The Peri-Urban Interface:

a Tale of Two Cities

Edited by

Robert M Brook,
School of Agricultural and Forest Sciences,
University of Wales, Bangor

Julio Dávila,
Development Planning Unit,
University College London

ii

Contents

1 Introduction

Background

More than half the world's population lives in areas that are classified as urban. In developing countries, a substantial and growing proportion lives in or around metropolitan areas and large cities, including the zone termed the 'peri-urban interface', where their livelihoods depend to some extent on natural resources such as land for food, water and fuel, and space for living.

The population pressure means that resources in such zones are often over-exploited. Although heterogeneous in its social composition, the peri-urban interface (PUI) constitutes the habitat of a diversity of populations, including lower income groups who are particularly vulnerable to the impacts and negative externalities of both rural and urban systems. This includes risks to health and life and physical hazards related to the occupation of unsuitable sites, lack of access to clean water and basic sanitation and poor housing conditions. Environmental changes also impinge upon the livelihood strategies of these communities by decreasing or increasing their access to different types of capital assets (including access to natural resources such as land, water, energy).

The UK Department for International Development (DFID) conducts its natural resources research programme mainly though programmes coming under the Renewable Natural Resource Research Strategy (RNRRS). RNRRS comprises a number of programmes, of which the Natural Resource Systems Programme (NRSP) is one. Each programme has to address particular production systems, and this volume is concerned with the Peri-Urban Interface (PUI) system.

In 1996, the NRSP research in the peri-urban interface system programme commenced in two medium sized city regions: Kumasi in Ghana and Hubli-Dharwad in India. A systems based approach was adopted to study effects of urbanisation upon natural, human and financial resource flows, to characterise the main stakeholders, and develop ways in which natural resource management and agricultural production could be improved. Over the past five years, these studies have produced a large volume of information, research reports, a few published articles, and a large database with a Geographical Information System (GIS) interface for Kumasi and its region.

Following a change in UK Government policy, DFID produced a White Paper on "Eliminating world poverty: A challenge for the 21st century", which set a new agenda for the British aid programme, embracing an explicitly stated poverty alleviation goal. As a consequence, the research goal stated in the NRSP's logical framework of "Productivity and productive potential in the peri-urban interface production systems increased through the application of systems-based approaches", was in 1999 modified to "Livelihoods of poor people improved through sustainably enhanced production and productivity of renewable natural resource systems". These new terms of reference required research projects to adopt a livelihoods approach with the emphasis upon poverty alleviation.

NRSP commissioned a project, "Consolidation of existing knowledge in the peri-urban interface system" (project number R7549: see Appendix) to position itself with regard to future direction in the research programme. The report produced was the result of three months of multi-disciplinary teamwork by a group of nine researchers based at the University of Wales in Bangor, University College London and the University of Birmingham. The work comprised a review of over 90 written documents and other research outputs (e.g. CD-ROM) emanating from PUI projects funded by NRSP. This book is an edited version of the R7549 final report.

Project R7549 had a specific set of terms of reference, to consolidate the knowledge generated by previous research, assess whether this knowledge was adequate for development of new calls for research, and identify any significant knowledge gaps resulting from the change of programme direction which should be addressed before activities outlined in NRSP's new PUI logical framework could proceed. This required that some data had to be looked at a new way, sometimes in ways that the original researchers could not have anticipated. In the final report of project R7549, and in this book, opinions were expressed concerning the extent to which projects operating under the previous terms of reference met the terms of NRSP's new purposes. When the reader comes across such expressions of opinion, they should be understood in the context just outlined. Although many of the opinions are relevant to findings arising from particular projects, they nevertheless have wider applicability for research programmes in other locations.

In consolidating the existing knowledge and identifying gaps in knowledge, the team was guided by the sustainable livelihoods framework developed by the Institute of Development Studies, University of Sussex, and adapted to accommodate DFID's particular concerns, as described in the book '*Sustainable Rural Livelihoods: What Contribution can we make?*' (Carney, 1998a)

At the core of this framework lies an awareness that individuals draw on five types of capital assets to build their livelihoods, namely: natural, human, financial physical and social. Opportunities are constrained or enhanced by potentially transforming structures and processes which generally lie beyond the control of individuals, as they are the result of institutional factors (policies, laws, customs) and the operation of markets. A central tenet of the sustainable livelihoods approach is that poverty is not a static or permanent phenomenon, but a condition into and out of which people move in response to the opportunities, shocks and stresses that they experience. In the context of the PUI there is a need to understand the specific opportunities that arise from the meeting of urban and rural processes and how these affect the livelihoods of the poor.

For some enterprises (e.g. livestock) the transition from urban to peri-urban through the peri-urban interface is a gradual one. The distance over which inputs to the enterprise (fodder) and waste outputs from the enterprise (manure) must be transported primarily mark the boundaries of this transition zone.

As a city expands in area, so the zones representative of 'urban' and 'peri-urban' increase. The peri-urban zone is in a state of rapid change. Land that earlier met the definition of 'peri-urban' becomes 'urban' and truly rural land now becomes 'peri-urban'. Consequently, all agricultural activities are likely to be transient in character and the incentive to invest in capital developments very small.

The rest of this chapter presents an introductory overview of Hubli-Dharwad and Kumasi and the regions in which they are located. An understanding of the issues and processes that have been documented in the NRSP research is best seen in the context of the differences and similarities between the two city regions, particularly as regards their peri-urban interfaces. The aim of these profiles is to locate the discussion of the following chapters by providing a set of comparable basic information on the recent development of the two cities and their peri-urban areas. The profile starts with a brief statistical overview of India and Ghana, placing particular emphasis on human development and basic agricultural issues. In the following section the two cities are examined in parallel with the help of a basic set of comparative data for 1993 drawn from a large database compiled by the United Nations Commission on Human Settlements (UNCHS, 2000). The comparison centres around human and economic development, as well as environmental issues and infrastructure.

An overview of India and Ghana

The choice of India and Ghana as locations for the NRSP research on the peri-urban interface was the result of a process of selection by a team of researchers, and because they are both DFID target countries. With a population 54 times larger and an area fourteen times as big, India is by far a much larger country. And yet, when seen in relation to their respective sizes, the extraordinary cultural and linguistic diversity that marks them both would seem to highlight an important commonality. However, as in the reports reviewed there were no data reported, an area not covered in this book is culture.

Table 1.1   Basic statistics for India and Ghana

Indicator	India	Ghana
Population, 1998 (millions)	980	18
Annual population growth rate, 1990-1998 (%)	2.0	3.1
Share of urban population, 1998 (%)	28	37
Population density, 1998 (people/km^2)	330	81
GNP per capita measured at PPP[a], 1998 (US $)	1,700	1,610
Average annual GDP growth rate, 1990-1998 (%)	6.1	4.2
Life expectancy at birth, 1998 (years)[b]	62.6	60.0
Adult literacy rate, 1998 (as % of age 15 and over)	55.7	69.1
Population below poverty line[c] (%):		
Rural	36.7	34.3
Urban	30.5	26.7
Total	35.0	31.4
Population with access to safe water, 1995 (%):		
Rural	82	52
Urban	n.a.	88
Irrigated land, 1994-1996 (% of cropland)	32.0	0.1
Arable land (has. per capita), 1994-1996	0.17	0.16
Agricultural productivity (value added per agricultural worker; 1995 US$), 1995-1997	343	533
Annual deforestation, 1990-1995		
Km^2	-72	1,172
Average annual change (%)	0.0	1.3

n.a.: Not available;a: Purchasing power parity; b: Data from UNDP (2000); c: Nationally defined poverty lines; Survey years: India, 1994; Ghana, 1992.

Source: World Bank (1999), except where indicated.

The research that informs this publication are human and economic development issues, including the role that urban-based activities, agriculture and natural resources play in both. The statistical information in Table 1.1 offers a parallel summary of both countries in some of these dimensions. In the 1990s, Ghana's population grew at a much faster rate than India's where birth control policies were successfully implemented well before Ghana. In population terms, India is much more densely populated but it is also less urbanised. Both countries experienced relatively healthy rates of economic growth in the 1990s, and by the end of the decade their per capita income (when adjusted for purchasing power parity) was very similar.

A much higher proportion of India's cropland is irrigated than in Ghana, where irrigation is negligible, although the availability of arable land in relation to their population is very similar in both cases. Despite greater mechanisation (as measured in tractors in relation to population) of agriculture in India, Ghana's productivity per worker is over 50% higher than India's. But while in India de-forestation has been reversed, in Ghana it is advancing apace, losing over 1000 km^2 every year.

The urban cores of Hubli-Dharwad and Kumasi

The two case studies have provided a substantial body of information that has helped advance our understanding of the nature of the peri-urban interface in two rather dissimilar medium sized cities, in terms of natural resource management and how the livelihoods of its poorer inhabitants have changed in recent years.

Kumasi is the second largest city in Ghana after the capital Accra, and centre of a large area which historically encompassed the Ashanti Kingdom (Figure 1.1). It is located in the tropical forest ecozone about 300 km northwest of Accra. Since the 19th century, it has been important as a cocoa growing and trading centre. The urban area proper corresponds to the jurisdiction of the Kumasi Metropolitan Assembly (KMA). "By virtue of its geographical position and of its road connections, Kumasi constitutes probably the most important centre . . . in the country. . . its markets . . . constitute the point of arrival and departure of goods produced locally as well as in neighbouring countries" (Corubolo with Mattingly, 1999, p. 1).

Hubli-Dharwad, in southwest India (Figure 1.2), is a conurbation comprised of the urban areas of Hubli and Dharwad which are separated by a distance of some 20 km. The two were brought together under the Hubli-Dharwad Municipal Corporation (HDMC) in 1962, thus making it the third largest urban agglomeration in Karnataka State (after Bangalore and Mysore). "Hubli is the larger city, a centre of commerce, trade and industry, and also the centre for transport within the region, due to its position on road, rail and air links with Bangalore and Bombay, both important centres of trade and industry. Dharwad, to the west of Hubli, acts as the administrative centre and hosts the city's higher education institutions" (Budds with Allen, 1999, p. 1).

Statistical comparison across national boundaries is a task fraught with difficulties. This is because governments usually have their own approach to gathering, processing and publishing statistical data, which rarely conform to internationally agreed definitions. Additionally, such definitions often change from one year to the next even within the same country. Thus, an international database providing a range of comparable indicators for a large number of cities or localities is a very valuable tool. A team of international and local experts led by UNCHS assembled the indicators used in this section. By and large, they refer to the urban agglomeration, "defined as the built-up or densely populated area containing the city proper, suburbs, and continuously settled commuter areas" (UNCHS, 2000). Unfortunately, the Internet version of the database does not provide more specific information on what these areas encompass in the two case studies cities under consideration here.

As far as possible, the city-specific data seek to conform to the same definition across national boundaries, and they all refer to the year 1993, providing a composite picture of the two localities, particularly as regards the urban core of the metropolitan area. Comparative data are not available for the two peri-urban interfaces, as even the definitions of what constitutes them differ from one city to the other.

Table 1.2 shows that population growth is considerably faster in Kumasi. At the rates observed in the early 1990s, it would take around 30 years for the population of Hubli-Dharwad to double, but only 18 years in Kumasi. Differences in the two growth rates are partly a reflection of national differences in the rates of natural growth in the respective countries, but to a lesser extent they also reflect a somewhat higher proportional influx of migrants into Kumasi and its periphery.[1] This is a consequence of the fact that Kumasi is not only the second largest city in the country (while Hubli-Dharwad occupies 44th place in India) but as was noted earlier, it is also a major regional trade centre.
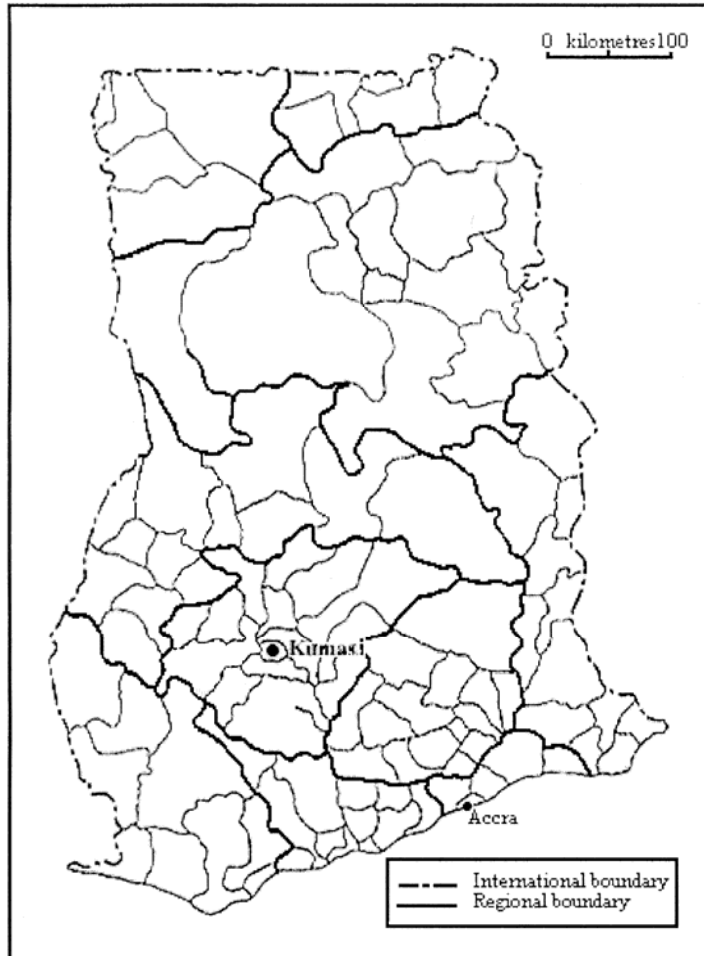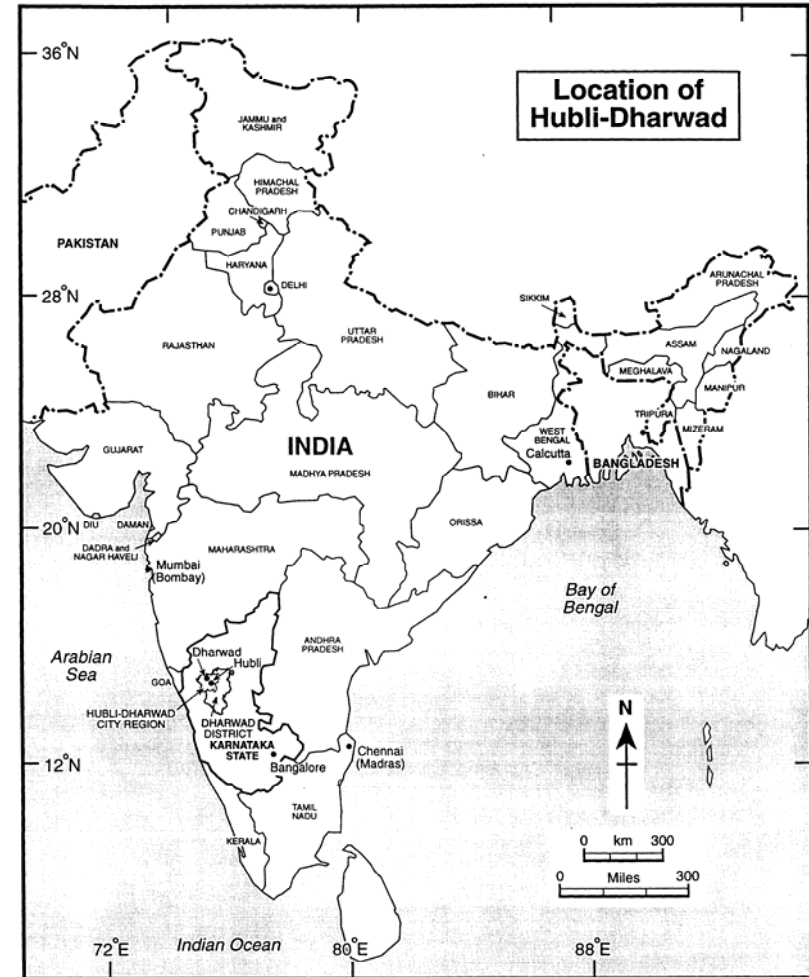
Figure 1.1 Location of Kumasi in Ghana

Figure 1.2

Source*:* University of Birmingham *et al*. (1998a, p. 4)

Table 1.2   Population data for Hubli-Dharwad and Kumasi cities, 1993[a]

Indicator	Hubli-Dharwad	Kumasi
Population (000s)		
Female	326.8	290.1
Male	351.6	245.2
Total	678.4	535.3
Annual population growth rate (%)	2.3	3.9
Rank among the country's cities by population size	44	2
Residential density (people/ha.)	231	n.a.
Annual rate of formation of new households (%)	3.1	2.6
Average household size	5.6	5.5
Share of women-headed households (%)	12.5	n.a.
Household income distribution (average household income in US$ per year)		
Quintile 1	284	405
Quintile 2	691	662
Quintile 3	1,092	707
Quintile 4	1,494	1,162
Quintile 5	2,009	1,171
Income disparity (quintile 5/quintile 1)	7.1	2.9
Child mortality among under 5-year olds (%)	2.29	n.a.
Informal employment (% of employed population)	30.7	77.1
Local government employees per 1,000 population	4.25	1.32

n.a.: Not available

a.   Cities defined as the built-up or densely populated area containing the city proper, suburbs, and continuously settled commuter areas

Source: UNCHS (2000)

Another marked difference between the two cities is the sex ratio of their populations. While in Hubli-Dharwad males comprised 52% of the total, in Kumasi they accounted for just under 46%.[2] This is the result of differences in in-migration, as males in the region around Kumasi are more likely than women to migrate away from the region, to the capital, Accra, or even to international destinations. New households are forming faster in Hubli-Dharwad than in Kumasi, probably the result of the sex imbalance, but also of a population

structure marked by a smaller proportion of children and teenagers and a correspondingly higher share of people in child-bearing and retirement age.

Income disparities are more marked in the Indian city, where the richest 20% of the population earn over seven times as much as the poorest 20%; in Kumasi, by contrast, the ratio is less than three. The data also suggest that the poorest groups in the Indian city earn on average less than their counterparts in Kumasi, although the difference between the poorest quintile and the next groups up is more marked in Hubli-Dharwad. Thus, while the poorest are considerably worse off in the Indian city when household income is measured, the middle and high income groups appear to be comparatively better off.[3]

While 77% of Kumasi's labour force work in the informal (or unregistered) sector, less than a third of Hubli-Dharwad's do. This is probably a reflection of both the greater control exercised by the Indian government over unregistered activities (such as trade and manufacturing), and the greater significance of local government in providing employment (three times higher compared to population size).[4]

Although by no means high compared to developing country standards, the population in Hubli-Dharwad generally enjoys better coverage of basic services and infrastructure (Table 1.3). There are fewer patients per hospital bed, while considerably higher proportions of local households have connections to water, sewerage and electricity networks. Individual consumption of water is closer to international standards Hubli-Dharwad, whereas telephone coverage is better in Kumasi, with nearly a third of all households having access to it.

In cities with populations of comparable size (see Table 1.2), the average times taken for commuters to reach their workplace is very similar. There are noticeable differences in the transport modes available to commuters, however, with over half travelling by bus or minibus in Kumasi, and 10% by private car, while in Hubli-Dharwad these two modes account for less than 40%. Motorcycles, by contrast, are much more widely available in the Indian city, providing nearly 20% of all daily trips to work.

In 1993 per capita annual capital expenditure by the local government in Kumasi was 80% that of Hubli-Dharwad. Expenditure on road infrastructure accounted for half of this in Hubli-Dharwad but only for 17% in Kumasi. It is possible that this was the result of a one-off programme of road investment in 1993, rather than the result of a long-term trends.[5] Major services such as water and electricity are the responsibility of national government enterprises, rather than of the local government represented by the KMA (Devas and Korboe, 2000).

Table 1.3. Services and infrastructure in Hubli-Dharwad and Kumasi , 1993[a]

Indicator	Hubli-Dharwad	Kumasi
Number of persons per hospital bed	721	2,094
Percentage share of households connected to:		
Water	37.6	28.0
Sewerage	37.4	11.9
Electricity	74.1	58.7
Telephone	7.4	29.1
Consumption of household water (litres/person per day)	92.1	9.85
Median price of water (US$ per 100 litres)[b]	0.08	n.a.
Solid waste generated per capita (m^3/year)	0.37	n.a.
Transport modal split (% of all work trips made by):		
Private car	2.6	10.4
Train/tram	0.2	0.0
Bus/minibus	37.1	55.0
Motorcycle	17.6	2.0
Bicycle	7.1	4.6
Foot	29.5	28.0
Other	5.9	0.0
Mean travel to work (minutes)	22.0	20.0
Automobile ownership (cars/1,000 inhabitants)	48.7	102[c]
Annual expenditure on road infrastructure (US$/person)	0.78	0.20
Annual local government capital expenditure per person (US$)	1.42	1.19

n.a.: Not available;

a   Cities defined as the built-up or densely populated area containing the city proper, suburbs, and continuously settled commuter areas

b   Median price paid per hundred litres of water in US dollars, at the time of the year when water is most expensive

c   Estimated average for all zones in the city. From Annex Table 2.9 in Korboe *et al* (1998).Source: UNCHS (2000), except where indicated.

An overview of the book

Following this introductory chapter, chapter 2 provides overviews of the peri-urban interfaces of Hubli-Dharwad and Kumasi, stressing particularly a range of issues such as spatial, human and economic development, the institutional framework under which the peri-urban interface has developed in recent years and the decision-making processes that are likely to shape the future of the interface, particularly for its poorer inhabitants.

Chapters 3 to 5 summarise the natural resource base of the PUI of the two cities, considering cropping and livestock systems, and soil, water and waste management, respectively, and how the process of urbanisation has affected these, where this is known. Chapter 6 summarises existing knowledge on the livelihood strategies of poor households in the Hubli-Dharwad and Kumasi PUI. After a discussion on the nature of poverty in the PUI, the chapter outlines the sustainable livelihoods framework adopted by DFID for natural resources research. This is then used to examine the nature of poverty in the two city regions, and to examine how processes there affect the five capital assets available to the PU poor.

Chapter 7 is different in nature from earlier chapters, as it concentrates upon one particular technology, Geographical Information Systems (GIS). This management and descriptive tool has grown in importance in parallel with the power and availability of the computing systems upon which it depends. In a rapidly changing environment such as the PUI, the ability to rapidly enter new data and obtain outputs renders this a potentially powerful instrument for planning and analysis. This potential was realised for Kumasi, and significant investment was put into developing GIS application suited to that location.

Notes

1 In-migration was a much more important contributor to Kumasi's population growth in the decades before 1980. In 1960 it is estimated that it may have contributed two-thirds of the growth rate, and slightly over half in 1970. By the 1984 census, it is estimated it contributed a mere 6.2% (Korboe *et al*, 1998). In the absence of census figures after 1984, it is not possible to ascertain the extent of its contribution in the 1990s.

2 In Dharwad District the ratio of women : men was 944 : 1,000 men in 1991 (Vyasulu, 1997).

3 Care must be exercised in using income as the only measure of poverty or wealth, as several authors have pointed out (e.g. Wratten, 1995) and the discussion on sustainable livelihoods elsewhere in this book illustrates.

4 Kumasi is believed to have a larger shadow economy than Accra (Korboe *et al*, 1998).

5 Expenditure priorities change from one year to the next in government budgets, and data for 1993 only are presented here. As an example of the nature of these changes, in Kumasi capital expenditures accounted for nearly half of its expenditures in 1997, two items, street lighting and waste skips, representing two thirds of KMA's expenditures from its own resources; a much greater volume of

capital expenditure was budgeted for 1998, where street lighting accounted for a mere 15% but the construction of a market and an office building made up over half (Korboe *et al*, 1998).