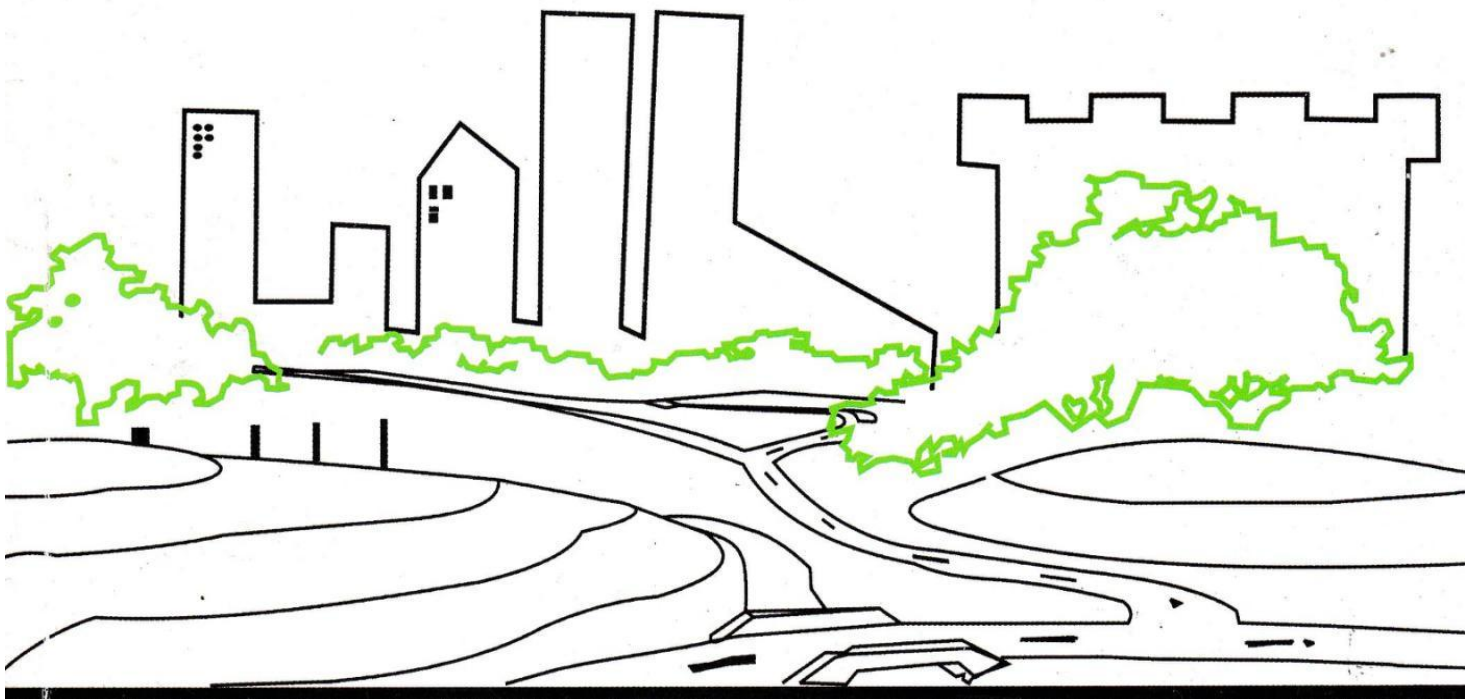


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# MANAGEMENT OF PERI-URBAN INTERFACE: PERSPECTIVE ON AN EMERGING RESEARCH FIELD IN ENVIRONMENTAL SCIENCES

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## ABSTRACT

*There is an increasing recognition among development professionals and institutions of the fact that rural and urban features tend to increasingly co-exist within cities and beyond their limits, and that the traditional urban-rural dichotomy deeply ingrained in our planning systems is inadequate to deal with processes of environmental and development change in the PUI. The objective of this paper is to present the perspective that environmental planning and management of the PUI cannot simply be based on the extrapolation of current planning approaches and tools applied in rural and urban areas. We need the construction of a novel methodological and research approach centred on the specific aspects of the PUI (in environmental, social, economic and institutional terms). This will capture its differential processes of occupation and transformation with regard to the natural resources base, the activities taking place and the ways in which heterogeneous social groups live and work in the PUI. This paper contributes to the understanding of what future research on environmental planning and management of the PUI might entail, examines its specificity both in terms of the challenge faced and the possible new approaches and scientific method for implementation.*

**Keywords:** Environmental Planning and Management, Peri-urban interface, Perspectives.

## INTRODUCTION

Changes in the peri-urban interface (PUI) are driven by a variety of processes, ranging from urban expansion to the decline of agricultural and rural employment opportunities. Therefore, managing the environment of the peri-urban interface (PUI) has significant implications not only for the livelihoods and quality of life of those who live in these areas, but also for the sustainability of urban and rural development. This is because both the city and the countryside depend on the ecological, economic and social functions performed by and in the PUI. Thus, the task of managing the environment of the PUI is a complicated one, which only recently started to receive specific attention. Part of the complexities of the task derives from the artificial distinction between 'urban' and 'rural', a distinction that misinforms not only the set-up of institutional arrangements but also and more broadly the deployment of planning approaches and tools.

Environmental Planning and Management (EPM) of the PUI is informed by three distinctive and well-established fields, those of environmental planning, regional planning and urban planning and the multitude of traditions that characterize the evolution of these fields.

This paper argues that EPM of the PUI requires a specific approach based on a critical appraisal of these three fields and their dominant traditions, an approach that pulls together a selection of methods and tools from the three fields into a new process. In general terms, urban (and regional) planning can be defined as "a government-administered process of determining how actions will shape the future, and of selecting and prescribing of the best course of action to arrive at desired goals for an urban (or rural) area and to prevent and solve existing problems" (Quon, 1999). In the context of development, planning systems have been

traditionally developed (at least in theory) upon the so-called 'comprehensive planning tradition'. In practice, this approach is very often replaced and/or complemented by a piecemeal planning approach, guided by a random interpretation and enforcement of mixed regulations and decrees. Consequently, both approaches relegate planning to a reactive activity in which planners find themselves either

locked in an ivory tower wondering why development process do not follow their long-term visions or trapped in the dilemma of 'tolerating' reality or enforcing the norm.

### NEW PARADIGM

In response to these problems, most recently, there has been a shift in the focus and style of planning, which places less emphasis on planning prescription and control in favour of greater policy orientation, which sees planners input as one of the many inputs required in the development process, that values other forms of non-technical knowledge and seeks the involvement of community members in the definition of a vision. In short, planning is increasingly seen (and practiced) as an iterative, participatory and flexible process. However, Healey (1997) opines that the advocates of this shift have paid little attention to "*the changing understanding of urban regions dynamics evolving in regional economic analysis and urban sociology*". In other words, planning is persistently pursued as a process that separates not only the urban and the rural but also the understanding of urban and regional change from the processes of governance through which decisions are made.

Looking again at the three fields converging in the EPM of the PUI, it is possible to identify that each of them tends to deal with different aspect of reality. Urban planning has been traditionally associated with physical planning, although most concerned with the built environment in detriment of the natural environment (Taylor and Williams, 1987). Regional and rural planning has been largely focused on economic and social aspects,

neglecting very often the spatial dimension of the development process. Environmental planning has been essential in bringing a systems approach to planning, highlighting the links between urban and rural but, until recently, has often been weaker in understanding and acting upon the web of social and economic decisions that produced 'environmental problems', confining itself to deal with the unwanted effects of development (such as pollution, natural resource scarcity and degradation) rather than tackling the causes of those effects.

### DISTINCTIVE FEATURES OF THE PUI

Although little work has been done so far on EPM for the PUI, in Nigeria, a series of documents provide a useful starting point to draw the principles and mechanisms that could guide such process (Allen et al, 2010; Allen, 2009; Atkinson 1999a, 1999b; Dalal-Clayton, 1999; Davila et al, 1999; Douglass, 1998; 1999, Matingly, 1999; UNDP, 2000; Universities of Nottingham and Liverpool, 1999). The documents reviewed focused both on the theory and practice of environmental intervention in the PUI, looking at institutional arrangements, policies and environmental strategies to address sustainability and poverty concerns in the PUI. Before proceeding with the analysis of EPM procedures and methods, this section examines the main features that make EPM of the PUI a distinctive process.

### THE PERI-URBAN INTERFACE AS A COMPLEX MOSAIC

The analysis of the processes of development of urbanization in developing countries has been traditionally structured around dichotomies such as urban-rural, traditional-modern, formal-informal and others. Within this framework, the PUI constitutes an 'uneasy' phenomenon usually characterized either by the loss of 'rural' values (loss of fertile soil, natural landscapes) or the deficit of "urban" attributes (low density, lack of accessibility, lack of services and

infrastructure). Population and built-up density, infrastructural characteristics, administrative boundaries and predominant economic activities are the main variables conventionally used to distinguish rural from urban areas.

From an environmental perspective, the PUI can be characterized as a heterogeneous mosaic of 'natural', 'productive' or 'agro-ecosystems' and 'urban' ecosystems' affected by material and energy flows demanded by urban and rural systems. The processes of interaction between these three subsystems are affected and conditioned by different factors, which might be related or external to the peri-urban environment, notably the influence of nearby urban systems for which the PUI constitutes a metabolic support system. Each of these subsystems conditions each other and is conditioned at the same time by the other two.

Although incipient, an environmental conceptualization of the peri-urban interface has several implications for its analysis and for devising policy interventions.

Firstly, the environmental perspective opens a new understanding and evaluation of these processes, calling upon the articulation of social, economic and biophysical aspects. In this way, the processes of differential valuation and private appropriation taking place under highly heterogeneous conditions in the PUI acquire new perspectives. For instance, the processes of private appropriation of land, either through real estate speculation or through the direct marginalization of certain groups within society created by disparities in the distribution of public expenditure in the territory and spatial segregation, reinforce unequal conditions of environmental quality within society. Thus, areas subjected to environmental hazards often become the habitat of lower income groups, whilst those areas of high environmental quality constitute the epicenter of speculative mechanisms through the process of land conversion from

agro-productive and natural uses to urban), subtracting or 'freezing' the capacity of these areas for the productive accumulation of previous dwellers or cancelling valuable ecological functions performed by natural systems.

Secondly, the consideration of the carrying capacity of the territory (landscape quality, soil productivity, vulnerability to floods, availability of drinking water) poses more appropriate criteria for the assessment of the environmental aptitude of the PUI than the conventional zoning criteria based on density, morphology, distance and urban and rural uses of the territory. Conventional urban planning has favoured a centrifugal view from the urban to the 'non-urban space', unable to address the characteristics and functioning of the 'patchwork' structure of the peri-urban interface, in terms of attributes, uses and functions. The breakdown of supportive reciprocal relations between cities and their hinterlands tends to aggravate unsustainable patterns of natural resources use and the transference of environmental problems to distant regions (Douglas, 1998; Evans, 1990). The concept of the 'urban ecological footprint' is useful to understand how the relationship between cities and their hinterlands changes over time and the environmental costs associated with these changes. Increasingly, through trade and natural flows of ecological goods and services, cities tend to draw on the material resources and ecological productivity of vast and scattered hinterlands. This means that not all environmental changes in the peri-urban interface are necessarily shaped by city-based demands.

The expansion of the ecological footprint of each city has important implications for the peri-urban interface, both in terms of increasing pressures over its carrying capacity and in terms of missing opportunities for its production, for instance, when food is imported from distant regions rather than supplied from the city's hinterland. The quest

for reciprocal and environmentally sustained relations between urban, peri-urban and rural systems demands a reappraisal of the concept of 'urban bioregion', which calls for a close consideration of the nature of these relations as a paradigm for sustainable EPM (Atkinson, 1992).

### **CHANGING SOCIAL STRUCTURES**

The PUI is often characterized as the converging focus of sectoral and overlapping institutions with different remits. Institutions of local government tend to be either urban or rural in their focus, metropolitan governments – few in any case – rarely include rural jurisdictions, special purpose authorities bridging urban and rural areas are not created, and district and regional governments do not adequately link urban and rural concerns (Allen et al, 2010; Mattingly, 1999; Davila et al, 1999; Durand-Lasserre, 1998). In addition to these, other structures such as the private sector and the non-governmental and community organizations also intervene actively in the management of peri-urban areas, but often without clear articulation with government structures. In this sense, one of the most salient characteristics of the PUI is the diversity of organizations that converge in the decision making process and the lack of clearly established institutional arrangements to articulate their interventions.

The problem of institutional fragmentation is particularly relevant for understanding the constraints conditioning environmental planning and management in the PUI. Peri-urban areas often share the territory of more than one administrative unit, with weak links and limited municipal power in sectors such as transport, water, energy, solid and liquid waste management and land use planning and this results in uncertainty as to which institution administers which specific area or activity. In social and economic terms these areas are strongly connected through complementary industrial and service functions between neighbouring districts and an increasing number of commuters. These

links are even closer at the time of managing environmental resources and controlling contamination and degradation processes. No single district is able to apply an isolated approach to supplying the qualitative and quantitative water and energy flows required by its population and activities or to manage the wastes and pollution generated within its jurisdiction limits. The emergence of the so-called 'regional metropolitan areas' asserts the need to rethink the validity of existing jurisdictional and institutional arrangements. Regional metropolitan areas are characterized by a highly integrated and dispersed settlement pattern, within which several towns and cities with relatively low concentrations of population perform complementary functions in the provision of services and infrastructure and the development of economic activities.

The environmental management of the PUI demands a conceptual and methodological approach that moves away from the physical definition of urban and rural areas (understood as clearly limited geographic and administrative entities) to a broader understanding of the articulation of complex patterns of settlement and resource use, where the flow of natural resources, capital, goods, services and people do not fit in with jurisdictional boundaries.

### **EPM APPROACHES AND METHODS**

There is undoubtedly a wealth of proposals and experience regarding EPM procedure and methods. Examples of these methods applied to cities include those ones developed by the Urban Management Programme (UMP), the Sustainable Cities Programme (SCP), the work developed by German Agency for Technical Cooperation (GTZ) and by the International Council for Local Environmental Initiatives (ICLEI, 1996) among others. In general terms, these approaches fall within the framework of Local Agenda 21 (LA 21) and differ from traditional EPM in so far as it shifts the attention from the environment and local governments to sustainability and governance.

There is also a wealth of 'participatory planning' at the community level – albeit almost entirely rural – which uses related methods but not under the title of EPM. These methods include rural rapid appraisal (RRA) and participatory rural appraisal (PRA) among others (Dalal-Clayton, 1999) and many of them have been integrated under the framework of Community-Based Natural Resource Management. As such, these methods constitute an important source to guide and implement action planning at the community level

In practice some of the main shortcomings of these methods include the fact that very often, *"the formation of partnerships is too simplistic. It takes inadequately into consideration the difficulties of identifying and empowering silent voices (the poor, ethnic minorities, women and children. The rich and poor continue to take decisions over the heads of the vast majority). The emphasis on listening to local wishes and identifying immediate problems ('visioning' and 'prioritising') results in longer term environmental (resource) sustainability being disregarded in any meaningful way"* (Atkinson, 1999b).

In other words, it could be argued that the application of community planning methods in the peri-urban context faces two main challenges. The first is related to the need to disaggregate the process at the local level to work with communities rather than with the community, paying particular attention to those already marginalized even by local social structures. The second challenge is related to the fact that these methods are only marginally engaged with those planning issues that fall outside the immediate and medium term concerns of specific localities and communities within the PUI; therefore neglecting the urban regional dimension and long-term perspective required for the sustainable management of peri-urban environmental resources and services. As a result, the application of these methods alone often fails to bring into the process other actors outside the community (notably

government and private decision-making makers), thus having very little impact on the institutionalization of EPM of the PUI.

Experiences in applying an articulated EPM process that is able to link local, city-wide and regional development processes are still rare. Most of the methods applied in the EPM programmes appear to give little consideration to the problems and opportunities for developing more effective urban-peri-urban links, for instance, making productive use of urban waste for agriculture or supplying urban needs for food and energy. The previous discussion suggests that EPM of the PUI requires a combination of methods that strike a balance between local planning (paying particular attention to the heterogeneity of and power relations within peri-urban communities) and the broader dimension and urban regional planning. Drawing from innovative experience in EPM and the work conducted at the DPU (Peri-Urban Research Project Team, 2001), the following paragraphs attempt to specify the key guiding principles that should be considered to conduct an EPM process for the PUI.

### THINKING AND ACTING STRATEGICALLY

Strategic EPM seeks to create a balance between the formulation of long-term, cross-sectional and dynamic strategic and the development of short-term interventions within the framework. Strategic EPM differs from other approaches to planning and management in so far as it does not attempt to intervene in all aspects of the problematic areas in question but focuses on certain interventions which are considered strategic due to their synergetic effects. This requires thinking about traditional problems in a new and cross-sectoral way.

Future environmental strategies for the PUI ought to be based on some degree of understanding of the current policies that affect directly and indirectly the processes of

change that has taken place in peri-urban areas. Environmental policies or interventions with a specific focus on the PUI are still rare. As discussed earlier in this document, this is partly because of the lack of specific institutions with a clear and specific remit on peri-urban areas. *"There is a real limitation, in that most interventions that might be regarded as explicitly focused on the PUI take as their starting point a physical definition, such as the 'urban periphery', the 'green belt' and so on. This is because most development interventions are either initiated or guided largely by one or more government tiers, which are by law obliged to implement their actions within a physical boundary"* (Davila et al, 1999). Therefore, when examining those policies and strategies that have an effect on the PUI, it is necessary to take a broader perspective, considering not only those policies that have more immediate physical impacts on peri-urban areas, but also those which affect a diverse range of flows between rural and urban areas.

Douglass (1998) proposes an analytical framework for understanding how rural-urban linkages or flows (of people, production, commodities, capital and information) can be mutually reinforced or truncated leading to different trajectories and reciprocal or opposite relationships between urban and rural development. Allen et al (2010) added to this framework the consideration of flows of natural resources and wastes. The dynamics of the flows affecting the use of natural resources as well as the livelihoods of the poor in the PUI might be driven by local policies or strategies (that promote, for instance, the competition for land between urban development and agriculture or the increasing pressure of extractive activities as a response to the city demand for building materials); by regional and national policies (for example, the promotion of industrialization); or by international processes, such as falling prices of export crops increasing the migration of impoverished farmers from rural areas to the

PUI in search of alternative livelihood opportunities. Hence, placing environmental processes of change in the PUI into the analysis of the problems and opportunities created by rural-urban flows allows the identification of strategic entry points and ensures that the EPM process keeps an orientation to the future.

### **BUILDING A PARTICIPATORY PROCESS**

As discussed before, EPM of the PUI requires the

building of a participatory process that addresses unequal power relations whilst building on the collective use of the strengths of a variety of actors and institutions. This involves the engagement of a broad variety of actors, ranging from the local communities living and working in these areas to institutions operating at the sub-national and national level. The criteria of participation relates to the careful identification and collective use of individual strengths.

Certain actors bring different strengths to the process; some will come with practical knowledge, some with institutional knowledge, some with financial assets and some with commitment. A process aimed at achieving the aims of environmental sustainability whilst bringing benefits to the poor, must draw from them all, creating a new web of relationships. Treating urban, rural and natural eco-systems together increases the complexity of participatory strategies but builds new forms of collaborative arrangements that transcend the boundaries of urban and rural action.

It can be argued that, when considering the specific institutions related to urban and rural matters in any specific peri-urban area, this might lead to the identification of a long list of stakeholders and institutions, making any institutional arrangement extremely difficult to establish and sustain. Furthermore, not all the institutions and actors might be relevant stakeholders to the different issues related to peri-urban environmental planning. Considering the diversity of processes

affecting sustainability and poverty in the PUI, a more strategic approach to the definition of the most appropriate institutional arrangement for the PUI could consist of identifying the specific institutions and actors affecting and being affected by specific themes or processes of change. For instance, regional authorities dealing with the definition and implementation of industrialization policies might be key stakeholders in the process of managing land use changes from agricultural to industrial purposes but might be irrelevant in dealing with the impacts of shifting crops from agriculture to horticulture.

This type of 'issue-specific institutional arrangement' has been successfully adopted in the definition and implementation of urban EPM within the framework of Local Agenda 21. The review on peri-urban management approaches, developed by the Universities of Nottingham and Liverpool (1999) analyses the principles and mechanisms adopted by several international development organizations, drawing lessons from urban EPM programmes. Typically, the EPM process starts with a broad consultation in which different actors and institutions are brought together to participate in a comprehensive environmental forum. This forum is the basis to set 'broad-based consensus on issue-specific objectives and strategies. The different issues prioritized become the basis to establish more specific institutional arrangements usually adopting the format of a series of thematic working groups and a steering committee. Specific partnerships are established for the practical implementation of concrete actions.

#### **Summary and Recommendations**

- i. The peri-urban interface is a particular type of metabolic support system, in which the value of the configuration is much higher than the sum of the value of its component parts. The assumption is that these configurations are characterized by particular possibilities and conflicts due

to the physical proximity of different land uses and related social, economic and physical processes;

- ii. Environmental degradation in the PUI cannot be addressed in isolation from the processes taking place in a wider region. On the one hand, environmental problem affecting the quality of life of the poorest demand urgent attention, on the other, these issues cannot be separated from the long-term problems affecting the sustainability of the natural resource base. This ultimately demands broadening the focus of EPM beyond localized environmental problems to a consideration of the sustainability of the urban bioregion;
- iii. Environmental problems in the PUI cannot be addressed from the mere perspective of the sustainability of urban development, nor from sectoral interventions in some peri-urban villages. More attention needs to be
- iv. paid to the synergies and trade-offs of EPM responses. For instance, reusing urban waste as compost is often seen as a potential strategy to reduce the amount of wastes that are otherwise simply disposed of or dumped and to increase the productivity of the soil for farming activities in the PUI, thus enhancing livelihood strategies. However, the synergy between these two objectives has to be analyzed in the light of other aspects such as access to land for farming purposes, and market conditions for selling the compost;
- v. Geographical and administrative boundaries prevent a strategic approach to the environmental planning and management of the PUI that is holistic enough to include concerns at the city-region level and take into consideration at the same time the specific problems affecting peri-urban dwellers. Neither the brown agenda priorities of peri-urban communities, nor the longer-term issues



affecting the sustainability of the city region are likely to be addressed by municipal authorities. Urban EPM processes tend to neglect both issues, although increasing attention is evident in the management of the natural resource base in the peri-urban interface, this rarely involves peri-urban communities as key stakeholders in the process;

- vi. The PUI is not only subject to the influence of nearby urban systems but, as discussed by Douglass (1998), influenced (or created and sustained) by different types of urban-rural linkages (which may be represented by different types of flows operating at different scales: immediate and more distant interactions. Urban-rural interactions are diverse and operate at different scales, affecting each specific PUI in diverse forms. They are diverse both in relation to their types (quality and quantity) and scale (local, regional, national, international). Urban-urban and rural-rural, or international-local interactions may also form the basis of the organization of peri-urban interface;
- vii. 'Peri-urban interfaces' must be disaggregated and livelihood strategies must be researched if a strategic EPM that benefits the poor is to result. The analysis suggests.
- viii. the existence of very heterogeneous socio-economic groups in the PUI, with the poor becoming increasingly poor. On the one hand, low-income groups dependent on natural resource activities may lose access to livelihood resources and might miss out on
- ix. the opportunities related to 'peri-urban' changes. On the other hand, those engaged in urban-based activities may be subjected to two inter-related processes. First, the development of urban influence (particularly land value changes and infrastructure) may confine their places of

living to new marginal environments (depending on their political clout and opportunities that allow for living in the city). If low income areas are both of low political resistance and in need of job opportunities, which can be preferred as sites for noxious activities;

- x. Environmental problems and opportunities need to be analyzed in the context of their political underpinnings, conditions and ramifications that are derived from socio-economic inequalities and political processes. The differential social and economic impacts of environmental change not only have implications in terms of winners and losers, but also political implications altering the power of actors in relation to other actors. For example reducing the ability of some actors to control or resist other actors, and upon the institutionalization of responses to the environmental problematic; and
- xi. From the previous discussion it may be clear that a strategy to benefit a particular social group is essentially a political enterprise. It is therefore necessary to identify key elements which, in principle, should be investigated and addressed in EPM for the peri-urban interface. However, the most important aspect of a strategic EPM that benefits the poor is obviously a central element in the relationship between sustainability, poverty, environment and health.

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## REFERENCES

- Allen, A., (2009) "Local-international Partnership in Metropolitan Environmental Management Latin American Experiences", in A Atkinson, J. Davila, E. Fernandes and M. Mattingly (eds). *The Challenge of Environmental Management in Urban Areas*, Ashgate, London.
- Allen, A., N. Alves da Silva and E. Corubolo, (2010) "Environmental Problems and Opportunities of the Peri-urban Interface and their Impact upon the Poor", paper produced for the research project on *Strategic Environmental Planning and Management for the Peri-urban Interface*, Development Planning Unit, University College London (available from [www.ucl.ac.uk/dpu/pui](http://www.ucl.ac.uk/dpu/pui)).
- Atkinson, A. (1992). "The Urban Bio-region as a 'Sustainable Development' Paradigm". *Third World Planning Review*. Vol. 14, No. 4.
- Atkinson, A. (1999a). "Peri-urban Interface Research Project. Recommended Principles and Components of Strategic EPM. First draft for discussion", paper produced for the research project on *Strategic Environmental Planning and Management for the Peri-urban Interface*, Development Planning Unit, University College London (mimeo).
- Atkinson, A. (1999b). "Principles and components of a Strategic EPM process relevant to the Peri-urban Interface (PUI)", paper produced for the research project on *Strategic Environmental planning and Management for the Peri-urban Interface*, Development Planning Unit, University College London (available from [www.ucl.ac.uk/dpu/pui](http://www.ucl.ac.uk/dpu/pui)).
- Atkinson, A and A. Allen, (1998). *The Urban Environment in Development Cooperation. A Background Study*. Prepared for the Commission of the European Communities, Directorate General B/D4, Environment and Tropical Forests Sector, European Communities, Brussels.
- Dalal-Clayton, B., (1999). *Rural Planning: Experience and Lessons*. PUI Research paper, International Institute for Environment and Development, London.
- Davila, J., J. Budds and A. Minaya, (1999). "A review of policies and strategies affecting the peri-urban interface", paper produced for the research project on *Strategic Environmental Planning and Management for the Peri-urban Interface*, Development Planning Unit, University College London (available from [www.ucl.ac.uk/dpu/pui](http://www.ucl.ac.uk/dpu/pui)).
- Douglass, M., (1998). A Regional Network Strategy for Reciprocal Rural-Urban Linkages: An Agenda for Policy Research with Reference to Indonesia. *Third World Planning Review*, Vol. 20, No. 1, pp.1-33.
- Durand-Lasserve, A., (1998). Rural-Urban Linkages: Managing Diversity. Governance as a Matrix for Land Management in the Metropolitan Fringes. *International Workshop on Rural/Urban Linkages*, Curitiba, Brazil, March 1998.
- Evans, H., (1990) Rural-Urban Linkages and Structural Transformation. Report INU 71, *Infrastructure and Urban Development Department*, The World Bank, Washington DC.
- Healey, Patsy, (1997) *Collaborative Planning. Shaping Places in Fragmented Societies*, MacMillan, London.
- ICLEI, (1996) *The Local Agenda 21 Planning Guide: An Introduction to Sustainable Development Planning*. International Council for Local Environmental Initiatives, Toronto.
- MacGregor, S., (1995) "Planning Change: Not an End But a Beginning", in Margrit Eichler (ed), *Change of Plans: Towards a Non-Sexist Sustainable City*, Garamond Press, Toronto, pp. 151-167.
- Mattingly, M., (1999) Institutional Structures and Processes for Environmental Planning and Management of the Peri-Urban

Interface, paper produced for the research project on *Strategic Environmental Planning and Management for the Peri-urban Interface*, Development Planning Unit, University College London (available from [www.ucl.ac.uk/dpu/pui](http://www.ucl.ac.uk/dpu/pui)).

Peri-Urban Research Project Team, (2001) *Guidelines for Strategic "Environmental Planning and Management of the Peri-Urban Interface*, Development Planning Unit, London. Volumes 1-3.

Quon, S. (1999) "Planning for Urban Agriculture: A Review of Tools and Strategies for Urban Planners". Cities Feeding People (CFP) Report Series, Report 28, International Development Research Centre (IDRC), October,

[[http://www.idrc.ca/cip/rep28chap2\\_e.html](http://www.idrc.ca/cip/rep28chap2_e.html) ] (accessed 22 October 2001).

Taylor, J. L. and D. G. Williams (eds). (1987) *Urban Planning Practice in Developing Countries*. Pergamon Press, Toronto.

United Nations Development Programme (UNDP), (2000), *Rural-Urban Relations: An Emerging Policy Priority*. Interim Report, Institutional Development Group, Bureau for Development Policy, UNDP, New York.

Universities of Nottingham and Liverpool, (1999). "Literature review on peri-urban natural resource conceptualization and management approaches", unpublished Final Technical Report, Peri-urban Production Systems Research, Natural Resources Systems Programme.

