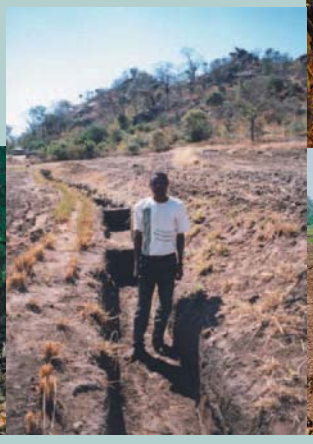
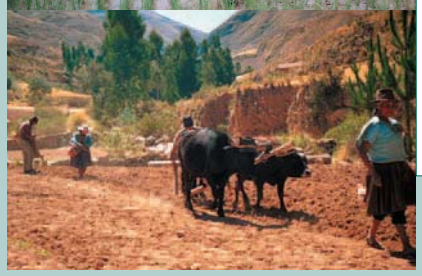
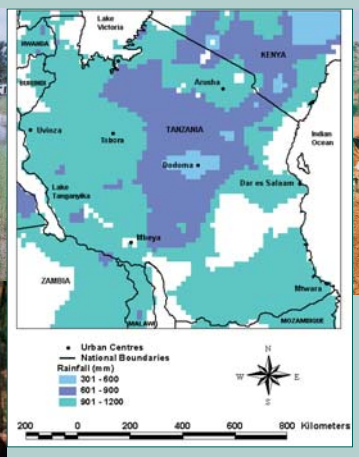
DFID Natural Resources Systems Programme



The Characterisation of Six Natural Resources Production Systems

J. Taylor, M. Tang, C. Beddows, F.M. Quin, M.A. Stocking





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Natural Resources Systems Programme

THE CHARACTERISATION OF SIX NATURAL RESOURCES PRODUCTION SYSTEMS

J. Taylor, M. Tang, C. Beddows, F.M. Quin, M.A. Stocking

August 2003

PREFACE

This Characterisation Study was funded as part of the Project Development activities of the Natural Resources Systems Programme (NRSP). Dr FM Quin (the NRSP Programme Manager, April 1999 to April 2003) and Professor MA Stocking (member of the NRSP Steering Group) developed the method that was used for the Study and oversaw the work, providing technical advice and contributing to the writing of this report. Jeremy Taylor, a Research Associate with the Overseas Development Group, University of East Anglia (ODG-UEA), was responsible for assembling and compiling the data and other supporting information by country and production system. ManFai Tang of HTS Development Ltd assisted in the production and compilation of the physiographic characterisation maps, refinement of the method for systems comparisons and prepared the initial draft of parts of this report. Carl Beddows (also with HTS Development Ltd) provided technical guidance to Jeremy Taylor on the use of GIS software and assisted with assembling some data sources.

Other technical and administrative support provided by ODG-UEA and HTS Development Ltd is gratefully acknowledged. Thanks also expressed for the support and encouragement for undertaking the Study provided by the DFID Adviser to NRSP, the late Derek Sutton.

NRSP
August 2003

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EXECUTIVE SUMMARY

The Natural Resources Systems Programme (NRSP) is part of the Renewable Natural Resources Research Strategy (RNRRS) of the UK Department for International Development (DFID). Within the RNRRS there are ten NR research programmes which variously conduct research in the context of six Production Systems (PSs): the High Potential (HP), Hillsides (HS), and Semi-Arid (SA) PSs and the Forest Agriculture (FA), Land Water (LW), and Peri-Urban (PU) Interfaces. NRSP addresses all these systems and, from April 1999, following DFID's requirements, has focused on either two or three target countries per PS variously covering Sub-Saharan Africa, South Asia, and Latin America and the Caribbean. NRSP's research is conducted through commissioning research projects for each PS portfolio, giving a total portfolio of 30-50 projects.

In the first four years of the programme, prior to April 1999, budget allocations between the PSs and target countries had evolved on a somewhat *ad hoc* basis reflecting both historical precedent and the interests and activities of particular research institutions and scientists. In 1999, following review of the NRSP Annual Report for 1998-99, DFID queried the basis for deciding funding allocations between PSs. In addition, the UK Government's 1997 White Paper 'Eliminating World Poverty: A Challenge for the 21st Century' had significantly shifted DFID's developmental policy focus to poverty reduction and livelihoods improvement. In common with other programmes of the RNRRS, this led to a refocusing of NRSP's research (as from April 1999). In addition, DFID's query combined with the required poverty-focus for NR research prompted NRSP to undertake the Systems Characterisation Study to provide, in terms of the donor's policy priorities, a basis for identifying priorities between the six PSs and their target countries. The Study therefore served as a guide to research planning in the second term of the programme, 1999-2005.

A method was developed for the Study. As a first step, definitions and, where necessary, alternative definitions, were devised for each PS in its respective target countries and used to set the boundaries of the PSs. PSs were then characterised on the basis of twelve variables which nested into six Characterisation Criteria. All criteria either directly or through proxy variables were measures of the donor's policy priorities and enabled an assessment of 'need' for research. The criteria covered: land area, human population, market feasibility (infrastructure and within PS market demand), land productivity and export potential (national and international market demand), poverty status (GDP; literacy rate; child nutritional status), and national NR management knowledge base (national support to NR research and national numbers of NR scientists). The PSs were mapped and data were assembled and used to assign values for the variables of the criteria to each PS. Data sources were various published and unpublished documents and the Internet. The data were input to an Excel Workbook (one worksheet per target country) together with explanations as to how the data were derived for the PS(s) of each target country. A supporting Map Album was also created covering all target countries to show the extent of a PS in each country and the extent of the main factors that determined each PS definition on a country by country basis.

Using the target country PS datasets for the six main characterisation criteria, a master spreadsheet for the criteria for the six PSs was developed and then comparative spreadsheets were developed for three PS dataset versions. These three versions took account of some alternatives for PS definition in respect of the HP, SA, FA and LW PSs. The data of each dataset version were compared using simple ranking (scale of 1 to 6, with 6 defining the value with greatest need) and relative ranking (1 defines greatest need value with all other values expressed as a proportion (less than 1)). Weights were decided for the six criteria and, in order to examine the findings from different biases, five weighting scenarios were analysed. A total 'need' score was then generated for each PS in each scenario, which equalled the sum of the multiples of weight by criterion ranking values across the six criteria. Following the same procedure, an additional dataset was developed and analysed by relative scoring that made corrections for the double counting of population in PSs that had overlapping land areas in some target countries e.g., HP and LW in Bangladesh.

The results of these analyses were then compared by considering (A) the overall PS rankings averaged across five scenarios and three PS dataset versions; (B) the PS rankings for the Version 3 of the PS dataset (the version that most closely represented the geographical scope of NRSP in year 2000) and (C) the PS ranking for the weighting scenario that gave a greater weighting to poverty status.

Irrespective of the varying PS definitions and alternative ways of comparing between PSs to assess relative importance, there were no significant differences in the conclusions reached. The PS ranking in respect of highest to lowest priority was SA, HP, FA, LW, HS, and PU. In terms of proportional need (and therefore priority), SA and HP formed a distinct pair with high priority; FA and LW were a closely middle ranked pair; and HS and PU were a similar lowest ranking pair. In the Scenario with greater weighting to poverty status, LW remained in the middle rank but moved slightly higher than FA.

Overall, there was a close correspondence between assessed need and actual planned budget allocations for the 1999-2002 and 1999-2005 programme terms. The main difference was that whilst SA had the greatest fund allocation, it was not as high as the ranking indicated while FA, LW and PU had slightly more than the ranking indicated.

The target countries of each PS were a factor in the rankings that were identified. For example, the large national populations of some target countries e.g., India was a major factor in the high priority indicated for SA and HP. The low values for poverty status of Bangladesh combined with a higher population were the reason for LW rising slightly higher in the rankings in Weighting Scenario 4.

The results of the Characterisation Study were used both as an information source on PSs and as guidance for research planning.