

## THESIS INFORMATION

- The Doctoral Dissertation: **RESEARCH SUSTAINABLE MANAGEMENT OF WATER RESOURCES UNDER CLIMATE CHANGE CONDITIONS FOR BA RIVER BASIN**
- Field: **Water Resources Planning & Management**
- Field code: **62.62.30.01**
- PhD student: **Le Duc Thuong**
- Scientific Advisors:
  - + Assoc. Prof. Dr. Nguyen Thong – Ho Chi Minh City University of Technology
  - + Prof. Dr. Tran Thuc – Viet Nam Institute of Meteorology Hydrology and Climate change
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- Institution: **Ho Chi Minh City University of Technology – VNUHCM**

### 1/ **Abstract of the thesis:**

In order to contribute to the social and economic development as well as sustainable water resources development under climate change conditions in Ba river basin, it is necessary to carry out integrating climate changes in intergrated water resources management (IWRM) scientifically and systematically. Therefore, the thesis carried out doing research on scientific foundation to IWRM in Ba river basin including contents: (1) Analyze to determine problems in water resources exploitation and management as well as the effects of climate changes on water resources management in Ba river basin. Estimate the ability of water resources recession. Estimate the contradictions in water resources utilization and exploration on catchment area in detail. (2) Determine methods to calculate the water balance in Ba river basin. (3) Determine the climate change scenarios as well as basic methods to assess the fluctuation of water resources under climate changes conditions. (4) Determine methods to evaluate the vulnerability of water resources. (5) Build the process of mainstreaming climate changes

into sustainable water resources management. Basing on the scientific foundation the adaptation solutions to implement IWRM in Ba river basin were addressed and detailed assessed.. Moreover, the thesis mainstreams climate changes into water resources management as well as determines the tools to enhance sustainable water resources management efficiency in river basin.

## **2/ Objectives and tasks of the thesis:**

- Determine the science base for sustainable water resources management under climate change conditions in Ba river basin;
- Give solutions for sustainable water resources management under climate change conditions in Ba river basin.

## **3/ The research latitude of the thesis:**

- The research is carried out on Ba river basin in Gia Lai, Dak Lak and Phu Yen provinces.
- The thesis's object is deposit of water resources including: surface water, rain water and ground water. In those kinds of water resources, it focuses on surface water and rain water. It just evaluates the potential and the ability to exploit ground water due to the lack of numeral measurement.

## **4/ The new contributions of the thesis:**

There are new contributions in the thesis as following:

- The thesis identified the vulnerable index of water resources in Ba river basin, and then assessed the necessary of mainstreaming climate changes into IWRM in Ba river basin.
- The thesis analyzed and evaluated relatively completely the actual situation of water resources' development. It also identified the existing problems in water resources exploitation and management under pressures of population, social-economic development and global climate changes.

- The thesis Built the process of mainstreaming climate changes into IWRM in river basin. Basing on this process, the thesis draw out the adaptation solutions to implement IWRM in Ba river basin.

- The thesis gave solutions to enhance IWRM under climate change conditions such as: Building River Basin Organizations, solutions of water demand management, adjusting water resources planning strategy basing on mainstreaming adapting solutions.

### **5/ Scientific and practical meanings of the thesis:**

#### **Scientific meanings:**

Consulting the mainstreaming process of climate changes into development planning, the thesis built up the process mainstreaming of climate changes into IWRM in river basin and especially in Ba river basin. Calculate progress of water resources, vulnerability assessment and effect of climate changes to water resources in Ba river basin as well as solutions to solve conflict in using water resources. These things lead to the necessary to build up a model intergrated water resources management under under climate change conditions. This is scientific meaning and practice of this thesis. It is the most adequate result obtained from analyzing, calculating and evaluating water resources management.

#### **Practical meanings:**

It is highly practical to propose calculation tools for managers to evaluate water resources, distribute water resources, solve conflict in using and exploiting water resources as well as problems caused by climate changes.

The scientific result of this thesis contributes a lot to management, preservation and development of water resources. It is also the base for companies, provinces to make reference to plan strategies as well as plan for water resources management to serves their own modernization and industrialization.

It is highly practical to put the thesis's theories into practice with the sensitive and high risky area in making water recession as Ba river basin. It is possible to use this result

for other river basin, contributing to water resources development in specific as well as the economy and ecological system in general.

**Scientific Advisors**

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