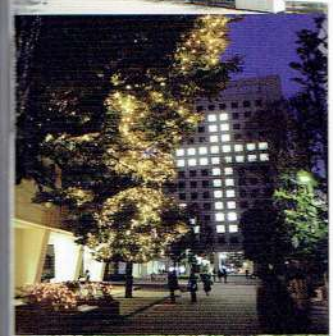










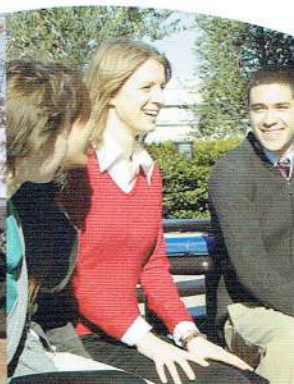
SOPHIA UNIVERSITY

A Japanese University with a Global Mission

Sophia — Bringing the World Together







Preliminary Report of the Indo-Japanese International Workshop on "Sustainable Water Resources Management in Kerala", at School of Biosciences, Mahatma Gandhi University, Kottayam, Kerala

Introduction

The major goals of the workshop and field visits were to provide first-hand information on water resources and its management in Kerala to both the experts from Japan and Kerala. As experts in water resources management of Japan, the professors from the Global Institute of Environment Studies of Sophia University, Japan wanted to know how much they can support sustainable management of water resources in Kerala.

From the Global Institute of Environment Studies, Sophia University of Tokyo, Japan, the Director Prof Guangwei Huang and Professors Dr Keiko Hirao, Dr John Joseph Puthenkalam and Dr Nobuhiro Zuzuki participated in the workshop. The experts from Kerala who appraised the Japanese experts on water resources of the state and its management in Kerala were Dr E J James (former Director of CWRDM, Kozhikode, Kerala), Dr PS Harikumar (Registrar of CWRDM, Kozhikode, Kerala) and Dr K G Padmakumar (International Research and Training Centre for Below Sea-level Farming). In addition to the above mentioned three invited experts, about 60 water-related researchers and faculties attended the workshop and field visits.

The workshop meeting was held on 2nd November at the IIRBS Seminar Hall of MG University. On the following day's field visits to 'Meenachil River' and the 'Vembanad Lake' were carried out. The experts have made the following preliminary observations on the current status of water quality management in Kerala and the measures required for managing it as a sustainable natural resource for the ecological and economic prosperity of the state.

The inference from Expert Presentation:

Among the three experts on water resources, Dr E J James informed that in general, the state has a regular rich supply of water received in two monsoon seasons. But there is high temporal and spatial variation in the distribution of precipitation in the state. The average rainfall of Kerala is 3000 mm. But the average rainfall of Attappadi area is just 800 mm and that of Wynad is 5500 mm. In general, there is lesser rain in the south than in north Kerala. In the low land area, the north-south variation is 3500 to 1000 mm whereas in the midland the north-south variation in precipitation is 4000 to 1400 mm. In the highland, the north-south variation in precipitation is 5500 mm to 2500 mm. While the state receives 60% of its annual rainfall during the southwest monsoon, only 20% is obtained during the northeast monsoon and the rest of the 20% is received during the summer season. In the mean annual rainy days also there is a great variation in the state; 141 in Vythiri to just 50 in Chinnar. There are 44 rivers in the state and the annual average discharge of all rivers in the state equals

78041Mm^3, which is quite lower than that of the states such as Rajasthan and Tamil Nadu. Moreover, the per capita water availability in Kerala is low; lower than the national average and that of the Indian states such as Tamil Nadu, Gujrath, Karnataka, Rajasthan and the like. The recent flood disaster in the state was mainly an outcome of unexpected heavy rains; 37% of excess annual precipitation in just two months. Excessive urbanization and destruction of wetlands were the major reasons for the excess water to flood the entire area. Since the government and people were not prepared to meet such a disaster, there was a lot of panic in the state during the unexpected flood. Overall the presentation was very useful to understand the present status of water resources and its management in the state. The general impression was that although the state has a good account of its entire water resources, there is no systematic approach yet available in the state to manage or conserve its existing water resources.

Dr PS Harikumar explained the major water quality issues of the state. He has provided enormous data on the various kinds of researches that are already carried out on the different surface water resources in the state. The physicochemical water quality parameters, microbial and other toxic contaminations, algal blooms and the like of the drinking and other water resources of the state are well known. A good account of water supply schemes also was presented. Overall the presentation revealed that apart from efforts to ensure drinking water supply from the existing water resources, there is no serious planning or management in the state regarding an ecologically safe and sustainable economic utilization of water resources in the state. It was very strange to notice that the state has no specific institutions to safeguard or monitor the waters of any of the natural water resources in the state.

Dr K G Padmakumar explained the general principles of wetland management and the bio-resources, especially the fish wealth of the water bodies in the state. He explained the severe biodiversity erosion that happened in the state during the past few decades due to faulty implementation of projects for the economic utilization of water resources focusing on electricity generation and agriculture. He explained the ecological impacts of faulty projects such as the Thannirmukkam barrage in the Vembanad Lake.

Overall impression of the three expert presentations was that water resources in Kerala are comprehensively investigated with regard to its water quantity, quality and bio-resources. However, the state has not yet started a systematic approach to institutional ecological management of its water resources focusing on its sustainable utilization. Water resources of the state need to be managed to focus on the future economic growth and increasing demand of a growing population in Kerala.

The inference from the Field visits:

Field visits to the "Meenachil" River and the "Vembanad" Lake were focused on collecting the details of river and lake management in the State. The Meenachil River was selected for onsite inspection as it was one of the small rivers, the inspection which may be completed in a day. The onsite inspection of the river from Erattupetta to Kumarakom has provided us with the following impression on water management in the state of Kerala:

Impression on the Management of 'Meenachil' River:

1. The River was found remaining just as a natural drainage system and no state management of the same was visible anywhere in its entire course to the Lake

2. The boundaries of the river were not demarcated in its entire length - no institution as an authority exists to manage the river

3. The river was found encroached by people on its ether banks – both in the rural and urban settings.

4. The river was found an open channel for receiving solid wastes including plastics at several places – both in the rural and urban settings

5. Wastewater outlets from the townships on the banks of the river were found joining with the river without any control

6. At two sites the pumping stations of Kerala water authorities were observed.

7. None of the townships on its banks was found equipped with a proper wastewater treatment system.

8. No measures were found for storing the precious freshwater resource of the river at anywhere in its entire course

9. The entire freshwater of the river was flowing out to the lake without any control or efforts of conservation for offseason needs

Impression on the Management of Vembanad Lake:

1. Although the lake is an internationally approved 'Ramsar Site' no specific authorities was felt in the lake management

2. Solid waste including plastics was found spreading here and there in the entire lake

3. Excessive growth of water weeds found in the lake reveals its eutrophicated state

4. The dissolved oxygen content of the lake was 5.8 in the boundary areas whereas 5.9 in the interiors – not excellent for a freshwater system

5. As the rivers flowing into the lake remain unmanaged systems, the lakes remain a dumping yard of solid wastes and wastewater without any control

6. Fool proof check or control of waste dumping into the lake from the tourist boats and the tour operating systems all around the lakes were not observed

7. No patrolling for sustainable water management was observed in the lake while the same remains as the focus of backwater tourism in the lake.

Major Recommendations – River management

1. As in Japan, the State Government may appoint authorities for proper management of the river

2. There should be time-bond budgetary programmes to demarcate the boundary of the river – a certain area (minimum 50-meter width) on either side of the river must be declared as public property and proper fencing may be done to avoid encroachment

3. All the rivers must be cleaned from the existing solid wastes in the same, which may be carried out by the involvement of voluntary organizations and local governments on the entire course of its flow to the lake

4. The local governments on the course of the rivers and even private institutions may be involved in the management of a river

5. Every local government on the course of a freshwater river may be encouraged to store freshwater in one or many huge specially designed tanks during the rainy season for the off-season usage

6. Every township on the banks of a river should be encouraged to treat the entire wastewater before being discharged into the river – there should be stringent monitoring of the same

7. River policing must be established to prevent solid waste dumping into the rivers – the same must be supported with a proper legal framework

Lake Management

1. A proper authority must be appointed to develop and manage the sustainable ecological quality of the lake

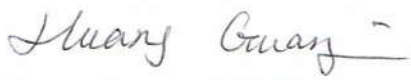
2. All the tour operators in the lake must be encouraged to follow principles of responsible tourism

3. Sufficient strength of 'Lake Policing' may be established to monitor and prevent waste dumping into the lake – proper legal framework also need to be established for the same

4. The authorities of all the rivers that flow down to the rivers may work together in collaboration with the lake authority to maintain its sustainable management

Signature of Experts:

1. Prof. Dr Guangwei Huang, Director, Global Institute of Environment Studies, & Professor, Graduate School of Global Environment Studies, Sophia University, Japan



2. Prof Dr Keiko Hirao, Professor, Graduate School of Global Environment Studies, Sophia University, Japan

3. Prof. Dr John Joseph Puthenkalam, Professor, Department of Economics and Graduate School of Global Environment Studies, Sophia University, Japan

4. Dr Nobuhiro Suzuki, Assistant Professor, Department of Material and Life Sciences, Institute of Global Environment Studies, Sophia University, Japan

5. Prof. Dr J G Ray, Professor, School of Biosciences and Convener or the Indo-Japanese Workshop on sustainable water resources management in Kerala, Mahatma Gandhi University, Kerala, India

Japan's Pioneer in Global Education

Sophia University leads the drive toward internationalization in Japan, providing innovative educational opportunities that take our increasingly complex world into account.

Over the years, Sophia University has developed a strong global network that attracts researchers and students from overseas to teach and study in Japan, and Japanese researchers and students to do the same abroad.

Sophia University provides an excellent educational environment in the era of internationalization, cultivating our mission "Men and Women for Others, with Others" so that we can excel on the global stage.

Facts & Figures

(As of 2017)

* 9 undergraduate faculties with 29 departments
* 10 graduate schools with 25 programs
* Total Full-time Student Enrollment: 14,021
  12,575 Undergraduate 1,369 Graduate 77 Law School
* Number of International Students: 1,593
  1,067 Undergraduate 526 Graduate
  76 countries in total
* Faculty Staff : 1,486
  543 Full Time (22 countries) 943 Part Time
* Administrative Staff: 381

The Origin of Sophia

The origin of Sophia University can be traced back over 460 years, to the visit to Japan by the Jesuit missionary St. Francis Xavier in 1549. In letters to Rome, St. Xavier wrote about his hopes to found a university in the Japanese capital. In 1913, charged with the mission of fulfilling St. Francis Xavier's vision, three Jesuits from Germany, the United Kingdom and France, Fr. Dahlmann, Fr. Rockliff and Fr. Boucher, established Sophia University in Tokyo.