**ENVIRONMENTAL FLOWS DETAILED ASSESSMENT OF THE RIVERS OF THE**

**MAHANADI BASIN**

**ABSTRACT**

 Environmental flow (EF) is referred as the amount of water regarded as sufficient for shielding or maintaining the construction & function of an ecosystem and its dependent species. River systems attain zero flow due to construction of water Retaining Structures, Hydropower generating Structures, construction of bridges etc. which possess a tremendous and huge threat to the environment, ecology & aquatic life of the river systems. Thus, Environment Flow assessment is done in order to analyse and infer the natural flow regime of the river which is required to be in existence for the sustainability of the ecosystem. In the present work, we are going to assess the Environmental Flow of the Mahanadi River Basin based on the Tennant method, RVA (Range of Variability Analysis), Flow Duration curve (FDC) & Flow Indices method (i.e 7Q10, 7Q2 etc), FDC shift and Spatial Interpolation method (applied on FDC). Tennant (or Montana) method utilizes a percentage of the average annual Flow (MAF) for two separate six month periods to classify the various circumstances of flow, whereas RVA uses IHA (Indicators of hydrologic Alterations) applications, to determine low flow, high flow, maximum high flow etc. Flow Indices (Q95, Q90 etc.) and the 7Q10, 7Q2 methods are computed with which the different low discharges are determined for the eight stations covering the whole Mahanadi river basin. Environmental Management classes are categorised here such that by shifting the FDC for each and every station, the flow can be analysed from the extreme modified (very poor) flow to the high flow. Spatial Interpolation method using the Flow-Duration curve computes the discharge of the destination station using the value of the source station. The Low discharge and the High discharge for the eight individual stations are computed for the various seasons to maintain an unrestricted flow over the entire river basin, ensuring that the balance of the river ecosystem is highly maintained. Our main focus is to maintain the Environmental Flow with a very small percentage of mean annual flow, which would serve our each and every purpose, ranging from aquatic life to the water quality of the river