Institutional framework for integrated water
of the Kapiriggama Small Tank Cascade System
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<tr>
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<td>Agriculture Instructor</td>
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<tr>
<td>ARPA</td>
<td>Agriculture Research and Production Assistant</td>
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<tr>
<td>CKD</td>
<td>Chronic Kidney Disease</td>
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<td>CMC</td>
<td>Cascade Management Committee</td>
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<td>DAC</td>
<td>District Agriculture Committee</td>
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<td>DAP&amp;H</td>
<td>Department of Animal Production and Health</td>
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<td>DO</td>
<td>Development Officer</td>
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<td>DZLiSP</td>
<td>Dry Zone Livelihood Support and Partnership</td>
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<td>Farmer Organisations</td>
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<td>NAQDA</td>
<td>National Aquaculture Development Authority</td>
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<td>NCP</td>
<td>North Central Province</td>
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<td>Non Governmental Organisations</td>
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<td>NWS&amp;DB</td>
<td>National Water Supply and Drainage Board</td>
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<td>OP</td>
<td>Organisational Partners</td>
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<tr>
<td>PEACE</td>
<td>Pro Poor Economic Advancement and Community Enhancement</td>
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<td>PRA</td>
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1 Introduction

Annually, Sri Lanka receives about 12 million ha m of water from rainfall. Of this, more than 50% is lost directly through evapotranspiration. Another 20% seeps down to replenish groundwater. Only 30% or about 3.6 million ha m is available for irrigation through streams, rivers, and lakes. Surface water from the high watersheds is transported by 103 distinct natural river basins. Of these basins, nine extend over 90% of the island, while the remaining 94 small coastal basins contribute only marginally to water resources. River basins originating in the wetter parts of the hill country are perennial, while the majority of those in the dry zone are seasonal. Annual surface water estimates vary from 4.0 to 5.13 million ha m. A part of this is used for irrigation and hydropower projects, and the balance is discharged to the sea. Rivers flowing for long distances through flat to undulating landscape — especially the Malwathu Oya, Kala Oya, Yan Oya, and Deduru Oya — replenish groundwater, creating a more favourable situation for human living. Collectively, these four rivers contributed to the spatial base from which the ancient hydraulic civilisation of Sri Lanka evolved.

This civilisation evolved through millennia and tried to find solutions to basic human needs (food, water, and protection) and to respond to basic problems (drought, flood, cyclone, epidemics, and invasions). It is difficult to trace the timing of the special strategies adopted to mitigate such disasters or to what degree these approaches were indigenous or influenced by invading/migrating foreigners.

There are three factors that influenced the evolution of the water resources management system in the dry zone. They are: the morphology of the landscape, the amount and distribution of the rainfall, and the nature of the substratum (in terms of pedology and geology).

In the past, Integrated Water Resources Management (IWRM) was planned at the macro-level among above mentioned rivers. Water was managed by sharing it between river basins through diversion or feeder canals to avoid excess or shortage. Some examples are the Dambulu Oya–Malwathu Oya diversion canal (860 AD); the Malwathu Oya–Kanadara Oya diversion canal (860 AD); and the Yoda Ela–Nachchduwa feeder canal (540 AD). Within some river basins, water flow had been also regulated through link canals to avoid imbalance of water. Examples are the feeder canals of Kalawewa–Thisawewa Yodha Ela (470 AD), Nachchaduwa–Nuwarawewa (290 AD), Balaluwewa–Siyambalangamuwa feeder canal (290 AD), and Basawakkulama– Maha Vilachchiya (470 AD)\(^1\).

A form of cascading small tanks and streams was also developed to manage the water resource within river sub-basins. These tank cascades were mostly rain-fed but locally they may have been supplied by feeder or diversion canals. Knowledge was developed

to construct long canals with extremely low gradients, such as the Yoda Ela, which carried water from Kalawewa to the city tanks of Anuradhapura (Thisawewa) along a canal 87 km long. This Yoda Ela, which had a gradient of less than 10 cm/km within its first 27 km, continued to maintain itself as a natural stream. It feeds numerous tank cascade systems found along its way, at the same time receiving excess drainage waters dispersed on the land from upstream tank cascades.

The groundwater resource has always been replenished through the surface water network, but was not considered as a source for human use and kept stored for ecological sustainability and to ensure a source of water during times of famine and disasters. Today, as the demand for water increases with an increasing population, groundwater is also used for various purposes such as agriculture, domestic, industry.

In this paper, the current context of Integrated Water Resources Management (IWRM) is discussed within the framework of use of surface and groundwater.

2 The Current Situation

Given such a historically successful background of water resource management, it is understandable that not all water-sector professionals fully appreciate the deepening challenges of water resources management.

In common with most other countries, and all countries with dry zones, in Sri Lanka, we have now reached a ‘tipping point’ with insidious catchment degradation and demographic changes. Old approaches to water resources management need to be re-conceptualised because of the following circumstances.

i. The demand for agricultural, domestic, municipal and industrial water has been growing at an accelerating rate throughout last few decades, albeit with substantial fluctuations arising from conflict and natural causes.

ii. The potentially available surface and groundwater supply has not increased. Indeed, there is some evidence to suggest that it may have actually decreased.

iii. Consequently, the demand and supply curves have crossed, with some areas either ‘mining’ groundwater or ‘robbing environmental flows’ of surface water in order to bridge the water deficit.

iv. Such practices are unsustainable, and have dire implications for the future of water-stressed communities. If left unresolved, this will constitute a serious failure of governance.

v. Consequently, it is necessary to ensure that future water resources management is placed a more technically sound footing; with greater community participation; greater transparency of departmental decision-making; a strong inter-departmental decision support system; more diversified skills (not just civil engineering); long-term strategic planning; more scientifically-based resource assessment; stronger legal underpinning; better departmental resourcing, and an entirely restructured approach towards effective IWRM.

vi. Two drastic differences have been observed in Sri Lanka as a consequence of climate change. The first change is that the annual mean air temperature
anomalies have shown significant increasing trends in Sri Lanka. The rate of increase of mean air temperature for the 1961-1990 period is about 0.016°C per year. The second difference is that the annual average rainfall over Sri Lanka has been decreasing for the last 57 years at a rate of about 7 mm per year. This poses a serious, additional challenge to water resources planning.

Furthermore, in the future, there will also be serious challenges facing the availability and sustainability of water sources for household, commercial, and other competing uses. Scarcity of water for drinking purpose is becoming a serious concern in many parts of the country, particularly in the dry zone and during periods of drought. Water contamination and inadequate water quality testing have increased the difficulty for securing safe water sources. Contaminated water sources and poor sanitation in rural areas have contributed to infectious and parasitic diseases among people, particularly young children. Irrigation water is frequently a source of drinking water, and it helps in recharging groundwater. In some areas, National Water Supply and Drainage Board (NWS&DB) has been tapping water from irrigation canals, and this has led to conflicts with farmers and other water users.

Proper management of irrigation systems is critical to minimise degradation of water resources on which people’s livelihoods depend. The effects of irrigation and the issues related to water logging, salinity, land degradation, groundwater depletion, ecosystems, and biodiversity are inter-related.

Thus, it has become imperative for the water sector to have a comprehensive policy that can allocate fairly and manage the country’s water resources. In 2003, a draft ‘National Water Resources Act’ and Policy was drafted in response this pressing issue. It still remains ‘under discussion’. Given the evolving social and political contexts, there is no clear indication that an agreement can be reached on this subject in the near future.

The future scenario will become more complicated as there are planning exercises to bring upcountry water to feed tank cascade systems in the dry and intermediate zones. The North Central Province (NCP) Canal Project includes development of following 5 river basins in NCP, NP and EP namely: Malwathu Oya (I); Parangi and Pali Aru (J); Kanagarayan Aru (K), Ma Oya (L) and Yan Oya (M).

Some of the benefits of this project are as follows.

- Development of five river basins in North Central and Northern and Eastern Provinces;
- Meeting drinking water demand of North Central Province;
- Diversion of water to minor tank cascade systems in NCP;
- Environment improvement in the area with an increase in groundwater potential;
- Diversion of Mahaweli water to Nachchaduwa, Nuwarawewa, Huruluwewa and Mahakandarawa through Upper Elahera Canal;
- Diversion of Mahaweli waters to North Western Province via the Bowatenna tunnel; and
- Meeting the existing deficit of all major tanks including Iranamdu tank in the Northern Province.
However, the following project impacts need careful investigation.

- Augmentation of cascade tanks with Mahaweli water will increase water availability, change land use patterns, increase cropping intensity, improve home garden productivity and change the ecological status;
- Dilution due to the percolation of Mahaweli water will reduce hardness in groundwater (Ca and F dilution);
- The enhanced water availability will increase land value, cause illegal encroachment and create threats to natural habitats;
- Given more water, it is likely that farmers will clear forests causing a loss of biodiversity;
- The groundwater table will come up;
- Soil erosion and sedimentation of tanks will take place because of intensive cultivation;
- If Mahaweli water conveys Cd and P from vegetable farms in the upcountry, there will be resulting eutrophication, algal blooms and increased incidence of Chronic Kidney Disease (CKD);
- If proper drainage is not provided, salinity may increase, as well as health hazards and flood hazards;
- If the excess water is not accommodated properly, damage to existing irrigation structures and natural streams will be expected;
- By feeding water to a tank cascade from outside, the upstream-downstream conflict will be aggravated;
- People benefitting from this outside water supply will become dependent on such water, and an absence will cause problems; and
- The principle of using cascades as the planning unit may no longer hold and management of cascade ecosystems for sustainability will not be possible.

3 Multiplicity of Institutions related to Water Management

In Sri Lanka, inefficient use of water resources has been exacerbated by the fact that a variety of agencies have exploited the resource, each pursuing its own mandate. No single agency has stewardship over the country’s water resources. There is a plethora of agencies and ministries responsible for one or more aspects of water resource management.

This multiplicity of agencies operating in the water management sector, more or less independently of each other, continues to result in distortions and inefficiencies. These include:

i. Large water users allocating water to themselves, assuming both the roles of regulator and user, potentially allocating water in an impartial manner;
ii. Water required for environmental and social needs may not be protected because these uses are not recognised in policy and there are mechanisms to

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2 Principally the Irrigation Department (ID), DAD, WRB, CEB, MASL, NWSDB, Reclamation Corporation, CEA, Provincial Councils and local authorities (responsible for local water resource management issues).
legally safeguard minimum in-stream flows or reservoir levels. ‘Environmental flows’ are protected in principle, but inadequately defined in practice.

iii. The supply of water for existing uses is vulnerable where new water use continues to be allowed. This lack of control of water demand increases the risk of water shortages and reduces the value of downstream water-related investment. In particular, in the face of dwindling surface water availability, there is an accelerating trend towards groundwater extraction in unsustainable amounts.

iv. Water allocation is inflexible. New users cannot be supplied by voluntary transfer of water from existing users. Therefore, existing users have no incentive to improve their water-use efficiency and hence do not recognise the true value of their allocation.

v. There is no planning system currently in place to allocate water to priority uses.

4 Water Policy

Sri Lanka does not have an exclusive and formally approved water policy. Indeed, the country has been discussing a water law since 1982, but has yet to enact it. Even the concept of Apex Body introduced in 1992 did not take hold probably because:

- A general opinion emerged among civil societies that this was an initial step towards commodification and privatisation of water;
- The political environment has changed frequently. Ownership of water sector swings and moves roundabout;
- A lack of stakeholder consultation and poor communication of the Concept of Apex body.
- No attempts were made to consider traditional water management principles and concepts.

However, policy through water supply service statements regarding water use are often made in official documents such as the public investment programs, the annual budget speech and the President’s address to parliament. Attempts to develop a national water policy and related institutional reforms in Sri Lanka go as far back as the 1950s, when it was proposed to set up an agency to undertake water resources management. Subsequently, the Water Resources Board Act, No 29 of 1964 was passed in order to establish Water Resources Board.

At the national level, there are some 28 government agencies that have, to a varying degree, been involved in the water sector. In addition, there are many other entities involved with water at the provincial, district, divisional and local levels. Of the various organisations, seven are most important as they form the core of water administration at the national level. The Ministry of Irrigation and Water Resources Management is the key organisation responsible for irrigation development policy. The Irrigation Department and the MASL are/were the major organisations vested with the responsibility of policy implementation. The Irrigation Departments (Central and Provincial) are in charge of all major and medium irrigation schemes.

The only legal provisions related to groundwater are those prescribing the obligatory fencing of wells and pits by the land owners, and prohibiting the establishment of waste dumps, waste injection wells and the use of land for waste disposal from pollution.
At present, there is no single agency responsible for groundwater development and use, and no legislation or administrative procedures in place to regulate groundwater extraction. The Central Environment Authority is responsible for all ecological aspects of water development including water quality. Consequently, there is an inappropriate licensing system for new water supply boreholes, in which licenses are granted on the basis of environmental grounds rather than, as should be the case, upon the basis of yield sustainability.

Over 50 agencies and 40 Acts deal with the irrigation water sector, but whilst the irrigation management is very intensive, the irrigation authorities have had little effect in improving the low average irrigation efficiencies. However, there are a few notable exceptions, such as the pressure irrigated systems near Puttalam.

5 Institutional Responsibilities

There are different institutions from national to village level, which are responsible for developing, using, investigating and protecting water resources in Sri Lanka. The mandatory responsibilities of these organisations are briefly discussed below.

5.1 National Water Supply and Drainage Board (NWS&DB)

The National Water Supply & Drainage Board was launched as a sub-department under the Public Works Department with responsibility for the water supply and drainage systems of Sri Lanka. Starting from 1965, it functioned as a division under various ministries up to January 1975, when it was converted to a Statutory Board by an Act of Parliament.

The NWSDB and the Urban Development Authority are responsible for domestic and industrial water supply. The National Water Supply & Drainage Board functions under the Ministry of Water Supply & Drainage established in 2007. The NWSDB is the only organisation coming under the purview of this Ministry. In 2010, around 80% of the population has access to safe drinking water, of which 30% is through piped water supply systems of the National Water Supply & Drainage Board.

In accordance with the decentralisation policy initiated by the Government in the early 1990s, the NWSDB undertook a major initiative to devolve decision-making in investment and operations and maintenance to local governments to encourage their participation, and to increase accountability and sustainability in the provision of water supply and sanitation services.

5.2 Water Resources Board (WRB)

The Water Resources Board In 1964 was established to advise the minister of irrigation on issues of water management. At the moment, it carries out several activities described in Section 12 of the Water Resources Board Act, No 29 of 1964, which was
Figure 1. Agencies associated with Water Management
later amended as No 42 of 1999. These activities are feasibility studies on groundwater resources; hydrogeological investigations; construction of tube wells for groundwater extraction; and drilling investigation bore holes for sub-surface strata.

The Water Resources Board has deviated from its principal national duty mainly to advice the Minister on the following activities and undertakes investigations and surveys to collect data and information.

(a) Control, regulation and development (including the conservation and use) of the water resources of the country;
(b) Prevention of pollution of rivers, streams and other water resources;
(c) Formulation of national policies relating to the control and use of the water resources of the country;
(d) Preparation of comprehensive and integrated plans for the conservation, use, control and development of the groundwater resources of the country;
(e) Co-ordination of the activities of Government departments, local authorities, and public corporations, in regard to surveys of basic data and other investigations relating to hydro-geology;
(f) Analysis of reports based on investigations, statistical surveys, plans and proposals relating to the groundwater resources of the country made by Government departments, local authorities and public corporations;
(g) Coordination of projects undertaken by Government departments, local authorities, and public corporations, relating to the conservation, use and development of the subterranean water resources of the country, and the assessment of the possibilities, benefits and economic feasibility of such projects; and
(h) Any other suitable measures to be taken by the Government for the proper control and economic use of ground water.

5.3 Irrigation Dept. (ID)

The Irrigation Department is responsible for planning, design, construction, operation and management of all major and medium irrigation schemes and works related to flood control, drainage and salinity extrusion. Considering that almost 90% of the country’s water resources are applied in the irrigation sector, it is clear that this department is the dominant actor in the water sector in the country.

The Hydrology Division of Central Irrigation Department collects and analyses data and information related to surface water resources of the country and maintains a database of hydro-meteorological information.

5.4 Provincial Irrigation Department (PID)

Provincial Irrigation Departments have been established in each province under the 13th Amendment of the Constitution of Sri Lanka. The main activities of the PID are:

i. Construction and rehabilitation of irrigation schemes and canals in the Province;
ii. Development of skills and awareness of farmer organisations on water management;
iii. Collecting data and conducting basic investigations on irrigation projects; and
iv. Locating hazards to the irrigation system by floods and other disasters and introducing remedies.

5.5 Mahaweli Authority of Sri Lanka (MASL)

The Sri Lankan government has, on several occasions in the past, and most recently in the 2010 Mahinda Chintana, expressed an intention to undertake inter-basin transfer from the Mahaweli River Complex, northwards towards Vavuniya. If such a plan were to be undertaken, it would be a major canal construction on an unprecedented scale to provide irrigation water to numerous areas from Kala Wewa watershed area, to Vavuniya District. This will fall under the jurisdiction of the Mahaweli Authority of Sri Lanka (MASL). With the irrigation Department, this is the most powerful water-sector entity in the country, with a mandate to plan and distribute the available water resources for hydropower and irrigation, but not for urban water supply.

However, notwithstanding these ambitious political intentions, historically available water resources of the Mahaweli system have not lived up to expectations, and there is now considerable doubt whether there is sufficient surface water in the Mahaweli system to convey any significant excess as far north as Vavuniya. Computer modelling under the World Bank Dam Safety and Water Resources Planning (DSWRP) Project is expected to support this conclusion.

The Water Management Secretariat under MASL is working as the key cell on water allocation and operational decisions among major river basins and stakeholders, with more than thirty years of with coordination of the Irrigation Department, Ceylon Electricity Board, Agriculture Department, Agrarian Service Department and National Water Supply and Drainage Board.

5.6 Department of Agrarian Development (DAD)

The Agrarian Development Act No. 46 of 2000 provides for matters related to landlords and tenant cultivators of paddy lands in accordance with agricultural policies; for the establishment agrarian development councils; to provide for the establishment of a land bank; to provide for the establishment of agrarian tribunals; to provide for the repeal of the Agrarian Services Act. No. 58 of 1979, and other related matters. The Commissioner General has the authority to appoint one or more farmers’ organisations for a particular cultivated area. Similarly, there are legal provisions to establish Farmers’ Organisation District Federations. These district federations can establish a provincial federation and also, Sri Lanka National Farmers’ Organisations. However, this institutional framework only represents farmers and not all water users. Further, the DAD is responsible for managing minor irrigation schemes, which feed less than 80 ha.

5.7 Central Environment Authority (CEA)

The Central Environmental Authority is charged with protecting the country’s biodiversity and other matters defined by the National Environmental Act (1980). Most of
the CEAs activity is centred on regulatory/licensing functions. They appear to undertake little or no direct action in respect of quantifying environmental flows, water conservation, or the remediation of water pollution. There are several aspects of this departments’ mandate that are directly or indirectly relevant to water resources management. These are:

i. Maintenance of environmental flows in perennial rivers;
ii. Maintenance of aquatic habitats, and particularly of the biologically keystone environments of wetlands, estuaries, lagoons and freshwater fish spawning grounds;
iii. Protection of critical bio-habitats from human encroachment from either planned or ‘informal’ development;
iv. Licensing of groundwater extraction from new boreholes, but only on the basis of environmental acceptability, and not of the primary basis of water availability;
v. Prescription of all groundwater extraction projects; and
vi. Management of pollution — i.e. from large industries.

5.8 Ceylon Electricity Board (CEB)

The Ceylon Electricity Board is responsible for all large scale hydro-electric plants, and most hydropower stations in excess of 50 MW. In the highlands and intermediate topographic areas of Sri Lanka it is a major player in the water sector, albeit in a predominantly non-consumptive activity.

5.9 Department of Agriculture (DOA)

The Department of Agriculture (DOA) functions under the Ministry of Agriculture and the DOA is one of the largest government departments with a high profile community of agricultural scientists and a network of institutions covering different agro-ecological regions islandwide. The objectives of the DOA are focused on maintaining and increasing productivity and production of the food crop sector for the purpose of enhancing the income and living condition of the farmer and making food available at affordable prices to the consumer. The major functions of the DOA include research, extension, production of seed and planting material, regulatory services related to plant quarantine, soil conservation and pesticides.

As the food crop sector is one of the major water users in the country, the Department of Agriculture becomes one main stakeholder of the water resources management. Responsibility of protecting catchment from deterioration and pollution lies on the DOA under the Soil Conservation Acts. No. 25 of 1951 and 24 of 1996, Plant Protect Act No. 35 of 1999, Control of Pesticides Act. No. 33 of 1980 and No. 6 of 1994.

5.10 Local Authorities (LA)

Local Government only acts within mandates delegated for that province by legislation or directives of the higher level of Government. A local government usually
has some power to raise taxes, though these may be limited by central legislation.

The local authority structure comprises:

- Nine Provincial Councils;
- 23 Municipal Councils;
- 41 Urban Councils; and
- 271 Divisional or Rural Councils (*Pradeshiya Sabha*).

The functions of the local authorities focus mainly on environmental management and social services, such as roads, health, sanitation, water supply, solid waste management and sewerage. Some of these functions have been handed over to some other government boards, corporations or authorities, making the local authorities dependant on those institutions to serve their electorates. For example, the National Water Supply and Drainage Board (NWSDB), is one of the organisations owned and managed by the government, but serving the electorate directly or through local authorities. NWSDB has the mandate to develop and administer urban water supply schemes.

## 6 Previous Project Experience

### 6.1 Plan Sri Lanka Approach

The Plan Sri Lanka (PSL) Programme was implemented during 2004–2010 in five cascade systems: Navodagama and Sandamaleliya in Mahavilachchiya DS Division; Puwarasankulama and Ihala Kahagollewa in Manupa DS Division; and Parana Halmillewa in Medawachchiya DS Division. All these DS Divisions are in the Anuradhapura District. Thus, the PSL formed an apex body at district level as Project Steering Committee (PSC) to review the progress of their tank rehabilitation activities and other development programmes undertaken by implementing partner organisations. The PSC was chaired by the District Secretary and consisted of the Divisional Secretariat of the project areas, the Assistant Commissioner of Department of Agrarian Development, the Provincial Irrigation Director, Divisional Officers of respective Agrarian Development Divisions, representatives from Provincial Department of Agriculture, National Aquaculture Development Authority (NAQDA), Department of Animal Production and Health (DAP&H), Coconut Cultivation Board and the Sri Lanka Cashew Corporation. The PSC was responsible for facilitating, coordinating, monitoring progress, ensuring involvement of all relevant stakeholders and evaluating the Plan Sri Lanka approaches of holistic and integrated development. This committee was not summoned after the termination of the PSL Project.

The project has attempted to strengthen the existing Farmer Organisations (FOs) and establish new FOs, where people requested. The catalytic process of community mobilisation and empowerment of FOs was activated through area based local NGOs called as Organisational Partners (OPs). However, it is not clear that how the other development activities outside the purview of FOs were handled.
6.2 PEACE Project Approach
The Pro Poor Economic Advancement and Community Enhancement (PEACE) Project implemented during 2006 – 2012 by the Ministry of Irrigation and Water Resources Management, and funded by JICA in the Anuradhapura and Kurunegala Districts, aimed at rehabilitating eight major irrigation schemes, 12 medium-scale tanks and 80 minor irrigation schemes. The special feature in the PEACE project (or the ‘Wari Pubuduwa’) programme was that 183 FOs, under the 100 tanks, were tasked (on contract) with the renovation of sub-systems, such as irrigational canal network.

The respective FOs had to appoint three committees (Procurement Committee, Community Mobilisation Committee and Construction Supervisory Committee) consisting of not less than five members with the approval of the respective committee members of the FO, prior to commencement of the rehabilitation works. If any appointed members were inactive, FO committee had the authority to replace him/her with another suitable beneficiary farmer subject to approval of FO. However, it has been reported that only the construction supervisory committee was appointed and it had the responsibility of monitoring the entire rehabilitation work.

The project also attempted to obtain the active participation of line agency officers such as Development Officer (DO), Agriculture Instructor (AI), Agriculture Research and Production Assistant (ARPA) in the entire rehabilitation process. The linkages among officers of line agencies such as DOA, DAD, Coconut Cultivation Board, Sri Lanka Cashew Corporation, Department of Animal Production and Health, National Aquaculture Development Authority (NAQDA) and the farming community were established by hiring these personnel as resource persons for training programmes. The project also sought the support of line agencies in selecting suitable beneficiaries for the various project inputs and distributing the benefits at ground level. The approach was successful in developing linkages among farmers and line agency officers, and making farmers active partners of the project.

6.3 DZLiSP Programme Approach
The Dry Zone Livelihood Support and Partnership (DZLiSP), implemented between 2006 and 2012, conducted a tank rehabilitation programme, focusing mainly on small tanks, under which the command area is less than 10 ha. These tanks are looked after mostly by neighbouring FOs. The project created scheme level Water User Groups (WUGs). The respective WUG was expected to act as the focal point for planning and management of the scheme level activities. Such WUGs were found independently active in many schemes.

The DZLiSPP requested the support of divisional and grass root level officers to identify tanks and their rehabilitation needs. The data were collected through participatory rural appraisal methods (PRA), shared with officials, and their observations obtained. However, there was a lack of an effective strategy to integrate the line agency officers with project activities after the initial selection of the scheme
was over. Subsequently, the construction work was done by FO/WUG with the support and guidance of a technical officer hired by the project. Therefore, the opportunities for line agency officers to become integrated with project activities were limited to initial selection of the tank and providing services to the capacity development programmes.

7 Need for an Institutional Framework

All of the above discussed, still leaves the issue of current water management unresolved.

The following queries needs urgent answers if water resources are to be managed effectively at the local, regional as well as national level.

i. Who, ultimately, will take the responsibility for water resources management at local and national level?

ii. If an entirely new institution for water resources management is established, how can it be resourced and supported technically?

iii. If such an institution becomes authoritative, how will existing acts, which delegate powers to various organisations (mentioned in the previous section), be suppressed?

iv. Can groundwater extraction really be controlled by existing regulations? Will anyone enforce unpopular restrictions?

v. Do current water laws really cover the whole water sector? What about the gaps?

vi. Can 'IWM' (Integrated Waste Management) really be introduced? It is too large for any local authority to make decisions and too complicated to impose rules and regulations under any existing national law.

vii. What is needed to make inter-departmental cooperation in the water sector possible?

viii. What are the chances of IWRM succeeding under present legal and administrative environment? (Administrative boundaries do not follow watershed boundaries)?

Given the above background, an institutional framework is suggested with five levels of Water Resources Management Committees as at National, District, DS, Sub-watershed and GN levels, which should be strongly linked.

The National Committee for Water Resources Management (NCWRM) can be formed through an MOU as an extended committee of the Inter Departmental Executive Committee, which is in existence under the provision of the Section 14 of the Water Resources Board Act, No 29 of 1964 and subsequent amendment Act No 42 of 1999.

However, scope of this document is limited to discuss and conceptualise the institutional setup to sub-watershed or cascade level, which needs to be inter-laced subsequently at the watershed and national level. It is difficult, if not impossible, to adopt a top-down approach from national to village level, as these organisations function according to their Acts of establishment. Thus, the discussions below are confined to sub-watershed and village level committees.
7.1 Inter Department Advisory Committee (IDAC)

According to the Water Resources Board Act. (Amendment) No. 42 of 1999, the IDAC consists of following members.

i. The Secretary to the Ministry of the Minister to whom the Water Resources Board has been assigned;

ii. The Additional Secretary to the Ministry of the Minister to whom the Water Resources Board has been assigned;

iii. The Secretary to the Ministry of the Minister to whom the subject of Health has been assigned or his nominee;

iv. The Secretary to the Ministry of the Minister to whom the subject of Indigenous Medicine has been assigned or his nominee;

v. The Secretary to the Ministry of the Minister to whom the subject of Local Government has been assigned or his nominee;

vi. The Secretary to the Ministry of the Minister to whom the subject of Provincial Councils has been assigned or his nominee;

vii. The Director General of Irrigation;

viii. The Chairman of the Ceylon Electricity Board;

ix. The Chairman of the Geological Survey and Mines Bureau;

x. The Director General of the Department of Agriculture;

xi. The Land Commissioner;

xii. The Survey General;

xiii. The Commissioner of Agrarian Services;

xiv. The Director General of the Department of National Planning;

xv. The Chairman of the National Water Supply and Drainage Board;

xvi. The Conservator of the Forest;

xvii. The Chairman of the Road Development Authority; and

xviii. The General Manager, Sri Lanka Railways.

7.2 National Committee for Water Resources Management (NCWRM)

The NCWRM will consist of following permanent members.

1) Ministry of Irrigation and Water Resources Management
   a. The Secretary of the Ministry of Irrigation and Water Resources Management;
   b. The Chairman, Water Resources Board;
   c. The Director General of Irrigation; and
   d. The Director General of Mahaweli Authority of Sri Lanka.

2) Ministry of Water Supply and Drainage
   a. The Secretary of the Ministry of Water Supply and Drainage;
   b. The Chairman of the National Water Supply and Drainage Board; and
   c. The General Manager of the Water Supply and Drainage Board.

3) Ministry of Agriculture
   a. The Secretary of the Ministry of Agriculture; and
   b. The Director General of Agriculture.

4) Ministry of Economic Development
   a. The Secretary of the Ministry of Economic Development; and
   b. The Commissioner General of Agrarian Services.
5) Ministry of Local Government and Provincial Councils
   a. The Secretary of the Ministry of Local Government and Provincials
      Councils.

As some of the members are not in the Inter-departmental Advisory Committee, but
are under the same ministries, a Memorandum of Understanding (MOU) needs to be
signed among Secretaries of the above five ministries.

7.3 District Agriculture Committee

The District Agriculture Committee (DAC) has been established in each District
according to the Irrigation Ordinance (1956 revision – PART II) to advise the District
Secretary on all matters affecting or incidental irrigation and paddy cultivation within
the District, and on all other matters relating to agriculture, which the District
Secretary may refer to the committee or advice

To support the activities at a district level, this committee can be considered the link
between the National Oversight Committee and divisional level committees.

7.4 Divisional Agriculture Committee

In order to support the District Agriculture Committee under the same provision
Divisional Agriculture Committees have been established in each Divisional
Secretariat of the District. The chairman of the Divisional Agriculture Committee is
the Divisional Secretary. The membership of the Divisional Agriculture Committee
consists of divisional level officers of all government offices and representatives of
the farmer organisations.

Identification of ground level issues on water resources, establishment of a data base
on water use and water availability and study of changes and trends are some of the
responsibilities, which should come under Divisional Agriculture Committee.

7.5 Sub-watershed Committee (SWC)/ Cascade Management Committee
   (CMC)

In most the cases a sub-watershed comes under one or two Divisional Secretariat
areas. Discussions can continue separately in each Divisional Agriculture Committee
at the beginning, and final decisions can be reached through the discussions
between DSs of the relevant Divisional Secretariats.

The SWC/ CMC will be appointed by the Divisional Secretary/ Secretaries.

**Committee Members:**
   1. Divisional Development Officer (DAD) — Secretary
   2. Agricultural Instructors — members
3. Development Officers — members  
4. *Samurdhi* Officers — members  
5. Agriculture Research and Production Assistants — members  
6. *Grama Niladari* — members  
7. Farmers and other distinguished personnel — members  
8. Field officers of development programmes

**Responsibilities:**

i. The committee meets monthly;

ii. It prepares initial development proposals;

iii. It organises participatory activities of the development programmes;

iv. It reviews the state of the sub-watershed (cascade) development programme;

v. It makes decisions for programme improvement;

vi. It plans cultivation, water issues, input supply, training programmes and other production activities and makes arrangements for marketing produce;

vii. It submits monthly reports with progress, proposals and requirements to the Divisional Agriculture Committee; and

viii. It bears the overall responsibility of the development and production programmes within the cascade.

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### 7.6 Rural Coordination Committee (RCC)

Rural Coordination Committees are formed according to the Letter HAF-3-MISCL-04-002-1 dated 21.01.2014, circulated by the Secretary, Ministry of Public Administration (Annex 1), which was addressed to all District Secretaries on ‘the establishment of Divisional level participatory coordination mechanisms’. This aims to resolve rural level socio-economic problems. It has been decided to appoint *grama niladhari* (GN) as the chairman and a representative from the police as the Secretary of the committee. This can be considered initially as the lowest level of institutional framework to represent the interest of community and the most supporting group for information collection.

The composition of these committees may vary from place to place, and members will be *grama niladhari*, *Samurdhi* Officer, Agricultural Research and Production Assistant, midwife, farmer organisation members, fishery organisation members, rural women society members, rural development societies, school development societies, religious organisations, community water supply scheme members, CBOs etc.

**Responsibilities:**

i. The committee meets monthly;

ii. It prepares initial development proposal for the villages;

iii. It organizes participatory activities of the rural development programmes;

iv. It reviews the state of the village development programme;
v. It makes decisions for programme improvement;
vi. It plans cultivation, water issues, input supply, training programmes and other production activities and makes arrangements for marketing produce;
vii. It submits monthly reports with progress, proposals and requirements to the sub-watershed committee; and
viii. It bears the overall responsibility of the development and production programmes within the GN Division.

Table 1. Different levels of the proposed framework

<table>
<thead>
<tr>
<th>Level</th>
<th>Legal provision</th>
<th>Existing/ Legally provisional</th>
<th>Proposed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>Water Resources Board Act.</td>
<td>Inter Department Advisory Committee (IDAC)</td>
<td>National Committee for WRM (NCWRM)</td>
<td>An MOU is required</td>
</tr>
<tr>
<td>District</td>
<td>Irrigation Ordinance 1956 revision</td>
<td>District Agriculture Committee (DAC)</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td>Divisional</td>
<td>Under Irrigation Ordinance 1956 revision</td>
<td>Divisional Agriculture Committee</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td>Sub-watershed/ Cascade</td>
<td>No provision</td>
<td>-</td>
<td>Sub-watershed Committee (SWC)/cascade management Committee (CMC)</td>
<td>This can be formed under Divisional Agriculture Committee</td>
</tr>
<tr>
<td>GN level</td>
<td>Secretary’s letter, Ministry of Public Administration</td>
<td>Rural Coordination Committee (RCC)</td>
<td>Same</td>
<td>To be linked with SWC/CMC</td>
</tr>
</tbody>
</table>
Figure 2. The five committees proposed for water management of small cascade tanks

8 Expected Outputs

Five Committees (NCWRM, DAC, Divisional Agriculture Committee, SWC/CMC and RCC) envisaged in this concept document aim at various benefits and achievements. Following outputs are anticipated.

I. *Inter alia*, formulation of policies, laws, by-laws, regulations for sustainable management of water resources;

II. Resolution of disputes among water users;

III. Sharing water related knowledge bases among water related organisations;

IV. Decision-making on the investigation and development of water resources;

V. Decision-making and planning of ground level water resources for better use and management;

VI. Joint implementation of strategies for water quality improvement and the prevention of water pollution;

VII. Advisory support to the Government in water-related disaster events;

VIII. Preparation of guidelines, technical bulletins, training manuals for specific water management purposes (for example, groundwater for agriculture, clean water city programmes, water harvesting);

IX. Discussion on new technologies and research findings in the water sector; and

X. Intervention in water-related health issues such as kidney failure, arsenic in rice.
9 Present Project Interventions

The Project, at its initial stage, discussed institutional management at various levels, and decided to work at the field level to assess performance of such a mechanism in managing tank cascade systems. The following activities were carried out by the Project management:

i. A concept note was prepared on ‘Formation of an Institutional framework for Integrated Water Resources Management’;

ii. This concept was discussed at a meeting of the National Consultative Committee appointed by the Project;

iii. To introduce the concept, its importance and their responsibility especially when the NCP canal project is implemented, an awareness workshop was held for farmer representatives of the cascade villages;

iv. Eight village level committees were formed explaining the tasks to be carried out;

v. Three Grama Niladhari level committees for the three GN Divisions (Kapiriggama, Konakumbukwewa, Penagama) were established;

vi. A cascade management committee (CMC) was formed using members of the GN committees and it consists of following members:
   • Regional Development Officer (DAD);
   • Range Agricultural Instructor;
   • Grama Niladharis;
   • Development Officers (DAD);
   • ARPAs (DAD);
   • Samurdhi Officers; and
   • Farmer representatives of GN committees.

Activities assigned to the CMC:

- The committee meets monthly by the notice of the Regional Development Officer and the minutes of the meeting are brought to the notice of Divisional Agriculture Committee;
- The committee discusses maintenance work to be carried out in the cascade by respective farmer organisations;
- It organises participatory activities of the development programs at cascade level;
- The committee discusses the outcomes of kanna meetings and issues that can be solved at cascade level;
- It plans cultivation, water issues, input supply, training programs and other production activities and makes arrangements for marketing produce; and
- It bears the overall responsibility of the development and production programs within the cascade.

10 Summary

There are excellent historical records of the management of water resources, and successful inter and intra river basin diversions, especially in the northwestern dry zone of Sri Lanka. Although in the past, groundwater was not used for agriculture and urban water supply, with the increasing demand from an increasing population, it is now used for various purposes, such as agriculture, domestic, industry. In addition,
the annual average air temperature has shown significant increasing trends in Sri Lanka and the annual average rainfall for the last 57 years has been decreasing at a rate of about 7 mm per year. This adds an additional challenge to current water resources planning. Thus, Integrated Water Resources Management (IWRM) has become essential for long-term sustainability.

It is necessary also that water management ensures greater community participation; greater transparency of sectoral decision-making; a strong inter-departmental decision support system; more diversified skills (not just civil engineering); long-term strategic planning; increased scientifically-based resource assessment, stronger legal underpinning, better departmental resourcing, and an entirely restructured approach towards effective IWRM.

In Sri Lanka, inefficient use of water resources has been exacerbated by the fact that a variety of agencies have exploited the resource, each pursuing its own mandate. No single agency has stewardship over the country’s water resources. There are up to 28 agencies in 10 ministries responsible for one or more aspects of water resource management. This multiplicity of agencies operating in the water management sector, continues to result in distortions and inefficiencies.

This paper presented an institutional framework with five levels of water resources management committees at national, district, divisional, sub-watershed or cascade and grama niladhari levels, which should be strongly linked with each other. Each committee have a role to play and specific responsibilities.
11 Annex-1

[Image of the document]

[Text in Sinhala]

[Signature]

8.3. [Signature],

[Name]

[Date]
About IUCN

IUCN, International Union for Conservation of Nature, helps the world find pragmatic solutions to our most pressing environment and development challenges.

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IUCN is the world’s oldest and largest global environmental organisation, with almost 1,300 government and NGO Members and more than 15,000 volunteer experts in 185 countries. Its work is supported by almost 1,000 staff in 45 offices and hundreds of partners in public, NGO and private sectors around the world. IUCN has been working in Sri Lanka since 1986.

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