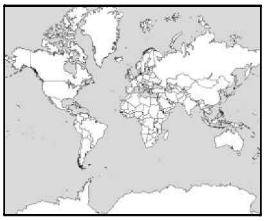

Environmental planning and management of the peri-urban interface: perspectives on an emerging field

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This paper draws on the findings of a three-year research project entitled Strategic Environmental Planning and Management for the Peri-urban Interface, funded by Infrastructure and Urban Development of the UK Department for International Development (DFID). The project team was led by the author and included Michael Mattingly and Julio Dávila as principal researchers, and Patrick McAlpine, Mona Chabra, Jessica Budds, Alicia Minaya, Enrico Corubolo and Nilvo

SUMMARY: Although there is no consensus on the definition of the peri-urban interface, there is growing recognition among development professionals and institutions that rural and urban features tend increasingly to co-exist within cities and beyond their limits. There is also recognition that the urban–rural dichotomy that is deeply ingrained in planning systems is inadequate for dealing with processes of environmental and developmental change in the peri-urban context. This paper argues that environmental planning and management of the peri-urban interface cannot simply be based on the extrapolation of planning approaches and tools applied in rural and urban areas. Instead, it needs to be based on the construction of an approach that responds to the specific environment, social, economic and institutional aspects of the peri-urban interface. The paper also outlines approaches to environmental planning and management in the peri-urban interface, examining its specificity in terms of both the challenges faced and possible approaches for implementation.

I. INTRODUCTION

CHANGES IN THE peri-urban interface range from urban expansion to the decline of agricultural and rural employment opportunities. Therefore, managing the environment of this interface 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 the ecological, economic and social functions performed by and in the peri-urban interface affect both the city and the countryside. Thus, the task of managing its environment is a complicated one which only recently started to receive specific attention. Part of the complexity of the task derives from the artificial distinction between "urban" and "rural", a distinction that (mis)informs not only the setting up of institutional arrangements but also, and more broadly, the deployment of planning approaches and tools.

Environmental planning and management of peri-urban areas is informed by three distinctive fields, namely rural, regional and urban planning, and the multitude of traditions that characterize the evolution of each. This paper argues that environmental planning and management of the peri-urban interface requires a specific approach that pulls together a selection of methods and tools from the three fields into a new process.[1]

Traditionally, planning systems have been developed (at least in theory) upon the so-called "comprehensive planning tradition" first introduced by colonial imperialism and later reinforced by the export of master planning.[2] In practice, this approach is very often replaced and/or complemented by piecemeal planning guided by a random interpretation and enforcement of mixed regulations and decrees. In both cases, planners find themselves either locked in an ivory tower, wondering why development processes do not follow their long-term visions, or trapped in the dilemma of "tolerating" reality or enforcing the norm.

In response to these problems, most recently there has been a shift towards less emphasis on planning prescription and control in favour of seeing planners' input as one of the many inputs required in the development process, valuing other forms of non-technical knowledge and seeking the involvement of community members in the definition of a common vision.[3] In short, planning is seen (and practised) increasingly as an iterative, participatory and flexible process. However, it is persistently pursued as a process that separates not only the urban from the rural but also the understanding of urban and regional change from the processes of governance through which decisions are made.

The aim of this paper is to examine the principles and components that could inform a strategic approach to the environmental planning and management of the peri-urban interface. The paper is structured in three main parts. First, it examines the main features that make environmental planning and management of the peri-urban interface a distinctive process (Section II). It then reviews the contributions and limitations of the main planning perspectives converging on the peri-urban interface (Section III) and then outlines the principles that should guide such a process as a framework for consistent action (Section IV).

II. WHAT ARE THE DISTINCTIVE FEATURES OF THE PERI-URBAN INTERFACE AND THE RELATED CHALLENGES FOR ENVIRONMENTAL PLANNING AND MANAGEMENT?

POPULATION SIZE, POPULATION density in built-up areas, infrastructural characteristics, administrative boundaries and predominant economic activities are the main variables conventionally used to distinguish rural from urban.[4] The peri-urban interface constitutes an "uneasy" phenomenon, usually characterized by either the loss of "rural" aspects (loss of fertile soil, agricultural land, natural landscape, etc.) or the lack of "urban" attributes (low density, lack of accessibility, lack of services and infrastructure, etc.). Attempts to conceptualize this new development landscape range from the emphasis on rural–urban linkages as footloose processes rapidly transforming territories, to the notion of the "peri-urban" as a term qualifying areas with mixed rural and urban features.[5]

a. A complex mosaic of rural, urban and natural subsystems

From an environmental perspective, the peri-urban interface can be characterized as a heterogeneous mosaic of "natural" ecosystems, "productive" or "agro-" ecosystems, and "urban" ecosystems affected by the

Luiz Alves da Silva as research assistants. For more information about the project or to obtain a copy of its main outputs, visit: www.ucl.ac.uk/dpu/pui

1. For a preliminary version of this paper, see Allen, Adriana (2001), "Environmental planning and management of the peri-urban interface (PUI): perspectives on an emerging field", paper prepared for the conference on Rural–Urban Encounters: Managing the Environment of the Peri-urban Interface, Development Planning Unit, University College London, 9–10 November 2001.

2. For a critique of rational comprehensive planning, see MacGregor, Sherilyn (1995), "Planning change: not an end but a beginning" in Eichler, Margrit (editor), *Change of Plans: Towards a Non-sexist Sustainable City*, Garamond Press, Toronto, pages 151–167.

3. Healey, Patsy (1997), *Collaborative Planning. Shaping Places in Fragmented Societies*, MacMillan, London.

4. Tacoli, Cecilia (1998), "Rural–urban interactions; a guide to the literature", *Environment and Urbanization* Vol 10, No 1, pages 147–166.

5. Iaquinta, David L and Axel W Drescher (2001), "More than the spatial fringe: an application of the peri-urban typology to planning and management of natural resources", paper prepared for the conference on Rural–Urban Encounters: Managing the Environment of the Peri-urban Interface, Development Planning Unit, University College London, 9–10 November 2001.

material and energy flows demanded by urban and rural systems.[6] Each of these sub-systems both conditions and is conditioned by the other two. An environmental conceptualization of the peri-urban interface has several implications for its analysis and for policy interventions.

First, it opens a new understanding of these processes, calling upon the articulation of social, economic and biophysical aspects. For instance, this reveals that the processes of private appropriation of land, either through real-estate speculation or through the marginalization of certain groups, reinforce unequal conditions of environmental quality. Thus, areas subjected to environmental hazards often become the habitat of lower-income groups, whilst those areas of high environmental quality constitute the epicentre of speculative mechanisms, subtracting or "freezing" access for productive activities by previous dwellers or cancelling valuable ecological functions performed by natural systems.

Second, the carrying capacity of the territory (soil productivity, vulnerability to floods, availability of drinking water, etc.) includes a set of more appropriate criteria for the environmental assessment of the peri-urban interface than the conventional zoning criteria based on density, morphology and urban and rural uses of the territory. Conventional urban planning has favoured a centrifugal view inadequate for addressing the characteristics of the interface's "patchwork" structure.

Through trade and natural flows of ecological goods and services, cities tend to draw on the material resources and ecological productivity of vast hinterlands. The expansion of cities' ecological footprints has important implications for the peri-urban interface in terms of both increasing pressures on its carrying capacity and missing production opportunities, for instance when food is imported from distant regions rather than supplied from the city's hinterland.[7] The quest for reciprocal and environmentally sustainable relations between urban, peri-urban and rural systems demands a reappraisal of the concept of the "urban bio-region".[8]

b. Changing social structures

From a socioeconomic viewpoint, the peri-urban interface also presents several peculiarities. The continuous but uneven process of urbanization taking place in these areas is generally accompanied (or in many cases produced) by land speculation, shifting economic activities of higher productivity, and the emergence of informal and often illegal activities such as clandestine abattoirs, intensive use of agro-chemicals and fertilizers for horticultural production, and mining or quarrying activities for the supply of building materials. As a result, the social composition of peri-urban systems is highly heterogeneous and subject to change over time. Small farmers, informal settlers, industrial entrepreneurs and urban middle-class commuters may all co-exist in the same territory, but with different and often competing interests, practices and perceptions.

Thus, a second distinctive characteristic of the peri-urban interface is that social groups are heterogeneous and in constant transition. That is to say, the composition and interests of these groups tend to change over time, in a process characterized by the fluctuating incorporation of new stakeholders. As a result, it is difficult to establish clear and more or less permanent institutional arrangements that deal effectively with the long-term management of natural resources and the enhancement of the livelihoods of those living and working in the peri-urban interface. This point is discussed in more detail below.

6. Allen, Adriana with Nilvo Alves da Silva and Enrico Corubolo (1999), "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).

7. Rees, William E (1992), "Ecological footprints and appropriated carrying capacity: what urban economics leaves out", *Environment and Urbanization* Vol 4, No 2, pages 121–130.

8. Atkinson, Adrian (1992), "The urban bioregion as a 'sustainable development' paradigm", *Third World Planning Review* Vol 14, No 4.

c. Institutional landscape

The peri-urban interface is often characterized as the converging of sectoral and overlapping institutions with different spatial and physical remits. This is related to the changing geographical location of the peri-urban interface or of the process whereby institutional arrangements or areas of responsibility tend to be either too small or too large, too urban or too rural in their orientation to address sustainability and poverty concerns effectively.[9] In addition, private sector bodies as well as non-governmental and community-based organizations also intervene in the management of peri-urban areas, but often without clear articulation or leadership from government structures.

The problem of institutional fragmentation is particularly relevant for understanding the constraints faced in environmental planning and management within this interface. Peri-urban areas often share the territory of more than one administrative unit. Weak links and limited municipal power in sectors such as transport, water, energy, solid and liquid waste management, and land-use planning often result in uncertainty as to which institution administers which specific area or activity.[10] No district is able to apply a single isolated approach when supplying the comprehensive water and energy flows required by its population, or to manage the wastes and pollution generated by that population within its jurisdictional limits.

This discussion implies that environmental planning and management of this interface demands a conceptual and methodological shift from the physical definition of urban and rural areas (understood as clearly limited geographic and administrative entities) to a broader understanding, whereby the complex patterns of settlement and resource use, the flow of natural resources, of capital, goods, services and people, do not fit or accord with jurisdictional boundaries.[11]

III. MODELS OF INTERVENTION

PLANNED INTERVENTIONS SEEKING positive changes in rural–urban linkages that both enhance the use and state of natural resources and improve the livelihoods of poor women and men are still rare. However, a number of recent programmes and projects pursuing these aims provide valuable lessons. These initiatives are highly heterogeneous in the way they conceptualize rural–urban linkages as well as in their underlying assumptions about the advantages and disadvantages of urbanization, the themes they address and, above all, the approaches adopted and methods deployed (Figure 1).[12] Despite this, they can be grouped under three distinctive intervention models associated with rural, regional or urban planning perspectives. Thus, the rural planning perspective tends to focus on localized and discrete actions; the regional perspective seeks to act upon rural–urban pressures and flows; and the urban perspective seeks the transformation of planning systems and their allied institutions.

It is worth noting that the boundaries between these three planning perspectives are increasingly blurred as each intervention model draws from the others in terms of approaches, methods and themes. For example, localized actions aimed at improving land-based livelihoods in peri-urban villages are likely to address issues of rural–urban market flows, whilst planning interventions targeted at urban authorities are likely to promote collaborative efforts with rural authorities.

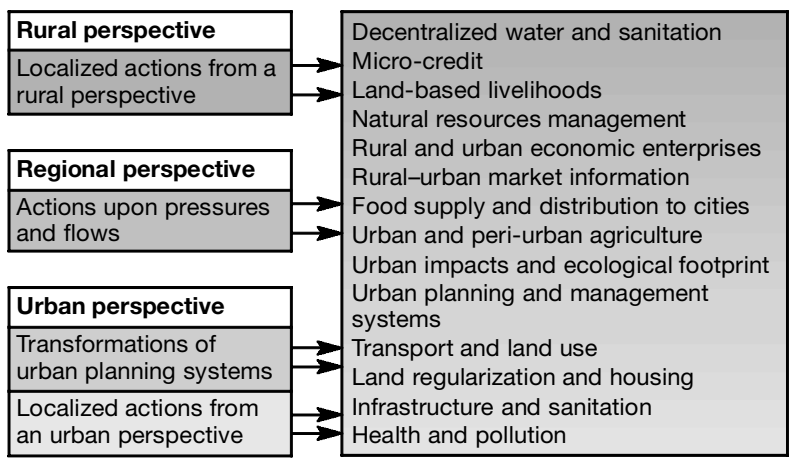
9. Mattingly, Michael (1999), "Institutional structures and processes for environmental planning and management of the peri-urban interface", paper produced for the research project on Strategic Environmental Planning and Management for the Peri-urban Interface, Development Planning Unit, University College London (available from www.ucl.ac.uk/dpu/pui).

10. Durand-Lasserve, Alain (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.

11. For a review of policies addressing the peri-urban interface and rural–urban linkages, see Dávila, Julio with Jessica Budds and Alicia 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).

12. Allen, Adriana and Julio Dávila (2001), "Rural–urban linkages: focus on people and interventions in development", background paper produced for the special chapter on urbanization and agriculture of the FAO *State of Food and Agriculture 2002*

Figure 1: Intervention models, concepts and themes



a. The rural perspective: localized and discrete actions

Rural planning has sought to promote balanced development between urban and rural areas by counteracting a perceived "urban bias" in government programmes and policies, for instance by attempting to curb rural–urban migration through strengthened rural production. Examples of this include rural industrialization programmes and integrated rural development programmes.[13] This type of initiative might also be framed within the regional perspective discussed below.

This intervention model focuses on localized actions aimed at improving living conditions and the social infrastructure necessary to increase rural production. Discrete pilot actions are implemented in peri-urban villages, which often retain land-based livelihoods and fall under the jurisdiction of rural authorities while being influenced increasingly by urban areas, regardless of their proximity. The model draws on community planning techniques and methods under the framework of "community-based natural resource management".[14] In considering the usefulness of these methods to address the processes of change affecting peri-urban villages, two main challenges remain to be addressed.

The first is the need to disaggregate different groups within communities, paying particular attention to those marginalized even by local social structures. The second is that these methods are only marginally engaged with planning issues that fall outside the immediate and medium-term concerns of specific localities and communities within the peri-urban interface. They tend to neglect the urban regional dimension and long-term perspective required for the sustainable management of peri-urban environmental resources and services and, as a result, the use of these methods alone often fails to bring into the process other actors outside the community (notably government and private sector decision makers).[15] Examples of initiatives that adopt a community-based management approach while addressing the challenges faced by peri-urban villages include a series of projects developed in the urban regions of Hubli–Dharwad, India,[16] and Kumasi, Ghana.[17]

13. 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.

14. Dalal-Clayton, Barry (1999), "Rural planning: experience and lessons", research paper, International Institute for Environment and Development, London.

15. See reference 1.

16. Reviewed in this issue; also Brook, Robert et al. (2000), "Participatory action plans (PAP) development for natural resources management around Hubli-Dharwad. Unpublished project summary", DFID Natural Resources Systems Programme.

17. McGregor, Duncan, David Simon and Donald Thompson (2001), "Peri-urban water quality and supply: changing circumstances and practical interventions in Kumasi, Ghana", paper prepared for the conference on Rural–Urban Encounters: Managing the Environment of the Peri-urban Interface, Development Planning Unit, University College London, 9–10 November

b. The regional perspective: actions upon rural–urban pressures and flows

The second intervention model refers to programmes that focus explicitly on the development of reciprocal links between rural and urban areas.[18] The model is based on a regional planning approach that acknowledges that current urbanization trends are leading to, and being shaped by, outward and inward movements of population, with metropolitan regions becoming sub-regions within countries in their own right, with greater industrial dispersal, loss of agricultural functions in rural areas, improved transport networks and the attendant restructuring of land markets. A country's settlement pattern is seen as the source of its planning problems, which requires tackling critical socioeconomic and political issues rather than localized urban or rural solutions. Whilst regional planning is by no means new, this approach moves away from the well-established "growth pole/core–periphery" model to focus instead on creating and strengthening networks.[19]

The main criticisms of the ability of the growth pole/core–periphery model to "trickle down" regional development are based on the contested assumption that urbanization is the key to regional integration. By contrast, the "actions upon rural–urban pressures and flows" type of intervention perceives the territory as a network in which planning and policy initiatives are developed for multi-sectoral, interrelated and complementary activities.[20] Emphasis is on the connectivity of the system and in developing infrastructure in both rural and urban areas and between minor centres rather than concentrating just on linkages with major cities. The central assumption underlying this approach is that through the expansion of the urban ecological footprint, the supportive reciprocal relations between cities and their hinterlands tend to break down, promoting unsustainable patterns of natural resource use and the transference of environmental problems to distant regions.

Examples of this approach are Nepal's Rural–Urban Partnership programme and the Poverty Alleviation through Rural–Urban Linkages programme in Indonesia.[21] Both programmes seek to identify specific development potentials in the linkages between rural and urban markets within a region and beyond. This approach is strategic rather than comprehensive in that it focuses on key entry points with the potential to reinforce rural–urban links, for instance by improving the flow of information between rural production systems and urban market demands.[22] In all cases, the emphasis is on creating new institutional arrangements that foster inter-municipal and inter-regional cooperation to address the political imbalances and unequal relations borne out of the primacy of certain urban systems.

An important area to be explored further is the identification of specific interventions to address increasing competition from cheap imports, for instance in the form of tariffs and political support for the local economy. Another area is the introduction of resource management on a regional scale which is often constrained by the lack of information on the supply and flows of resources and their environmental/social impacts. In addition, there is a need to reassess the role of common property regimes, increasingly marginalized by the intervention of and control by the private and public sectors.

Another set of issues which are, to some extent, addressed within this intervention model can be found in sectors such as urban and peri-urban

2001.

18. See reference 11.

19. Adell, Germán (1999), "Theories and models of the peri-urban interface: a changing conceptual landscape", paper produced for the research project on Strategic Environmental Planning and Management of the Peri-urban Interface, Development Planning Unit, University College London (available from www.ucl.ac.uk/dpu/pui).

20. Douglass, Michael (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, pages 1–33.

21. See reference 13.

22. Other initiatives within the same approach include the Rural Villages Programme implemented by the state of Parana, Brazil, and South Korea's Policy on Rural–Urban Integrated Cities; see reference 13.

forestry and agriculture, where the focus is on removing the barriers of conventional urban planning systems to activities that support self-reliance. Interventions in urban and peri-urban agriculture include the Cities Feeding People programme[23] and a range of programmes that seek to improve rural–urban nutrient flows and which challenge traditional views about what constitutes desirable urban activities, showing the potential that urban and peri-urban areas might have, for instance, in securing food for the urban poor.[24]

c. The urban perspective: transformation of planning systems

A third intervention model is found in a series of environmental planning and management initiatives at the city level. Initiatives within this group typically seek to address two sets of issues:

- the management of the relationship between urban systems and their hinterlands; and
- the quality of life of peri-urban dwellers.

In the first case, the underlying assumption is that cities are highly dependent on resources extracted from their immediate hinterland and beyond, so current urban planning systems need to work beyond the limits of built-up areas to become more proactive in managing the inputs and outputs required and produced by the city. An increasing number of programmes and projects aimed at promoting sustainable urban development adopt this approach. Examples include the Sustainable Cities and Localizing Agenda 21 programmes, which seek to transform conventional urban planning by building on the principles advocated in Local Agenda 21 and the Habitat Agenda.[25] Both agendas call for a new approach to urban environmental planning and management, and a shift of emphasis from a focus on local government and the environment to one on local governance and sustainability.[26] A general evaluation of the experience of developing Local Agendas 21 worldwide suggests that, typically, multi-stakeholder processes focus initially on immediate issues of concern traditionally associated with the provision of basic infrastructure. It is only through the iteration of the process over time that consensus can be built so as to move away from the immediate concerns of participating stakeholders to more strategic long-term issues affecting the development process as a whole. The planning experience of the Localizing Agenda 21 Programme in Nakuru, Kenya is an example of this approach, which shows how short-term actions and immediate problems can be nourished by a long-term vision that promotes sustainable linkages between urban and rural areas.[27]

The second set of issues addressed in this intervention model is represented by initiatives relating to the decentralized provision of infrastructure and services and, more widely, to the integration of peri-urban areas within the city. These include programmes promoting low-cost sanitation technologies, participatory methodologies for project design, community labour and micro-financing schemes. An example of this type of intervention is the project in peri-urban communities in Tegucigalpa, which is based on low-cost sanitation facilities, cost sharing and use of revolving funds,[28] and initiatives in peri-urban water and sanitation emphasizing the provision of drinking water supply through low-cost technologies, including hand pumps, wells, boreholes, gravity-fed systems and low-cost on-site sanitation.[29] Although these initiatives can be seen as localized and bearing many elements in common with the first model of

23. Maxwell, Daniel et al. (1998), "Farming in the shadow of the city: changes in land rights and livelihoods in peri-urban Accra", *Cities Feeding People* Report Series No 23 (available from www.idrc.ca/cfp).

24. Bourque, Martin (2002), "Cities going organic: does it work?" in Allen, Adriana and Julio Dávila (editors), "Mind the gap: bridging the rural–urban divide", *Insights* No 41, Institute of Development Studies, Brighton (available at www.id21.org/insights/insights41/index.html).

25. UNCHS (Habitat)/UNEP (1997), *Environmental Planning and Management (EPM) Sourcebook Volume 1: Implementing the Urban Environmental Agenda; Volume 2: City Experiences and International Support; Volume 3: The Urban Environment Forum Directory*, United Nations Centre for Human Settlements and United Nations Environment Programme, Nairobi.

26. Allen, Adriana and Nicholas You (editors) (2002), *Sustainable Urbanization: Bridging the Green and Brown Agendas*, Development Planning Unit/UN–Habitat and DFID, London.

27. See reference 25.

28. UNICEF (1999), "The construction of low-cost sewerage systems in Tegucigalpa: a feasible solution for the urban poor", [www/wsscc/org/gesi/unicef/honduras.html], (accessed March 1999).

29. Budds, Jessica and Alicia Minaya (1999), "Overview of initiatives regarding the management of the peri-urban interface", paper produced for the research project on Strategic Environmental Planning and Management for the Peri-urban Interface,

intervention discussed earlier, the main difference lies in their stress on integrating peri-urban areas into the urban fabric.

The main constraint on such initiatives is that all too often they remain outside mainstream government decision making, so results may remain marginal to the development process. Another concern relates to the fact that problems affecting the peri-urban poor tend to be neglected because of the nature of power relations at the municipal level, where more powerful and vocal urban-based interests are often favoured.

IV. TOWARDS AN ARTICULATED ENVIRONMENTAL PLANNING AND MANAGEMENT PROCESS

ENVIRONMENTAL PLANNING AND management of the peri-urban interface 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 of urban regional planning.

During 1998–2001, the Development Planning Unit undertook research that examined specific approaches to environmental planning and management of this interface. Searching for innovation in the field, this research focused on the analysis of the specific problems and opportunities faced in the peri-urban context, the examination of existing experiences, and the identification and discussion of guiding principles and working components in five countries. Drawing from this work, this section describes the key guiding principles that should be considered in conducting an environmental planning and management process for this interface. Whilst these principles might present similarities with those applied in any environmental planning and management process, three key features previously discussed make the peri-urban interface distinctive: the specific ecological nature of peri-urban systems; the heterogeneity and vulnerability of peri-urban communities; and the difficulty in identifying the boundaries of a system subject to rapid change and managed by overlapping institutions.

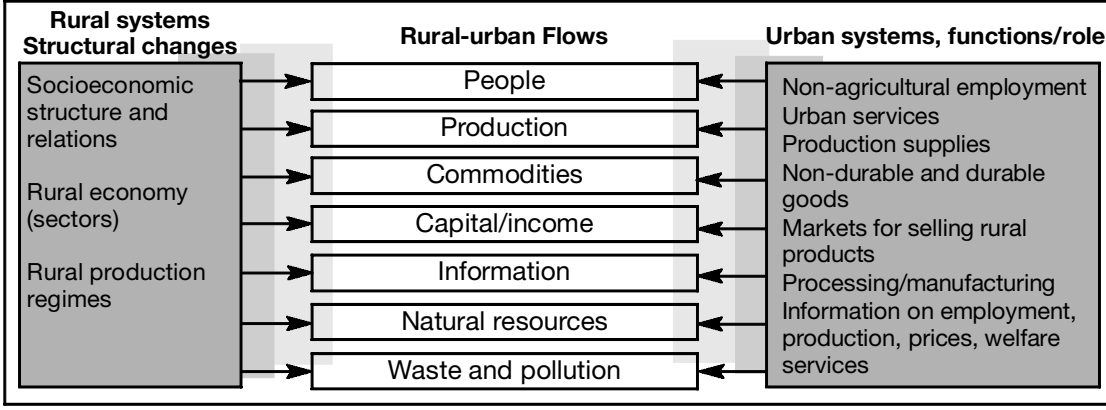
a. Thinking and acting strategically

Strategic environmental planning and management seeks to create a balance between the formulation of long-term, cross-sectoral and dynamic strategies and the development of short-term interventions. This differs from other approaches to planning and management in so far as it does not attempt to intervene on all issues but focuses on interventions with synergetic potential.

Long-term environmental strategies for the peri-urban interface should be based on an understanding of the current policies that affect directly and indirectly the processes of change taking place in peri-urban areas. As discussed earlier, environmental policies or interventions with a specific focus on this interface are still rare. This is partly because of the lack of institutions with a clear and specific remit on peri-urban areas. Therefore, when examining those policies and strategies that affect the peri-urban interface, it is necessary to take a broader perspective, considering not only policies that have more immediate impacts on peri-urban areas but also those which affect a variety of flows between rural and urban areas.[30]

Development Planning Unit, University College London (available from www.ucl.ac.uk/dpu/pui).

Figure 2: Rural–urban flows



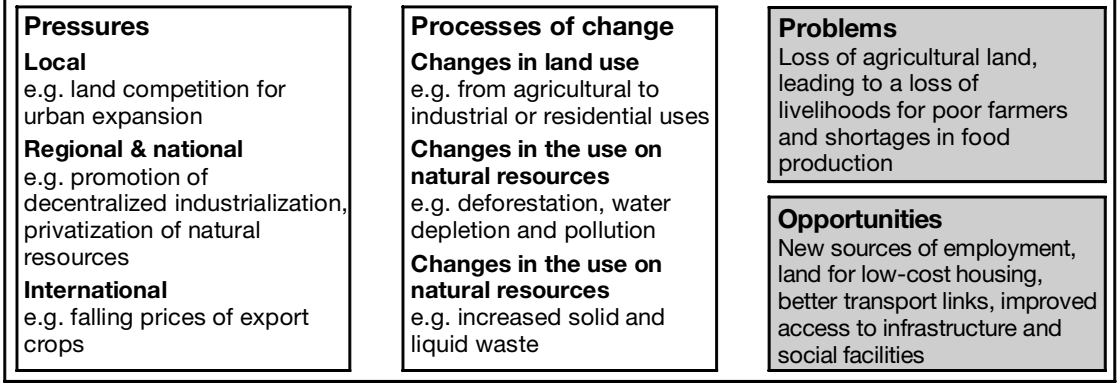
SOURCE: Douglass, Michael (1998), "A regional network strategy for reciprocal rural–urban linkages: an agenda for policy research with reference to Indonesia", *Third World Planning Review* Vol 20, No 1, pages 1–33.

30. see reference 11.
31. See reference 20.

32. See reference 6.

Douglass[31] proposes an analytical framework for understanding how rural–urban linkages or flows (of people, production, commodities, capital and information) can be mutually reinforcing or truncated, leading to different trajectories and reciprocal or opposing relationships between urban and rural development. Allen, da Silva and Corubolo[32] add to this framework the consideration of flows of natural resources and wastes (Figure 2). The dynamics of these flows might be driven by local policies or strategies (for instance, promoting competition for land between urban development and agriculture, or the increasing pressure of extractive activities as a response to the city's demand for building materials); by regional and national policies (for example, the promotion of industrialization); or by international processes, such as falling prices for export crops increasing the migration of impoverished farmers from rural areas to the peri-urban interface in search of alternative livelihood opportunities. Placing environmental processes of change in the peri-urban interface into the analysis of the problems and opportunities created by rural–urban flows allows the identification of strategic entry points and ensures that the environmental planning and management process keeps an orientation to the future (Figure 3).

Figure 3: Processes of change in the peri-urban interface



b. Building a participatory process

As discussed already, environmental planning and management of the peri-urban interface requires 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 levels. Treating urban, rural and natural ecosystems 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 this approach 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 in the different issues relating to peri-urban environmental planning and management. A more strategic approach consists of identifying the specific institutions and actors affecting and being affected by different 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 environmental planning and management within the framework of Local Agenda 21. Typically, this 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 for setting broad-based consensus on issue-specific objectives and strategies. The different issues that are prioritized become the basis for establishing more specific institutional arrangements, usually in the form of a series of thematic working groups and a steering committee. Specific partnerships are established for the practical implementation of concrete actions.

c. Working incrementally

Given that environmental problems occur over time and often manifest gradually, they must be tackled incrementally.[33] The environmental planning and management process is initiated at a modest level in response to specific problems or opportunities and is gradually expanded to cover more issues and to involve more stakeholders. The benefits of this approach are that institutional arrangements can be flexibly expanded and consolidated "*…as more information becomes available, potential benefits are better understood, and practical experience is gained*."[34]

Box 1 presents a possible strategy for addressing an incremental process, which highlights the importance of working gradually at several levels (from the sub-region to the community level), seeking their articulation at different stages of the process.

In addressing the principles and methods discussed above, the research conducted by the Development Planning Unit has developed a set of guidelines that present a framework of principles and components to steer strategic environmental planning and management of the peri-urban interface.[35] Eighteen principles were identified, giving substance to the three guiding principles described above. Four components or phases of conducting environmental planning and management of this interface

33. See reference 25.

34. 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, page 110.

35. Allen, Adriana et al. (2001), *Living between Urban and Rural Areas. Guidelines for Strategic Environmental Planning and Management of the Peri-urban Interface* (3 volumes), Development Planning Unit, University College London.

Box 1: An incremental approach to environmental planning and management of the peri-urban interface

The structure of the process will need to be geographically articulated with, probably, three levels: a community level, a municipal/district level (urban and rural) and a sub-regional level, which may or may not correspond to government jurisdictions, with the aim of a multi-stakeholder steering of the process. The community-level process involves awareness raising, mobilization, capacity building/action planning and small-scale actions to improve the efficacy of the methods and the confidence of community actors, followed by linking into the municipal/district environmental plan; probably initiated in selected pilot areas.

The sub-regional initiative can start simultaneously with the community initiatives, using a background study to explore a sustainable future for the region. Strategic issues such as control and profiteering over land should be raised immediately. An iterative process of awareness raising and step-by-step planning through alternatives and public involvement is required. The stakeholder analyses provide a basis for participation in plan development.

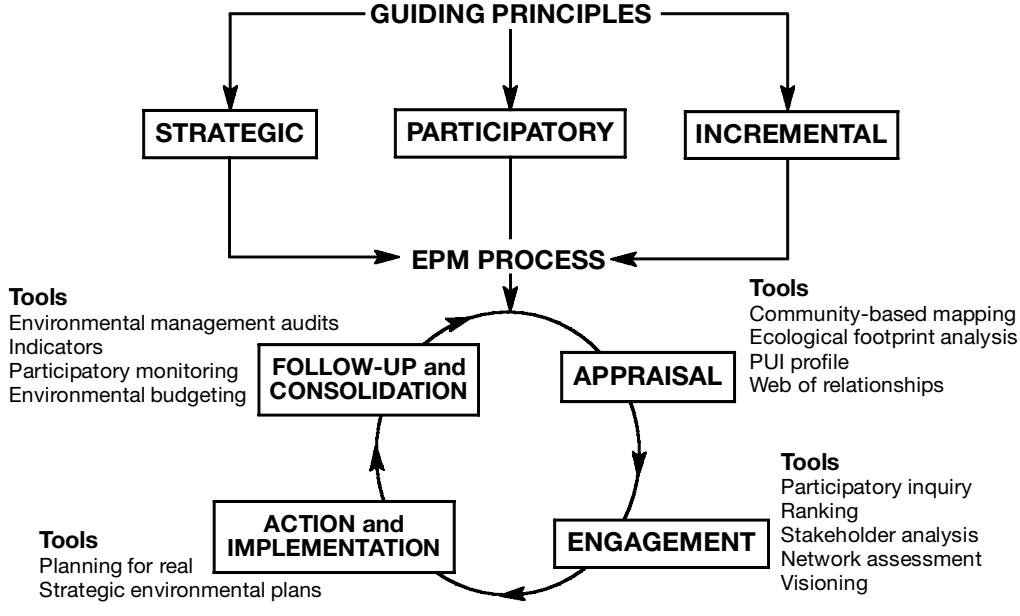
The municipal/district initiative starts last and becomes the level at which the community and regional initiatives are bound into a single process:

- moving the traditional sectoral, top-down priorities of the municipal and departmental plans and activities into line with priorities arising from the sub-regional planning exercise; and
- both responding to and guiding the community initiatives into the path of what has been determined to be sustainable development on a regional scale.

Returning to the communities: by the time the small-scale projects are in train, the municipal/district level, in which community stakeholders must also be involved, is both helping to fund more substantial local projects and helping communities to cooperate in deciding with surrounding communities how best to solve common problems.

SOURCE: Adapted from Atkinson, Adrian (1999), "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, UCL (available from www.ucl.ac.uk/dpu/pui).

Figure 4: A framework for EPM of the peri-urban interface



Note: EPM stands for environmental planning and management; PUI stands for peri-urban interface.

were also identified, each of them informed by a set of working principles and a series of tools that can support the process, as shown in Figure 4.

V. CONCLUDING REMARKS

A NUMBER OF key points highlight the main challenges facing environmental planning and management of the peri-urban interface.

- The peri-urban interface is a specific type of support system in which the value of the configuration is much higher than the sum of its component parts. The assumption is that these configurations are characterized by particular possibilities and conflicts as a result of the physical proximity of different land uses and related social, economic and physical processes.
- Environmental degradation in the peri-urban interface cannot be addressed in isolation from the processes taking place in the wider region. On the one hand, environmental problems affecting the quality of life of the poorest groups 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 requires a broadening of the focus of environmental planning and management beyond localized environmental problems to a consideration of the sustainability of the urban bioregion.
- Environmental problems in the peri-urban interface cannot be addressed only from the perspective of the sustainability of urban development or from sectoral interventions in some peri-urban villages. More attention needs to be paid to the synergies and trade-offs of environmental planning and management responses. For instance, re-using urban waste as compost is often seen as a potential strategy for reducing the amount of wastes that are otherwise simply disposed of or dumped and increasing the productivity of the soil for farming activities in the peri-urban interface, thus enhancing livelihood strategies.
- Geographical and administrative boundaries prevent a strategic approach to environmental planning and management of the peri-urban interface that is holistic enough to include concerns at the city/region level and simultaneously take into consideration the specific problems affecting peri-urban dwellers. Neither the immediate 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 unless specific fora are set up for this purpose.
- Environmental problems and opportunities need to be analyzed in the context of their political underpinnings, conditions and ramifications, which are derived from socioeconomic inequalities and political processes. The differential social and economic impacts of environmental change have not only implications in terms of winners and losers but also political implications altering the power relations between actors and the institutionalization of responses to the environmental problematic.

A strategy to benefit a particular social group is essentially a political enterprise. The most important aspect of strategic environmental planning and management that benefits the poor is obviously related to the possibility of participation of the poor themselves in the definition of priorities and in decision making. In addition, a focus on the improve-

ment of local environmental conditions alone is insufficient to address the environmental challenges brought by a broader process of change affecting the peri-urban interface which, in turn, affect not only the long-term sustainability of urban and rural areas but also the quality of life and livelihoods of those living and working in the peri-urban interface. The environmental perspective contributes to the formulation of a new approach in the analysis of how peri-urban systems are constituted, how they transform and how to act upon them. Environmental planning and management approaches to urban, rural and regional planning already present many of the methods that need to be applied in environmental planning and management for the peri-urban interface. However, work still needs to be done in the consolidation and application of a specific approach that links these methods into a coherent system.