

Santha Sheela Nair  
Secretary(DWS), Government of India, New Delhi



Government of India  
Ministry of Rural Development  
Department of Drinking Water Supply

Possible Alternatives for Sustainable Sanitation and  
Safe drinking water supply in Islands with specific reference to  
Andaman & Nicobar Islands

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## 1.0 Background

With a potential of more than 8.7 lakh million cum of water harvesting within the country, the present situation of rural drinking water is mostly dependent on ground water as source. Both the quantity and quality of ground water getting impaired in many regions of the country (almost 20% blocks already under over-exploited/critical status), dependence on single source, be it groundwater or surface water has no calculations on the sustainability of reaching the demand of drinking water supply but also inefficient in meeting emergency/calamity needs.

In order to address the emerging situations, the Department of Drinking Water Supply, Government of India is undergoing a paradigm shift in its focus from mere coverage of habitations to **universal access to rural people with sustained and safe drinking water supply and access to improved sanitation to all.**

Accordingly, a Central Team was constituted lead by D.Rajasekhar, Asst. Advisor (WQ), Dept. of DWS, MoRD, New Delhi and pooling experts from various research institutions, universities and non-governmental organizations to prepare a Strategy Paper on supply of safe water on a sustainable basis and establishing individual and environment friendly

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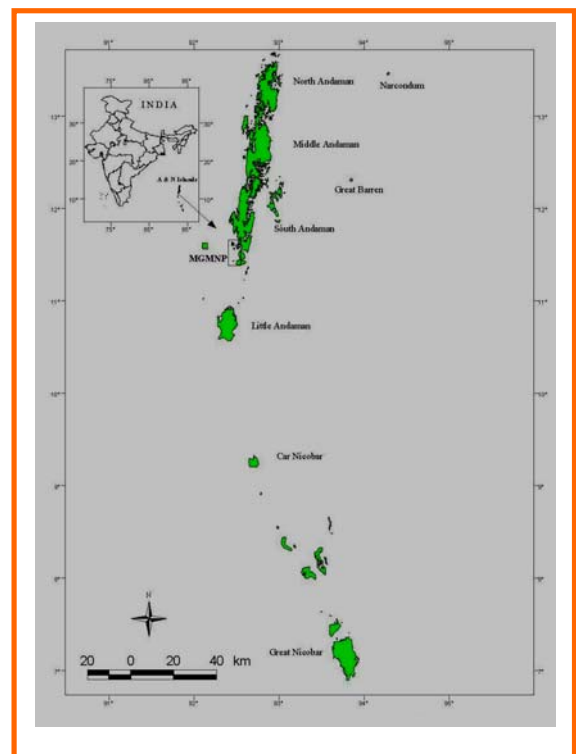
sanitation in the Union Territory of Andaman & Nicobar Islands. The expert members of the Central Team were as below :

- 1) Dirk Walther, CIM expert ,Anna University, Chennai
- 2) Dr. D.Muralidharan, Scientist, NGRI, Hyderabad
- 3) Dr Subramaniam, Scientist, NRSA, Hyderabad
- 4) M.Subbaraman, ECOSAN Expert, SCOPE, Trichy and
- 5) Dr N.Varadaraj, Regional Director, CGWB, Chennai

The Team visited A&N islands during 14-17 January 2009. Report of the Central Team is being prepared with available information from APWD, CGWB, NRSA, IIRS and other resources.

## 2.0 About Andaman & Nicobar Islands

The Andaman and Nicobar Islands (A & N Islands) are situated as a dissected chain in an arcuate fashion oriented N-S in the Bay of Bengal off the Eastern Coast of India. These Islands are extended between 6° to 14 ° N latitude and 92° to 94° E longitude in between Myanmar and Sumatra (Indonesia) over a distance of 780 km. The northern and middle group of Islands forms the Mayabunder district and the souther part including little Andaman island called as Andaman district. The southern group of Islands below the 10° channel form the Nicobar district. The islands are located in an active tectonic zone with volcanic eruptions at known points and possibility of new tectonic impacts in future.



The urban population in Andaman and Nicobar Islands is 1,16,198 (2001 census) and rural population is 2,39,954. There are 501 inhabited islands with 547 census villages while 48 villages in 38 islands are not inhabited. Water deficiency could be possible in Port Blair, Havelock, Strait, Car

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Nicobar, Chowra and Campbell bay islands in the near future. There are number of traditional springs and gravity flow of water from streams used for domestic needs. The dug wells are common ground water structures while the bore wells are failure in general. Piped water supply from the Dhankhari dam for Port Blair town and adjoining satellite villages and augmentation plan for improving the storage to manage the droughts is under consideration by the A&N Islands Administration. Inter-Island transfer of surface water from Rutland to Andaman islands is also in the pipeline. Though the demand and supply position looks comfortable at present in many islands, the Integrated water resources management and conjunctive use of water by creation of multiple sources, augmentation of decentralized systems to the existing centralized water supply systems is the need of the hour for sustainability in coming years and also to meet emergent situations.

With annual rainfall exceeding 3,000mm, the scope of rainwater harvesting is excellent in A&N islands. However, in the atoll islands (like Car nicobar, etc.), the elevation difference between the groundwater table and mean sea level is minimal and therefore there should be cut-offs for pumping for quality as well as quantity (TDS), otherwise the cone of influence would favour seawater ingress to a great extent.

The hill islands like Andaman and Mayabunder have relatively greater potential for surface water storage. Even the existing sources like that of Baratng water supply scheme, the dependence is on one single stream. It is also understood that during summer, there is water shortage. Source sustainability can be improved by a series of gully plugs in the upstream of this source so that sub-surface water retention potential increases and also reduce the velocity of flow of water. However, siting appropriate locations using scientific database for rainwater harvesting as well as augmenting centralized systems with decentralized systems like dug-wells, Oorany, recharge pit, etc. will bring in sustainability to drinking water systems.

Located in the highly seismic zone, special care have to be taken for siting the water retaining structures and cross-check for its stability, include disaster manegment issues in case of any calamity.

Total Sanitation Campaign, the centrally sponsored scheme for rural sanitation is yet to take off in A&N islands. The Administration has been suggested to prepare TSC projects for all the 3 districts viz, Andaman, Mayabunder and Nicobar, get it approved by this Ministry so that adequate funds could be provided to the islands for improving the sanitation coverage and also ultimately curbing the bacteriological contamination of drinking water sources.

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### 3.0 Specific suggestions for improvement

The following suggestions could be useful in accomplishing the task of Sustainable Sanitation and Safe drinking water supply in A&N islands:-

Agenda-1 : To make A&N islands as the “Heaven” of the world by creating healthy conditions of eliminating open defecation practices and providing safe drinking water on demand projections, household-wise. Ecological sanitation, which not only closes the loop of pollution, but also provides opportunity to use environmental friendly fertilizers. Proper awareness generation and building capacities of local people is a must to make the programme a success.

Agenda-2 : To understand the definition of “Sustainability” from source, system, financial and social angles, without which, the basic concept of “Bruntland” could be distorted. To go in for RO plants, only as the last option as not only the cost of production of water is high but the spent-water has high amounts of TDS and could be detrimental to fragile eco-systems in A&N islands.

Agenda-3 : To understand the concept of sea water intrusion and restrict ourselves from over-exploitation especially from marine sedimentary group of Palaeocene to Oligocene age and Recent to Sub-Recent beach sand, mangrove clay, alluvium and coralline limestone formations.

Agenda-4 : To curb the devil of bacteriological contamination, which affects especially children, susceptible pregnant and lactating mothers.

Agenda-5 : To understand the importance of scientific database not only from engineering but also from chemistry, taxonomy, geology, hydrology, morphology and other sciences. Our Country has one of the unique scientific resources in the World and therefore, integrated management for sustainable drinking water systems could be properly planned.

Agenda-6 : Dependence on single source for water supply is risky, as the patterns of rainfall has been changing over the current few years. It is suggested to move towards augmenting decentralized water supply systems to every centralized water system so that the objective of sustainability of source is ensured and also address the climate change issues.

Agenda-7 : A&N Islands are blessed with more than 90% forest area, though distributed island-wise separately. However, it is seldom forgotten that A&N Islands are unfortunately placed on the high seismic risky zones and therefore, quantum of storage of surface water has to be technically

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studied before taking up any upgrdations/ implementation. It is possible to achieve Integrated Water Resource Management possible through active involvement of Forest Department.

Agenda-8 : It is time to develop new and renewable energy sources from tidal, solar, biological and wind energies to reduce the overall O&M cost of water supply systems, especially in the context of high cost of production of water in A&N islands, as DG sets are used for pumping.

Agenda-9 : Individual and community roof-water harevsting is an ideal decntralized system of providing safe drinking water. With 180 rainy-days in A&N islands, this is perfectly suitable. Great effort may therefore be required to take forward roof-water harvesting in a big way, which is otherwise, neglected. I would like to make special emphasis in this regard, as the cost of storage of rainwater is as low as Rs 2.50 to 4.00 per litre of water storage for ferrocement/ PVC tanks. In islands, this cost may be slightly higher, but, is a very reliable source of drinking water especially in A&N islands.

Agenda- 10 : It is the united power which would beacon healthy environment. All stakeholders including NGOs, VOs, Ex-servicemen, Teachers, Engineers, Technocrats, Beauracrats, politicians and all parts of our Indian citizens should be involved for this noble cause and my Department will extend all possible co-operation in this regard.

I am not able to attend the Workshop conducted by the Emanual Hospital Association because of certain unforeseen activities. But I am sure, all stakeholders will be brought in, for proper deliberations. I wish the Workshop all the best and I expect that the deliberations held during the Workshop would be sent to me, for taking further necessary action.

Jai Hind.

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