased or given by "censo" <sup>(4)</sup> normally for three or four years, but often for ever. The latter, that was normally related to the plot, proved to be a main tool to carry on the cultivation of lands that became more fertile.

Moreover, the role played by the Church through the so-called "Monti Frumentari" was very important for the agricultural society of the region.

This innovative institution, set up by the Church, grouped centres of credit for wheat and barley seeds, and was usually established on the basis of gifts in kind granted by feudatories to the Church.

People could go to the closest "Monte frumentario" of the zone to withdraw either wheat seed or some shares for consumption.

The maximum amount lent per family amounted to about 10 "tomoli" (about 500 kg) and it had to be given back at most within September 20th of every year, with an interest rate corresponding to 1/8 "tomolo", that is 6 kg per "tomolo" (50 kg).

No wheat could be lent to the people who did not belong to the bishopric.

In this way the Church assisted farmers by granting a kind of running credit that may be considered an ancestor of what many specialised credit institutions did later on.

By this credit policy the Church gave a major contribution to the sustainability of the agricultural system of the region under analysis preventing, through its action, *rural depopulation*.

The XIX century is characterised by a steady population growth and by a first agricultural revolution, centred on the spreading of potato and maize.

Actually between 1700 and 1800, the Italian population increased from 13.4 to 18 million people.

The same trend was observed in the two municipalities

(<sup>4</sup>) that involved a rent in kind.

under analysis where the population doubled in the same period considered.

The arrival of Napoleon in Italy and the conquest of the Kingdom of Naples in 1806 resulted in the abolition of the feudal regime and of all taxes such as the excise duties, rights of way, civil rights on Ager Publicus, which will be then divided into lots and distributed to the local population.

The Church and all its estates also experienced the negative consequences of Napoleon's power.

Two years later, by royal decree, a land reform was implemented which merely consisted in the lotting of State lands and of some Church properties (estates).

This decree established the subdivision into lots, based on an allotment among all citizens without any age or sex distinction, and the surface of allotted plots ranging between 2/3 of hectare and one hectare.

After the reform, all labourers' families, about 80% of the population of the two municipalities, owned a plot ranging from 0.5 to 1.3 hectares that belonged initially to the Ager Publicus. For these micro-landowners the purchase of seeds was now more difficult, for seed credit institutions like the "Monti Frumentari" had been abolished.

Land cultivation, with a chronic lack of fertility, did not allow yields to be improved; moreover, 1.3 hectare plots per family were not enough to live so that leasing or share cropping were necessary to be able to cultivate about 2.5-3 hectares per family.

At a national level, the signals of crisis of such an agricultural system did appear when the national cereal production did not meet any longer the population growth that had started at the beginning of the XIX century.

Through the four-year period from 1879 to 1883, wheat imports increased from 252,000 tons to 740,123 of the 1884-1888 period.

The second agricultural revolution of the area concerned was determined by the Italian land reform of 1950 that brought about deep socio-economic changes all over the country and provided benefits also to the agricultural system.

In the farms concerned by the reform, for the first time all forms of fallow disappeared and forage crops like alfalfa were introduced. This involved the first heavy ma-

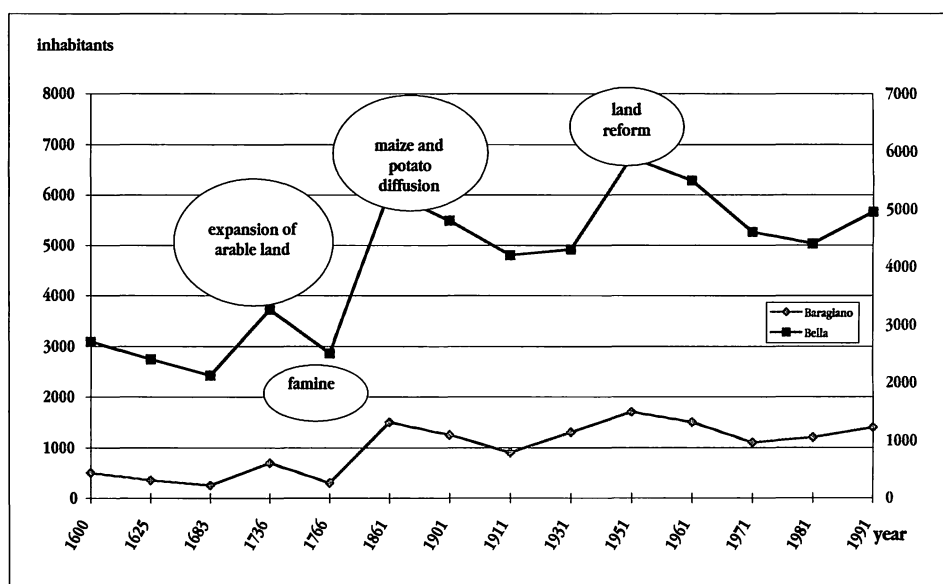


Figure 2 - Population dynamics in Baragliano and Bella municipalities from 1600 to 1991.

chinery, chemicals, new forage crops that changed the traditional crop rotations.

The above considerations are illustrated in the figure 2. The figure points out both a population growth between 1683 and 1736 as a result of the increase in arable land, and the start of population reduction due to famine in the following period.

The curve grows sharply starting from 1766 as a consequence of maize and potato diffusion; this was followed by a period of population drop related to Napoleon's reform that resulted in the splitting of State properties into micro-plots, characterised by a poor fertility management.

Lastly, in 1951 it is the land reform with the innovative technical means that contributed to the population growth.

From 1950 to 1975 the economy of industrialised countries experienced the longest and most intensive growth period; in Italy the economic boom, resulting from political, socio-economic and international factors, took place and triggered a virtuous circle of dramatic economic growth (the boom was maximum in 59-62 with a mean growth rate of 6.8% and peaked 8.2% in 1961).

The case study of the two above-mentioned municipalities in Basilicata confirms that the knowledge of the relations between population growth and ecosystem capacity is crucial to undertake any urban and rural development action.

The development of new crops and then of fertilisers laid the bases for the "agricultural revolutions"<sup>(5)</sup>, that marked the change from an agricultural system to another, causing a deep change in the production process that has largely affected the cultivated ecosystem and has had a beneficial effect on the population growth of the region under study. The same phenomenon, with

(5) "An agricultural revolution involves a deep change of the production process concerning the nature of the cultivated ecosystem, the shape or the quantity of used energy, the labour productivity" (Mazoyer, 1998).

the differentiations due to different time periods and contexts, is occurring in the Southern and Eastern Mediterranean countries.

In Morocco, for instance, from 1900 to 1994 the urban population increased from 500,000 to 14 million people and this trend to the strengthening of urbanisation is still on-going, following the last census. This dramatic development of urbanisation growth has caused a high pressure on the agricultural soil so that every year over 5,000 hectares are urbanised. In quantitative terms the Moroccan national area is very wide and some regions, like the Southern and Eastern ones, are still largely under-urbanised.

Nevertheless you should consider that:

- the spreading of urbanisation is not homogeneous In big towns and on the coasts the space requirement is increasingly growing;
- any loss of hectares in irrigated areas has direct effects on the national economy.

Everywhere the phenomenon is the same: since a region develops an irrigation scheme or tourist potentials, it becomes more attractive. The populations of the poor neighbouring regions migrate massively towards the centres that start to grow and to extend on soils of high agricultural potential.

Urbanisation starts thus to become a threat for the irrigation scheme and for the coasts. Landowners are therefore more attracted by urban speculation than from agriculture.

The above examples point out the need to take into consideration the rural problem in urban development projects, since rural development programmes reduce the rural and agricultural depopulation and can provide a major contribution to the solution of the urban problem.

This has not been the case over the last few years; actually over forty years, from the fifties till now, the emphasis has shifted from the rural world towards productive agriculture only.

From 1961 to 1971, the population increased by 7 million people, but the rural population, that remained unchanged from 1951 to 1961, decreased from 27.5 million, from 58 to 48% of the total population (Barberis).

The farms' difficulty to keep track of the technical progress and to survive in the social desert of the rural world, related to the attracting effect of towns in full industrial development, was further aggravated by the growing loss in interest of society towards agriculture.

The revival of the rural world in Italy and in many Eu-

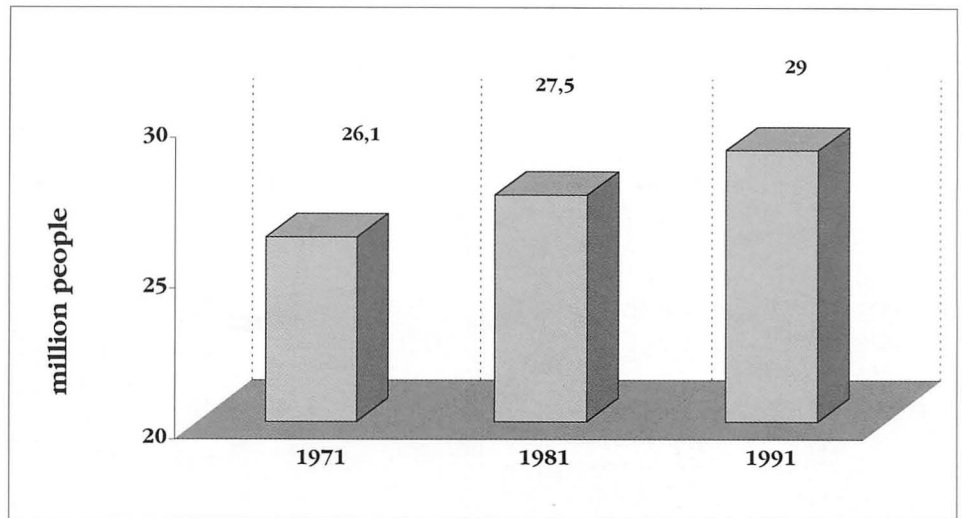


Figure 3 - Evolution of the population living in rural villages (1971-1991).

ropean countries started since the mid-seventies.

The population living in the municipalities classified as rural in the 1951 census, rose from 26.1 million in 1971 to 27.5 in 1981 and reached 29 million in 1991: "agricultural rurality was replaced by a non agricultural rurality: industry and services accounted for only 40% of the jobs in green areas in 1951 but they had already exceeded 80% in 1981 ..... so that thanks to thirty years of deep social and economic changes, the equation between rurality and under-development is not so much clear any longer." (Barberis). The modern rural world is again an economic and social place of human development and an institutional workshop. This explains why the European Union is now seeking compromise solutions between the rural and mercantile-townish civilisations, that broke out all over the world with the globalisation of the economy and of the social customs.

To re-launch the rural world, the European Union aids the multi-functional agriculture; it encourages the co-operation between municipalities and the partnership between public and private actors; it promotes management programmes of rural areas; it favours the training of rural staff through vocational courses for agriculture, craftsmanship, old trades and modern technologies; it promotes the agricultural services of rural development and rural animation; it finances by ob. 1, 5a and 5b and through the LEADER programmes, the renewed fruitfulness of the businesses (agricultural, craftsman, tourist, etc..) of rural areas.

#### THE INTERNATIONAL CO-OPERATIVE RESEARCH

The interest, risks and potentials of urban development are often presented in descriptive terms; in many cases the seeking of development policies and strategies and of more accurate technical indicators are still at an embryo stage. Some more strategic scenarios about the competition of renewable water resources (land and water) or about other environmental issues, necessitate



an on-depth approach and a validation with the different stakeholders of civil society. It is thus extremely necessary and important to co-ordinate research according to an inter-disciplinary and multi-sector approach to define the relations between urbanisation and agriculture in the use of natural resources, but also to understand the role of urban and peri-urban agriculture in the urban agricultural and food system, integrating this research with the experiences and facts deriving from the social-economic study of these systems. The International Centre of Advanced Mediterranean Agromic Studies (CIHEAM), in collaboration with other international agencies such as the OECD, the FAO, with non-governmental organisations but also with institutions, regional bodies and university centres, is co-ordinating research efforts with a view to identify the appropriate solutions to different environments and conditions of the Mediterranean countries. In 1994 it first organised an international seminar in Tunis with the contribution of the European Union and of the related Ministries of agriculture and environment. This seminar gathered over forty international experts and representatives of governmental and non-governmental international organisations, to define common research actions using the different possible synergies within an inter-institutional framework.

This seminar led to some research actions that could contribute to better define the different interactions between urban and rural worlds in the Mediterranean region. Some of them call for a homogenisation of statistical data and their survey, since urban-rural statistical aggregates have a limited use. Others concern the need to study methodologies to assess the costs (who loses?) or benefits (who gains?) subsequent to urbanisation policies, and the expenses incurred by each govern-

ment for the problems deriving from urbanisation.

CIHEAM research and co-ordination efforts have been carried on by framing the activities promoted by twenty European and non-Member Mediterranean scientific partners, following a multi-sector and inter-disciplinary approach within a concerted action, scientifically co-ordinated by the Polytechnic of Bari, that received a substantial financial aid by the European Commission (DG XII) over a four-year time period. Research activities concern the study of the inter-dependence between urbanisation and agriculture, the tourist development and coastal area management, the promotion of local growth systems, framed within a more general economic context,

with a view to construct possible scenarios such as to integrate problems concerning the information, organisation and political and economic strategies. Lastly, the results expected from such a concerted action concern primarily a better knowledge of the techniques relating the construction of scenarios for a sustainable use of land and water, the contribution to formulate analyses and a more complete monitoring of changes in quality of land and water in peri-urban areas, the study of alternative scenarios including new agricultural production policies and ecosystem management. Efforts will also be made to organise statistical data collection to ensure more comparative analyses and to construct data banks. What has been presented and the related research actions are framed within a working scheme that is aimed at assessing the origin of divergences in the interpretation and in the concepts that concern the management practices of rural and urban spaces in different Mediterranean countries.

#### CONCLUSIVE REMARKS

As already said, urbanisation in the Mediterranean is concentrating more and more along the coast and produces detrimental effects on life quality in coastal areas. Coast planning programmes should thus be concerned with the protection of such areas. But the Mediterranean coast covers different governments, having each a different planning rationale. Any development strategy should consider its possible impacts on the neighbouring areas as well as on the total sustainable development to preserve the precarious equilibrium of the ecosystem. Coast integrated management is essential to achieve the coast development objectives in the short and long-term by pursuing co-ordinated actions at different government levels. It has also been underlined

that tourism, which is an important economic resource, may cause an environmental degradation and an over-use of land for seasonal residence, with irreversible damages to natural and man-made landscapes. Tourist developments should therefore take into account the particular characteristics of coastal areas, within an integrated coast management approach. In many Mediterranean countries the rapidity and the extent of urbanisation processes make governments unable to face them. If one also considers the scarcity of available resources, it becomes very difficult to manage the existing towns and plan their change. It is thus necessary to develop new and cheap tools for the analysis and forecast of rapid urban and land transformations, such as to enable governments to take the most efficient and equitable decisions. It is also necessary to ensure an efficient and continuous exchange of information on conservation, environmental rehabilitation and protection, with the purpose to strengthen the maintenance culture and to spread the knowledge on planning and management tools.

Lastly, in agreement with what is indicated by the Barcelona Statement adopted during the Euro-mediterranean Conference (November 1995), it is necessary to strengthen or introduce tools of decentralised co-operation so as to encourage exchanges between the local actors of development.

REFERENCES

Di Giulio A. (1999), "Sviluppo rurale ed urbanizzazione nei paesi del Mediterraneo: iniziative e prospettive di cooperazione scientifica internazionale", in Dimensione ecologica e sviluppo locale: problemi di valutazione, Franco Angeli, Milano.

Di Giulio A. (1995), "Actions de recherche pour l'étude de l'espace urbain et rural en Méditerranée", Actes de l'Atelier de recherches INRA: l'Agriculture dans l'espace périurbain: des anciennes aux nouvelles fonctions, Rambouillet.

Abouhani A. (1999), "L'urbanizzazione del perimetro irriguo di Tadla", in Dimensione ecologica e sviluppo locale: problemi di valutazione, Franco Angeli, Milano.

FAO Document COAG/99/10 (1999), Urban and Peri-urban Agriculture, Committee on Agriculture, Roma.

Hardoy J., Mitlin D., Satterthwaite D. (eds.) (1992), Environmental Problems in Third World Cities, Earthscan Publication, Londra.

Hite J. (1997), "The Thunen Model and the New Economic Geography as a Paradigm for Rural Development Policy", Review of agricultural economics, vol. 19, n. 2, pp 230-240.

Institut de la Méditerranée (1997), La Méditerranée aux portes de l'an 2000, Edizioni Economica, Parigi.

Mazoyer M. (1998), "D'une révolution agricole à l'autre", Cahiers Agricultures, pp. 147-151.

OCDE (1996), Indicateurs territoriaux de l'emploi, le point sur le développement rural, Parigi.

OCDE (1994), Créer des indicateurs ruraux, pour étayer la politique territoriale, Parigi.

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