

Adger, W.N. (2000). 'Social and ecological resilience: are they related?' *Progress in Human Geography* 24 (3) 347–364.

Keywords

Resilience, resource dependency

Abstract/Summary

Considers the twin concepts of social and ecological resilience in relation to social groups or communities that are dependent on ecological and environmental resources for their livelihoods. Resilience is defined as the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change. While the link between social and ecological resilience is understood to be a clear one, what is not clear, apparently, is whether resilient ecosystems enable resilient communities.

The concept of resilience is sometimes used to analyse the social and economic situation of social groups: as a measure of how well individuals and social groups adapt to environmental change and, more broadly, as an analogy of how societies work. It has particular relevance for poor and resource-dependent communities.

Adger, W.N. (2003a). 'Social capital, collective action, and adaptation to climate change.' *Economic Geography* 79 (4) 387–404.

Keywords

Collective action, adaptability, resilience

Abstract/Summary

Adaptation is presented as a dynamic social process, determined, in part, by the ability to act collectively. Emerging perspectives on collective action and social capital are reviewed in this article and it is noted that insights from these areas inform both the nature of adaptive capacity as well as normative prescriptions of policies of adaptation to future changes in climate.

The article's analysis of collective action in adapting also has implications for a more general understanding of collective action.

Adger, W.N. (2003b). 'Building resilience to promote sustainability—an agenda for coping with globalisation and promoting justice.' *Newsletter of the International Human Dimensions Programme on Global Environmental Change*, Nr 2/2003, available at <http://www.ihdp.uni->

bonn.de/html/publications/update/update03_2003/IHDPUpdate02_2003_adger.htm
(as viewed on 6/4/2005).

Keywords

Resilience, sustainability

Abstract/Summary

This update considers the possible effects of adopting resilience principles: what this might mean in the quest for sustainability and whether it will result in persistent and equitable well being in the long run.

Acknowledges the need for precautionary action on resource use and in relation to emerging risks; asserts that vulnerability should be avoided and ecological integrity promoted.

Adger, W.N., Brown, K., Fairbrass, J., Jordan, A., Paavola, J., Rosendo, S. and Seyfang, G. (2003). 'Governance for sustainability: towards a "thick" analysis of environmental decision making', *Environment and Planning A* 35 (6) 1095–1110.

Keywords

Decision-making, interfacing

Abstract/Summary

This paper advocates an interdisciplinary framework for the analysis of the environmental decision-making process in which all who are involved (individuals, civil society, and the state) have a vested interest. It examines decisions concerning contested nature conservation and multiple-use commons in the management of Hickling Broad in the United Kingdom and concludes with the observation that interdisciplinary approaches to examining environmental decision-making make it possible to generalise and transfer lessons in a way that respects both the specifics and context of the issue at hand.

Economic efficiency, environmental effectiveness, equity and political legitimacy are identified as key integrative elements for analysing environmental effectiveness. How usefully can these same dimensions be applied to an analysis of water governance?

Agrawal, A. (2002). 'Common resources and institutional sustainability', in Ostrom, E., Dietz, T., Dolšak, N., Stern, P.C., Stonich, S. and Weber E.U. (eds) *The drama of the commons*. Washington DC, National Academy Press 41–85.

Key words

Common property institutions

Abstract/Summary

Reviews the large body of empirical work on common property and the range of plausible institutional mechanisms to govern natural resource use. Makes the observation that different studies have generated different conclusions about what counts in “successful” resource management and there are significant gaps in the many explanations of how common property institutions work.

Common property institutions are significant because they continue to frame how natural resources are governed in many countries throughout the world and, increasingly, national governments in developing countries are turning to local-level common property institutions.

Communicates very clearly the point that sustainable resource management can never be independent of the sustainability of collective human institutions that frame resource governance.

Baland, J-M. and Platteau, J-P. (1996). *Halting degradation of natural resources; is there a role for rural communities?*. Oxford, Oxford University Press, available at http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/x5316e/x5316e00.htm (as viewed on 6/4/2005).

Key words

Common pool resource management

Abstract/Summary

Central question: how can local ecosystems be most efficiently and equitably protected-by private, public or community management? Synthesises current theoretical and empirical research, challenges traditional assumptions, and examines the Tragedy of the Commons, the mismanagement of natural resources.

The scope of this book is vast. It is especially useful to have 3 prototypes of common pool resource management (private, public and community) pitted against each other in a comparative analysis.

Bardhan, P and Dayton-Johnson J. (2002). 'Unequal irrigators: heterogeneity and commons management in large-scale multivariate research', in Ostrom, E., Dietz, T., Dolšak, N., Stern, P.C., Stonich, S. and Weber E.U. (eds) *The drama of the commons*. Washington DC, National Academy Press 87–112.

Key words

Common pool resource management, heterogeneity, inequality

Abstract/Summary

Highlights a lack of consensus in the multidisciplinary empirical literature on common-pool resources over the question: What is the impact of heterogeneity among the users of a community-based natural resource? Identifies the most important types of heterogeneity, the commons outcomes they might affect, and the mechanisms that link the two. Attempts to review large-scale surveys of locally managed irrigation systems as an empirical illustration of the relationship between heterogeneity and success in managing the commons.

The relationship between heterogeneity and commons use management is complicated. This chapter draws attention to recent theoretical research in economics which clarifies some of the complicated mechanisms that link inequality and commons outcomes.

Berkes, F., Colding, J. and Folke, C. (2003). *Navigating Social-Ecological Systems*. Cambridge, Cambridge University Press.

Key words

Adaptability, resilience, sustainability

Abstract/Summary

Investigates the ways in which human societies deal with change in linked social-ecological systems, and build capacity to adapt to change. Resilient social-ecological are distinguished on the basis of their (i) potential to sustain development by responding to and shaping change in a manner that does not lead to loss of future options; and (ii) ability to provide capacity for renewal and innovation in the face of rapid transformation and crisis.

Interesting insights on the dynamics of social and ecological systems.

Brikke, F. (2001). *Operation and Maintenance of Rural Water Supply and Sanitation Systems: a Training Package for Managers and Planners*. IRC International Water and Sanitation Centre, The Hague.

Key words

Sustainability

Abstract/Summary

Training document for managers and planners who are concerned with the challenging problem of how to implement effective operation and maintenance of rural water supply and sanitation services in developing countries.

Covers all the traditional management aspects of operation and maintenance but also underlines the importance of community participation, with a right gender balance, in order to make more efficient use of local human resources for sustainability.

Ellis, F. (1993). *Peasant Economics: Farm Households in Agrarian Development*. 2nd ed, Cambridge, Cambridge University Press.

Key words

Decision-making, collective action, context sensitivity

Abstract/Summary

Explores household decision-making in a social context looking at efficiency, risk, time allocation, gender, agrarian contracts, farm size and technological change. Household economic behaviour is deemed to be the outcome of social interactions within the household, and market interactions outside the household. Also examines household and community decision-making in relation to environmental resources.

Encourages readers to think about the context within which decision-making takes place and to keep these circumstances in mind when analysing subsequent behaviour or outcomes.

Glantz, M.H. (1994). *Drought follows the plow*. Cambridge, Cambridge University Press.

Key words

Environmental change, sustainability

Abstract/Summary

Examines the relationship between society and climate change. Shows how current patterns of land use can make the problems worse; increasing the risk of droughts and the resulting food shortages.

Apocalyptic literature? Intended to stimulate reflection about our impact on the planet and consider our ability to respond to the consequences of future environmental change.

Harvey, P. and Reed, B. (2004). *Rural Water Supply in Africa: Building Blocks for Handpump Sustainability*. WEDC, Loughborough University.

Key words

Technology, sustainability, interfacing

Abstract/Summary

Principal output of a WEDC project on improving the benefits from communal handpumps in Africa through an increased application of factors affecting sustainability in new projects. Makes the observation that, although handpumps are a popular water supply option for rural and peri-urban areas, they have nevertheless failed to live up to expectations. Explores the reasons why handpumps have often fallen into disuse shortly after installation, identifies features that promote their sustainability, and then attempts to synthesise data from a variety of sources to produce guidelines for achieving sustainable handpump projects.

Attempts to tackle the complicated task of synthesizing multi-disciplinary data in order to produce guidelines.

Hasnip, N., Mandal, S., Morrison, J., Pradhan, P. and Smith, L. (2001). 'Contribution of Irrigation to Sustaining Rural Livelihoods.' *Literature Review*, KAR Project R 7879, MDS 0537, Report OD/TN 109, HR Wallingford.

Key words

Poverty-reducing potential of irrigation, sustainability

Abstract/Summary

Considers the contribution of irrigation to securing and sustaining rural livelihoods. Focussing on agricultural intensification through the practice of irrigation as a strategy for sustainable rural livelihoods.

Concludes that irrigation can play a central and dynamic role in the improvement of rural livelihoods, however further research is needed, including research on: the micro level processes through which irrigation affects rural livelihoods; production, income and employment effects; the likely nature and scale of production and consumption linkages; impacts on water, soil and the environment generally; the extent and nature of livelihood diversification; the multiple uses of water; constraints to the achievement of irrigation led pro-poor growth, and any incidences of negative impacts on rural livelihoods.

Hussein, I. and Biltonen, E. (eds) (2001). 'Irrigation against Rural Poverty: An Overview of Issues and Pro-Poor Intervention Strategies in Irrigated Agriculture in Asia.' Proceedings of National Workshops IWMI Sri Lanka.

Key words

Poverty-reducing potential of irrigation, sustainability,

Abstract/Summary

Presentation of AsDB's emerging water policy, some of the major foci being: achieving sustainable increases in the productivity of irrigated agriculture, increasing water use efficiency at farm and system levels, and integrated management of water resources in water basins.

Highlights an urgent need for policy research and science-based solutions to improve the productivity and sustainability of irrigated agriculture. Also draws attention to the weakness inherent in poverty alleviation policies which prioritise irrigation for agriculture: that they are often based on the assumption that the poor have access (either through ownership or employment) to productive land and the inputs necessary to enhance agricultural yields.

Fisher J (2005) *Why should the water and sanitation sector consider disabled people?* WELL Briefing Note Report 12, Water Engineering and Development Centre; DFID: UK

Key words

Disability and water

Abstract/Summary

This briefing paper is designed to raise the profile of disability issues within water and sanitation service provision.

A list of reasons why water professionals urgently need to address these issues is provided. These include the fact that (i) the right to safe water is a human right enshrined in international legal instruments; (ii) inclusive services would benefit many people who have difficulty with balance, co-ordination, weak grip, squatting or lifting in addition to disabled people (eg the elderly, pregnant women and people who are injured or); (iii) the inclusion (from the outset) of disabled people in mainstream initiatives would be cost effective because, generally, only minor adjustments would be necessary; and (iv) carers (usually women and girls) would benefit from improved services.

Jones HE, Parker KJ and Reed RA (2002) *Water and sanitation access and use by physically disabled people: literature review*, Water, Engineering and Development Centre, UK

Key words

Disability and water, interfacing

Abstract/Summary

Reviews information and current practice in low-income communities about the accessibility of domestic water and sanitation facilities for physically disabled people.

States unequivocally that the only way disabled people will ever access their basic rights to life, food, water and shelter and therefore to an acceptable quality of life is through mainstream services and programmes.

Highlights the fact that attempts to improve disabled people's access to services are usually isolated, unsupported and poorly coordinated. There is a great need for improved sharing of information about appropriate assistive mechanisms so that good practice can be replicated.

Kalonga, C.H. (2004). 'Factors Affecting the Sustainability of Community Based Rural Water Supply and Sanitation Projects: Case study of Kawinga and Chagwa Rural Water Schemes in Machinga District.' Project Report, Faculty of Environmental Sciences, University of Malawi.

Key words

Community-based schemes, social cohesion

Abstract/Summary

Kalonga's paper considers the sustainability of community-based water and sanitation schemes introduced in Machinga, Malawi. He concludes that: (i) social cohesion creates

the clarity of purpose and sense of ownership necessary for sustainability; (ii) sound financial management must include granting beneficiary communities' the authority to set contribution fees for maintenance and to make decisions relating to the use of sanctions against non-payers; and (iii) the viability of community management systems improves if training for community members and management committees is made available and access to technical and professional support is secured.

Note, however, that social cohesion at the community level is extremely hard to achieve, let alone maintain.

Lankford, B.A. (2004). 'Irrigation improvement projects in Tanzania; scale impacts and policy implications.' *Water Policy* 6 (2) 89–102.

Key words

Poverty-reducing potential of irrigation, sustainability, inequality

Abstract/Summary

Analyses the usual outcome of projects attempting to improve traditional smallholder irrigation in Tanzania, that is: a gain in water for the system being upgraded, especially if located upstream, accompanied by less ability to share water at the river basin scale. Looks at why this happens and concludes that these projects do not commonly understand, match and respond to the complexities of well-developed and evolving smallholder irrigation found in multi-user river basins.

Warns that a re-appraisal of smallholder irrigation is urgently required for its survival as a donor-funded sector.

Lankford, B.A., van Koppen, B., Franks, T. and Mahoo, H. (2004). 'Entrenched views or insufficient science? Contested causes and solutions of water allocation; insights from the Great Ruaha River Basin, Tanzania.' *Agricultural Water Management* 69 (2) 135–153.

Key words

Environmental change, water scarcity, interfacing

Abstract/Summary

Considers the large-scale environmental change related to, and recent responses associated with, growing water scarcity in the Usangu Plains, a catchment of the Great Ruaha River in south-west Tanzania. This paper critiques various theories of environmental change and the 'fit' of new river basin management strategies to the

problems found, arguing that various perspectives are worryingly at odds with each other. Concludes that the complexity of the science–policy interface is a feature of integrated water resources management and that the norms of scientific uncertainty in the face of competing theories (held by their protagonists with greater certainty) obliges scientists to take a more active role in sensitively managing the advice-to-policy process in order to improve management of water within river basins.

Promotes ‘action research’ (to move towards an improved understanding of change) and ‘action policy-advising’ (to draw policy-makers into a cycle of considered decision-making).

Leach, M., Mearns, R. and Scoones, I. (1997). ‘Challenges to community-based sustainable development: dynamics, entitlements, institutions.’ *IDS Bulletin* 28 (4) 4–14.

Key words

Intra-community dynamics, environmental entitlements, interfacing

Abstract/Summary

Challenges assumption that communities are “consensual units”, able to act collectively in restoring population-resource imbalances or reestablishing harmonious relations between local livelihoods and stable environments. Presents an alternative perspective which starts from the politics of resource access and control among diverse social actors, and sees patterns of environmental change as the outcomes of negotiation or contestation between their conflicting perspectives.

Discusses the concept of “environmental entitlements”, the processes by which people become endowed with these and the diverse institutions which shape those processes.

Leach, M., Mearns, R. and Scoones, I. (1999). ‘Environmental entitlements: dynamics and institutions in community-based natural resource management.’ *World Development* 27 (2) 225–247.

Key words

Intra-community dynamics, heterogeneity, environmental entitlements

Abstract/Summary

Looks at the practical implementation of community-based natural resource management, focussing on the implications of intra-community dynamics and ecological heterogeneity.

Examines the central role of institutions and of regularized patterns of behaviour between individuals and groups in society in mediating environment-society relationships. Looks at how differently positioned social actors command environmental goods and services that are instrumental to their well-being.

Lemos, M.C., Finan, T.J. Fox, R.J., Nelson, D.R. and Tucker, J. (2002). 'The use of seasonal climate forecasting in policymaking: lessons from northeast Brazil.' *Climate Change* 55, 479–501.

Key words

Environmental change

Abstract/Summary:

Discusses the use of seasonal climate forecasting in public and private efforts to mitigate the impacts of drought in Ceará, Northeast Brazil. Forecasting for policy development and farmer decision-making are the 2 particular foci of this discussion. The possibilities and constraints of forecast application are assessed and through consideration of (a) the characteristics of the forecasts; (b) policymaking systems; and (c) institutional environments.

Climate forecasting as a means of proactive drought planning.

Lipton, M., Lichfield, J. and Faures, J-M. (2003). 'The effects of irrigation on poverty: a framework for analysis', *Water Policy* 5 (5) 413–427.

Key words

Poverty-reducing potential of irrigation

Abstract/Summary

Study of the impact of investment in irrigation on poverty and, by connection, on food security. Analyses what appears to have been a sharp decline of investment in irrigated infrastructures and the deteriorating performances of many irrigation schemes. The findings were fed into the UN World Water Development Report.

Makes a judgment as to when irrigation is most likely to positively impact the poor, but it also reports that the evidence is patchy, and usually not gathered in such a way as to allow easy conclusions to be drawn.

McMichael, A.J., Butler, C.D. and Folke, C. (2003). 'New visions for addressing sustainability.' *Science* 302, 1919–1920.

Key words

Interfacing, sustainability

Abstract/Summary:

Strongly critical of the inability of key scientific disciplines to engage interactively in their pursuit of sustainability. Argues that environmental issues need to be addressed in the main intellectual discourse.

If the commitment to attaining sustainability is a serious one, then concerted interactive efforts among disciplines are imperative.

MUSWA (2005). Experience: Provision of Water Services to the Urban Poor. Moshi Urban Water Supply and Sewerage Authority (MUSWA) document.

Key words

Service delivery

Abstract/Summary:

Report following a survey conducted to identify and locate the urban poor in Moshi for free water services delivery. Report also suggests ways in which the delivery of free water services to those classified as “poor” can be best organised/conducted.

In identifying “the poor” the survey draws attention to other disadvantaged groups, eg the disabled, the elderly, widows and larger than average families.

North, D.C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge, Cambridge University Press.

Key words

Institutions, change

Abstract/Summary

Explains how institutions and institutional change affect the performance of economies, both at a given time and over time.

Argues that institutions exist as a result of the uncertainties involved in human interaction; they are the constraints devised to structure that interaction.

Advocates the incorporation of institutional analysis into neo-classical theory in order to produce a more dynamic theory of long-term economic change.

Ostrom, E., Gardner, R. and Walker, J. (1994). *Rules, games and common-pool resources*. Ann Arbor, University of Michigan Press.

Key words

Common-pool resources, institutions

Abstract/Summary

Models of behaviour in common-pool resource situations are tested and the institutional and physical variables that affect self-organization among common pool resource appropriators are examined.

Promotes an understanding of how the tragedy of the commons can be avoided by people who use common-property resources.

Ostrom, E., Dietz, T., Dolšak, N., Stern, P.C., Stonich, S. and Weber E.U. (eds) (2002). *The drama of the commons*. Washington DC, National Academy Press.

Key words

Common-pool resources

Abstract/Summary

Draws together evidence from several disciplines and many lines of research to present a state-of-the-art assessment of the 'tragedy of the commons'.

Makes reference to research which has clarified how human motivations, rules governing access to resources, the structure of social organizations, and the resource systems themselves interact to determine whether or not the many dramas of the commons end happily.

Palmer-Jones, R. (2001). 'Irrigation Service Markets in Bangladesh: Private Provision of Local Public Goods and Community Regulation?' Paper presented at the Symposium and workshop on *Managing Common Resources - What is the solution?* Held at Lund University Sweden, on 10-11 September 2001 (Draft only, not to be quoted without author's permission).

Key words

Poverty-reducing potential of irrigation, inequality

Abstract/Summary

Presents evidence from Bangladesh which demonstrates that private investment in tubewells selling irrigation services to farmers of contiguous blocks of land is reducing poverty.

Interestingly, the author concludes that although there have been significant reductions in poverty greater, the implications for inequality are not clear. The suggestion here is that the lowering of poverty levels through irrigation systems does not necessarily coincide with a reduction in inequality.

Piron L-H. and Watkins F. (2004). *DFID Human Rights Review: A Review of How DFID has Integrated Human Rights into its Work*. Department for International Development Executive Summary

Key words

Sustainability

Abstract/Summary

Review of DFID's human rights work, drawing on a portfolio of activities that the department supports. Reports on lessons learned and attempts to demonstrate how human rights can make a contribution to poverty reduction at the normative, analytical and operational levels.

Ribot, J.C., Magalhaes, A.R. and Panagides, S.S., (1996) *Climate variability, climate change and social vulnerability in the semi-arid-tropics*, Cambridge: Cambridge University Press, New York.

Key words

Environmental change, resilience, sustainable development

Abstract/Summary

Explores the relation between climate variability or climate change and the wellbeing of rural agricultural and pastoral populations in the semi-arid tropics.

Explanation for the focus on the semi-arid tropics: that is where drought and poverty most frequently collide: where the processes of under-development undermine the coping abilities and resilience of entire populations.

Roy, M.K.P. (2004). 'Water quality and health status in Kollam Municipality.' *Discussion Paper 56*, Kerala Research Programme on Local Level Development, Centre for Development Studies, Thiruvananthapuram, available at <http://krpcds.org/publication/downloads/56.pdf> (as viewed on 20/3/2005).

Key words

Water/poverty linkages

Abstract/Summary

Investigation into the environmental conditions, quality of potable water and socio-economic conditions and health status of the population in the Kollam Municipality

Author seeks to demonstrate a clear link between an individual's socio-economic status, the quality of water s/he is able to access and his/her health status.

Satpathy, M. (2001). 'Irrigation for Livelihoods Improvement: Small Holder Tribal Irrigation in Jharkhand,' Pre-publication Discussion Paper, International Water Management Institute (IMWI), Anand.

Key words

Poverty-reducing potential of irrigation

Abstract/Summary

Examines the factors contributing to the success and failure of such schemes small-scale community-managed lift irrigation schemes using evidence from tribal communities in Jharkhand State. Rationalization that, since water resources are abundant in Jharkhand State, irrigated agriculture should be a sound livelihood strategy for the tribal communities. However, irrigation schemes have repeatedly failed to address irrigation the problem of poor land productivity and the fact that communities situated in upper catchment areas hardly benefit from the initiatives.

Author identifies the following factors as determinants of the success of irrigation schemes: adherence of the farmers to agriculture, their farming skills, stimulus from other progressive farmers and external support in terms of infrastructure, training and capital.

Smith, L. (2004). 'Contribution of Irrigation to Poverty Reduction.' *International Journal of Water Resources Development* 20 (2) 243–257.

Key words

Poverty-reducing potential of irrigation, interfacing

Abstract/Summary

Counters stereotypical portrayal of irrigation in developing countries as equity reducing, in competition with other uses for scarce water resources, and often resulting in negative impacts for women and other disadvantaged groups. Author insists that irrigated farming varies widely in its form and impacts, and has diverse local attributes. Identifies benefits that might reasonably be expected as a result of irrigation farming, namely: improvements in the levels and security of productivity, employment and incomes for irrigating farm households and farm labour; the linkage and multiplier effects of agricultural intensification for the wider economy; provision of opportunities for diversification of rural livelihoods; and multiple uses of irrigation supply. Also points out that there are significant risks that badly designed and managed irrigation can negatively impact on poverty.

Broadens the debate beyond irrigation for food production. Recommends that water resource management decisions must be based on an holistic and livelihood-centred assessment of irrigation benefits and costs.

Solkie, C., Mwaruvanda, W. and van Coppen, B. (2005). 'Integrated water resource management in Tanzania: interface between informal and formal water institutions.' Paper presented at International workshop on *African Water Laws: Plural Legislative Frameworks for Rural Water Management in Africa*, 26-28 January 2005, Johannesburg, South Africa.

Key words

Poverty-reducing potential of irrigation

Abstract/Summary

Explores the interfaces and linkages between formal and informal institutional frameworks for water management in Tanzania with a case study of the Mkoji sub

catchment in the Rufiji Basin. Identifies 4 major areas of interfaces: (i) centralized and local institutions; (ii) modern water rights and customary rights; (iii) Water User Associations and informal associations of water users; and (iv) formal and informal power relations.

Highlights the complexity of institutional interfacing. There is still an urgent need (acknowledged by the authors) to better align the formal and the informal.

Sullivan, C.A., Meigh, J.R., Giacomello, A.M., Fediw, T., Lawrence, P., Samad, M., Mlote, S., Hutton, C., Allan, J.A., Schulze, R.E., Dlamini, D.J.M., Cosgrove, W.J., Delli Priscoli, J., Gleick, P., Smout, I., Cobbing, J., Calow, R., Hunt, C., Hussain, A., Acreman, M.C., King, J., Malomo, S., Tate, E.L., O'Regan, D., Milner, S. and Stey, I. (2003). 'The Water Poverty Index: development and application at the community scale.' *Natural Resources Forum* 27, 3, 189–199.

Key words

Policy tools

Abstract/Summary:

Article traces the history of the water poverty index (WPI) and explains its uses as (i) a holistic tool to measure water stress at the household and community levels, and (ii) a tool to aid national decision makers, at community and central government level, as well as donor agencies, in the identification of priority needs for interventions in the water sector.

Very optimistic about future role of the WPI and generally enthusiastic about its potential.

Sullivan, C.A. (2002), 'Calculating a water poverty index.' *World Development* 30, 7, 1195–1210.

Key words

Interfacing

Abstract/Summary:

Discusses how, by linking physical estimates of water availability with socioeconomic variables that reflect poverty, an interdisciplinary approach may result in the production of an integrated assessment of water stress and scarcity.

The hope is that an interdisciplinary approach will lead to more equitable solutions for water allocation.

Tompkins, E.L. and Adger, N. (2003). 'Building Resilience to climate change through adaptive management of natural resources' *Tyndall Centre*.

Key words

Resilience

Abstract/Summary

Considers the postulation that building resilience into human and ecological systems is the optimal way to improve climate response capacity (meaning the ability to deal with future surprises or unknowable risks). Perspectives on collective action for community-based natural resource management are reviewed with illustrations from Trinidad and Tobago.

Notes

Aims to demonstrate the importance of strategies that build social and ecological resilience.

van Koppen, B., Sokile, C., Habitu, N., Lankford, B.A., Mahoo, H. and Yanda, P.Z. (2004). 'Formal Water Rights in Tanzania: Deepening the Dichotomy?' Working Paper 71, Colombo, Sri Lanka, International Water Management Institute.

Key words

Entitlement

Abstract/Summary

Evaluates the processes and impacts of the new Tanzanian administrative water rights system in the Upper Ruaha catchment. The new system is assessed as a registration tool, a taxation tool, and a water management tool. Its effect on rural poverty is also considered. The findings are paradoxical and reflect the dichotomy between the 'modern' large-scale rural and urban economy with its corresponding legislation and the rural spheres in which Tanzania's majority of small-scale water users live under customary water tenure..

Suggests simple changes to the current system that (it is hoped) would accommodate both groups of water users, improve cost-recovery for government services, mitigate water conflicts and alleviate rural poverty.

World Bank (2004). *Rural Water Supply and Sanitation, Toolkit for Multi-Sector Projects*. Rural Water Supply and Sanitation and Social Funds Thematic Groups, World Bank.

Key words

Service delivery

Abstract/Summary

Multi-Sector Task Managers and Consultants are introduced to basic concepts and emerging best practices in the field of Rural Water Supply and Sanitation. . Introduces (RWSS).

Overriding concern is with the quality and sustainability of the services that water and sanitation projects are designed to provide.