

Watershed Concerns and Recent Policy Formulations in Sri Lanka and Australia¹

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Abstract: Addressing the problems associated with watersheds in both countries is the aim of this paper as well as assessing the respective watershed policies. Attention has been drawn to specific economic, environmental and sociocultural considerations in the recent past. An interesting feature of the most recent policy developments is the tendency to follow a balanced approach to water resource development in either situation. In Australia, it is envisaged to follow a co-ordinated and sustainable use and management of land water, and vegetation resources on a water catchment basis. In Sri Lanka however, after a prolonged lull in policy approaches it is only beginning to prepare the framework towards a bearable watershed resource.

While accommodating a similar population to Australia, Sri Lanka in its tiny 270 miles stretch, has its people clustered on the moist southwestern third of the island known as the 'wet zone'. In Australia, where the main concentration is in the eastern part of the continent, there is heavy reliance on catchments of the Great Dividing Range and the associated run-off for agriculture and hydro electricity. In Sri Lanka, the catchments for nearly all its major rivers rest in the central highlands where most of its hydro electricity is

generated and water diverted for downstream purposes. Compared to Australia, Sri Lanka receives a relatively higher rainfall mainly from the monsoonal rains.

WATERSHED MANAGEMENT

Sri Lanka

Irrigation structures in the dry zone of Sri Lanka has a history of 2000 years, and thus, its first water management practices can be related to that time. However, in modern Sri Lanka, soil erosion and watershed problems were first recognised and addressed in the legislature in the early 1940's. But policy formulation did not take place till recent times before a major river basin development programme was initiated surrounding the Mahaweli river. Largely, towards the sustenance of this programme, it was inevitable some policy be introduced to manage the natural resources surrounding its catchments. This materialized only in the late 1989 when an interim report on watershed management was considered by policy makers in Sri Lanka.

Australia

The relevant legislation were first introduced in Australia in 1915, and its maiden water resource assessment programme began in 1963. Australia's main water management programme involves the Murray-Darling river basin that spreads over four of its major states.

More recently, a Bill was tabled in the New South Wales Legislature to implement total catchment management of the State's natural resources, namely, the co-ordinated and sustainable use and management of land, water, and vegetation resources on a catchment basis. Such policy developments followed the recent Federal concerns over a balanced approach to natural resources management in Australia.

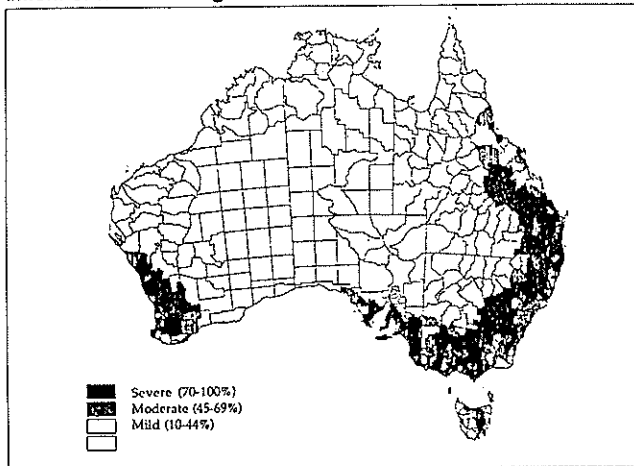
¹ Presented at the Subject Group S1.04 Technical Session on Geomorphic Hazards on Managed Forests, XIX World Congress International Union of Forestry Research Organisations, August 5-11, 1990, Montreal, Canada.

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CONCERNS

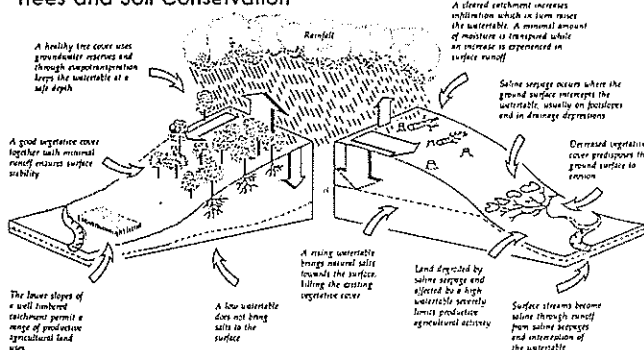
While deforestation in the catchment vegetation is common in both countries and excessive pressure on water resources, is there genuine concern in Sri Lanka and in Australia to ameliorate the situation and achieve a balance? The extent of tree clearing in Australia in the main catchment (Great Dividing Range) of the Murray-Darling Basin along the eastern coast is shown in the map. Sri Lanka, having carried out its last partial forest inventory in 1956, faces similar excessive deforestation in the main catchment of the Mahaweli and it is estimated that its forest cover has dwindled from 56 percent in 1956 to a mere 15 percent in the present times.

Extent of Tree Clearing in Australia Since European Settlement



In both situations, environmental flow management and flood mitigation remain unresolved policy issues mainly because of lack of information and the associated social and economic factors. It is in the same interest that it has become apparent those issues be addressed in a coherent policy frame for broad inter-temporal reasons. The sustainable frame still remains the same- the Trinity of Soil, Trees and Water (diagram 1).

Trees and Soil Conservation



FOCUS

In this paper, an assessment of the watershed policies of both countries has been carried out drawing attention to specific economic, environmental and sociocultural considerations in the recent past.

INSTITUTIONS and policy

Government policy intervention is two-pronged in watershed concerns. Direct and indirect. Direct policies are often regulating measures that affect a watershed.

Indirect policies converge on the integrated land-uses in an overall watershed region. Usually these measures do not fall within the scope of a particular policy consideration. It would be fair to say that in effect, indirect policy once applied has indirect effects on the watershed. These indirect effects are then moulded into explicit policy in the next application.

Indirect Policy

(a typical theoretical explanation of an effect on a watershed)

introduction.....price subsidy for agricultural production
/
intensive and.....effects from the extensive land vegetation cover reduction use
/
increased soil.....increased sedimentation erosion
/
reservoir..... power cuts, oil imports
water levels to fuel extra turbines
diminishing
|
overall...economic, resource and environmental effects on society

The political economy within which policies are formed, reshaped and applied is articulated uniquely according to the specific spatial condition in Sri Lanka and Australia.

In Sri Lanka, it is more centrally controlled and regionally applied. In Australia however, it is more regionally controlled and regionally applied. For instance, the role of the Central Government in institutional matters in Sri Lanka is authoritative in nature, whereas in Australia the role of the Federal Government in water affairs is more oriented towards a pro-active participation.

In managed and unmanaged water and watershed affairs, Sri Lanka's centrally dominated and directed policy is essentially a line functional system (not necessarily though they are efficient). In Australia, several regional (States) governments have different policy approaches, institutional structures in place, and legal frameworks in watershed settings (not necessarily though they are inefficient).

Consider the two-nation's main watershed regions. The focus is on the more naturally important as well as socially desired productive regions (i.e. Basins).

These Basins serve as their respective economic and ecological nerves where most social transformations occur, valuable currency exchange earned, more importantly food produced, the people productively employed and scarce and bearable water managed.

The recent phenomenon is not so much an optimistic and problem solving water front to both countries, but consist of overwhelming problem solving horizons. It is infact inheritance in both situations. The greatest tasks that both countries have aspired are the challenges faced with the accentuated environmental consequences from the continued resource degradation.

At cross roads are the favourite concepts for policy manipulation in flood mitigation, energy sustenance, water quality maintenance, total approach to balanced resource use and of course sustainability.

Despite the optimism, this brings us to a third set of policy application. Natural Resources Management Strategy (NRMS) for overall resource planning and management for a Basin wide system. The initiatives are (following the maps);

Sri Lanka- Mahaweli Accelerated Program

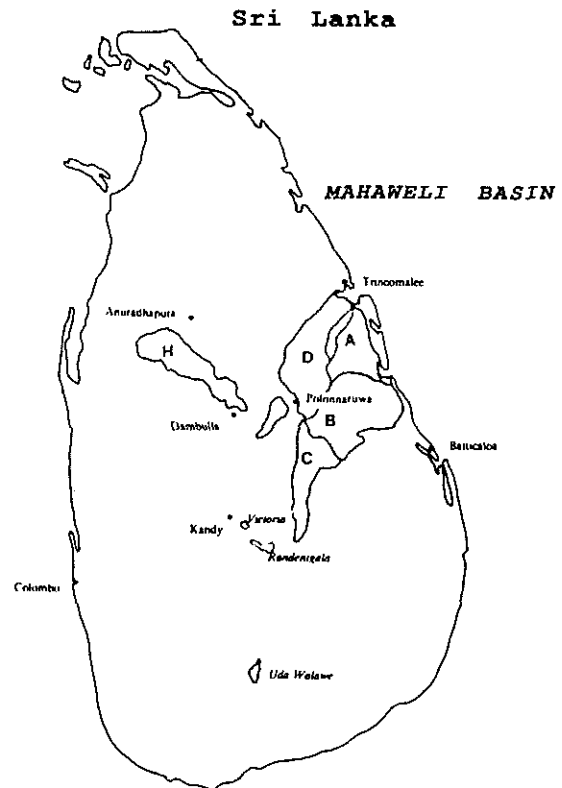
Australia- Murray-Darling Basin
Natural Resources Management
Strategy and Program.

Developments

Sri Lanka:

Optimum conservation of catchments is in pursuance.

Land Development Ordinance 1935.



Soil conservation Act follows after a private member Bill in the Legislature in 1940.

A considerable lull in the 1950's through to 1960's.

Absence of integrated Basin wide watershed analysis.

Lack of indepth study on detailed catchment hydrology.

Defficiency in resources and high level of resource degradation with plantation agriculture and private felling in the main catchment.

All Basins:

Rivers 103, total catchment area 59,217 sq km and number of stream gauging stations (River Gauging Stations); 68.

The Mahaweli Basin catchment 10,443 sq km and 18 RGS, number of run-off stations: on a daily basis- nil, monthly- 7.

Recent on watershed developments:

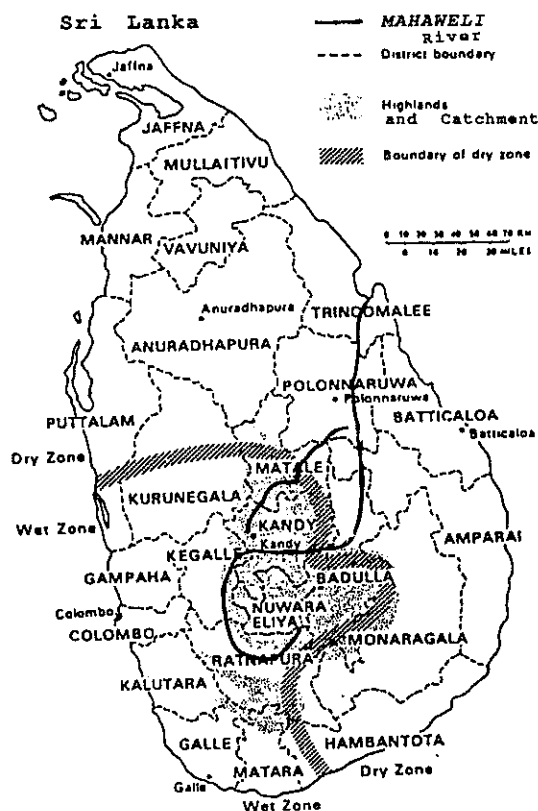
First Interim Report on Land 1985.

Second Interim Report on Land 1989.

Basin developments:

In the Mahaweli Accelerated Program total run-off in the project at lowest points of diversion is 10,000 cu m or 25 percent of the total run-off.

A Forestry Master Plan (1986) to circumvent the acute deforestation has been introduced



Australia:

First Legislation in 1915 on Murray-Darling Basin Agreement between New South Wales, Victoria and South Australia and River Murray Waters Amendment Act 1987.

Catchment management and water management follows.

Federal level New directions of Water Management 1987 and Instream Uses of Water.

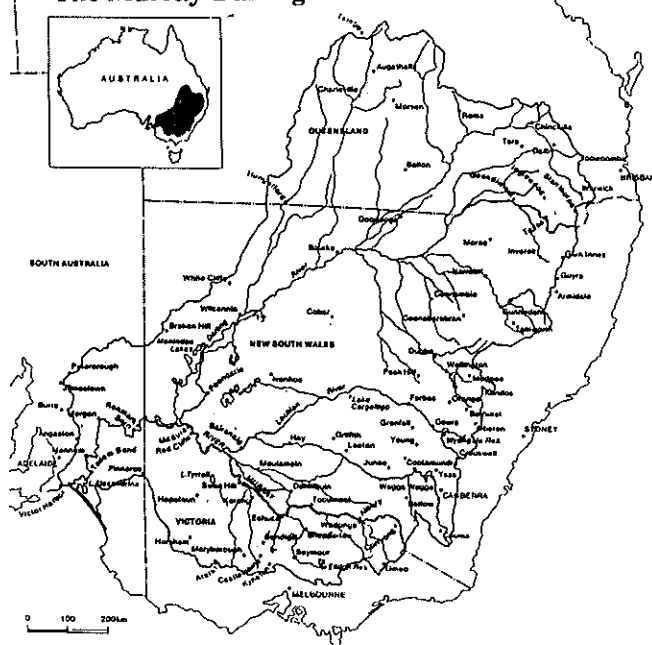
Recently, NSW State Legislation on Total Catchment Management, 1989 (see community participation as per media publicity).

Basin wide:

135 RGS and 10 within the Murray-Darling Basin.

River Murray Waters Act 1987.

The Murray-Darling Basin



1/7th of Australia's surface catchment falls within the purview of Murray-Darling Basin.

20 major rivers off the Great Dividing Range.

40,000 years history of the Basin associated Aboriginal Culture.

The length of the River is 3780 km .

30 to 40 percent of Australia's total natural resource based production occurs in the Basin.

7000 wetlands within the Murray waters.

Murray yields 12,000 gigalitres and the Darling carries 12 percent of the run-off over 50 percent of the Basin area.

CONSTRAINTS

Conflicts in the institutional arrangements create external diseconomies and in turn have created duplication and overlapping of institutions in both situations.

These impediments have caused disincentives to achieve efficiency and there is a large resource value depletion in both watersheds. This is largely reflected in undercharging for water and lack of appreciation of the resource has been aggravated by the absence of a rent which is the key to secure the resource for intergenerational purposes.

The way the politics interpret priorities, ignorance, postponement of actions and undisclosed defined regimes particularly in the sustainability issues have caused the greatest inequity in watershed concerns in these situations.

In Australia, inter-governmental quangos such as the River Murray Agreement present bona fide commitment by the States to co-ordinated, comprehensive regional approach to interstate water and resource issues.

There is legal opinion that a rational scheme for balancing conflicting interests within the Murray-Darling Basin and for administering the system is unlikely to spring up, alone and unaided, as a voluntary product of State consent.

In Sri Lanka, the infant stage of its handling of natural resources and initiatives, and the slow progress and cautious approach vindicate the whole objective of watershed protection for good economic and environmental reasons. The expectation that foreign help would always be forthcoming to salvage things that have gone wrong for decades due to political mishandling of important issues is in itself a summation of the ideology behind the scene.

In Australia, a major problem that the Murray-Darling Basin watershed planning confronts is the voluntary non-participation of the Queensland state in the Strategy to manage total water, vegetation and environmental flows. In terms of key tributaries, the State's part of the catchment is critical to achieve a bearable level of water flows in the downstream. They are also the underlying causes for most of the flooding in the adjoining State of NSW (during the preparation of this manuscript their has been a positive development to conglomerate Queensland to the River Murray Waters Agreement).

CONCLUSION

Natural resource management is taken up by a broadly modelled total catchment concept which has important parameters and implications. However, it is a brand new phenomena. Only time can determine the significance of the strategy as well as the accelerated initiatives.

Total catchment management has scope for flood mitigation, soil conservation and sedimentation problems in either situation. The concept is in harmony with an overall supply of vegetation resources

and sustained productive resource for the respective regions.

Intergenerational issue is another important policy debate that looms giving pertinent attention to inter temporal equity value of total resources in a watershed. At this point in time the best could be achieved is to learn from the past mistakes and accommodate comprehensive sets of objectives not only to circumvent previous impediments but to guard against reoccurrence of degradations and denudations. Because single issue oriented solutions in a watershed region does not carry that much of weight in policy justification anymore.

However, the determining force is not the way that policy is forwarded in a package, but the trade-offs desired politically and implemented concerning whether equity or efficiency is the criterion of the day. It is paramount because neither will be achieved if both criteria are pursued.

A conceptual model of watershed policy

Level of policy substitution = level of program/NRMS policy

Take NRMS for instance as a function of Total Catchment

Management [NRMS f (TCM)]

TCM f (soil, vegetation, watershed)

Therefore, the significance for water policy

as the institution for watershed concerns

note:

NRMS= Natural Resources Management Strategy

TCM= Total Catchment Management

COMMUNITY REPRESENTATIVES CATCHMENT MANAGEMENT COMMITTEE for the Lower Murray-Darling Region

CATCHMENT MANAGEMENT ACT, 1989

The NSW Government is establishing Catchment Management Committees, under the Catchment Management Act 1989, to implement Total Catchment Management (TCM) objectives.

TCM is a community-based approach to natural resource management. It is the co-ordinated and sustainable use and management of land, water, vegetation, fauna and other natural resources. Its aim is to balance resource use and conservation.

To allow various and differing Western NSW land use management issues to be adequately and effectively addressed it is proposed to divide the Western Region into two regions:

- Lower Murray-Darling Region
- Western Region

The boundary between these regions follows the Sydney-Broken Hill Railway line until Menindee Lakes. The Menindee Lake System, Broken Hill and the entire Lake Victoria catchment lies within the Lower Murray-Darling Region.

The eastern boundary of the Lower Murray-Darling region follows the catchment boundary with the Lachlan and Murrumbidgee, being the boundary to the Lachlan and Murrumbidgee TCM regions. The southern and western boundaries follow the Murray River/Victorian border and South Australian border respectively.

Persons who are landholders, landusers or who have an interest in environmental matters in the Lower Murray-Darling are invited to apply to be representatives of the region on the TCM Committee.

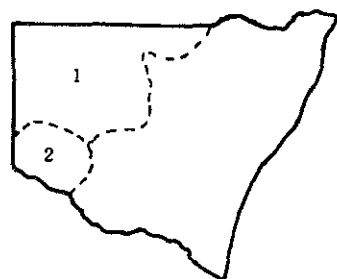
Members of the existing Western Catchment Management Committee will become members of the Committee within which they reside and do not need to reapply.

Applicants should possess the following qualities:

- commitment to sustainable development,
- knowledge, interest or experience in natural resource management,
- ability to represent community views,
- knowledge of natural resource issues in the catchment and how these issues affect the people, and
- such capacities as progressive thinking and the ability to work well with people.

Further information is available from Mr. Brendan Diacono, TCM Co-ordinator; (060) 88 0255.

Written applications providing details in terms of the above qualities should be with Mr. Diacono (c/- NSW Soil Conservation Service, 32 Sulphide Street, Broken Hill 2880) by 31 August, 1990.



1. Western
2. Lower Murray-Darling



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REFERENCES

- Australia Murray-Darling Basin by Murray-Darling Basin Ministerial Council. 1990. Natural Resources Management Strategy Towards a Sustainable Future; ii.
- Clark, S.D.; 1983. Intergovernmental Quangos: The River Murray Commission. Australian Journal of Public Administration XLII (1): 155-171.
- Commonwealth of Australia; 1989. River Murray Waters Amendment Act. No. 154 of 1987. Australia; Commonwealth Government Printer.
- Day, Diana G.; 1988. River Mismanagement: Policy, Practice or Nature?; Centre for Resource and Environmental Studies Working Paper 1988/1; Australian National University; 1-42.
- Democratic Socialist Republic of Sri Lanka; 1985. First Interim Report of the Land Commission; Sessional Paper No.1- 1986. Department of Government Printing Sri Lanka.
- Democratic Socialist Republic of Sri Lanka; 1989. Second Interim Report of the Land Commission- 1985. Department of Government Printing Sri Lanka.
- Department of Primary Industries and Energy; 1988. Instream Use of Australia's Water Resources; Australian Water Resources Council Water Management Series No.11. Australian Government Printing Press; 1-13.
- de Silva, Chandrananda R.K. 1982. Sri Lanka Country Paper. In: Water and Soil Miscellaneous Publication No. 45; Catchment management for optimum use of land and water resources: Documents from an ESCAP seminar; 1982 Wellington; 197-202.
- Extent of Tree Clearing in Australia Since European Settlement by Ive and Cock. 1989. Rural Land Degradation in Australia: The Australian Conservation Farmer; 1(3).
- Murray-Darling Basin Ministerial Council; 1990. Natural Resources Management Strategy Murray-Darling Basin: Towards a Sustainable Future; August, 1990.

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Murray-Darling Basin Ministerial Council;
1987. Murray-Darling Basin
Environmental Resources Study; July
1987; State Pollution Control
Commission, Sydney. 27-113; 251-281.

NEDECO; 1979. Mahaweli Ganga Development
Program Implementation Strategy;
Netherlands Engineering Consultants;
The Hague September 1979; Volume 1
Main Report; 17-21.

New South Wales Government. Community
Representatives Catchment Management
Committee. The LAND. 1990 July 26.
2(col.1). New South Wales.

New South Wales (NSW) State Parliament;
1989. Catchment Management Bill.
First Print.

Soil Conservation Service of New South
Wales; 1990. Total Catchment
Management: A State Policy Including
State Soils Policy, State Trees
Policy.

Sri Lanka Mahaweli Basin and Accelerated
Program by IIMI.1986.; 19.

Sri Lanka Mahaweli Basin and Mahaweli
River Catchment appeared in a paper
presented by Rohan Ekanayake;
Economics of Multiple Use of
Production Forests in Sri Lanka.
1986. 30th Annual Conference of the
Australian Agricultural Economics
Society; February 3-5, 1986; 20.

The Global Water Runoff Data Project.
1989. World Climatic Programme
Research, Workshop on the Global
Runoff Data Set and Grid Estimation,
WCRP - 22 and WMO/TD - No. 302, 1988
November 10-15; Klobenz, FRG; 6-12.

Trinity of Soil, Trees and Water based on
a diagram in a publication of the
NSW Soil Conservation Service.