



# Water Resources Management in Lijiang

## Summary

During the last 2-3 decades, the southwest part of China has experienced increasing drought events, which caused significant economic losses. Additionally, the rapid socio-economic and demographic developments result in additional challenges with respect to water resources management. The research at hand presents a case study in Lijiang Municipality addressing the challenges of water resources management in each town of Lijiang. The results give a detailed picture on the current and future water supply and demand situation of Lijiang, and indicate the needs for integrated water management measures. Thus, a solid basis is given to the local authorities for a sustainable decision making regarding water resources management in the future.

## Objective

- Give a clear picture on today's water supply situation
- Present today's water demand situation
- Set up a water allocation model (WAM) to analyze the water balance
- Assess future socioeconomic and demographic developments and other trends

## Approach

The Water Evaluation and Planning (WEAP) model is applied to evaluate and analyze the current water balance (2011-2015) and examine consequences of future developments (till 2030) on water demand. A combination of WEAP and RS (Routing System) model is used to simulate rainfall-runoff as well as flow routing according to a semi-distributed conceptual scheme.



## Results and Outcomes

### Water Balance

Agriculture accounting for 83% of the total water demand is the main water user of Lijiang. Due to limited supply capacity, the water deficit consists of 37% of the total water demand, mostly in the agricultural sector (31%).

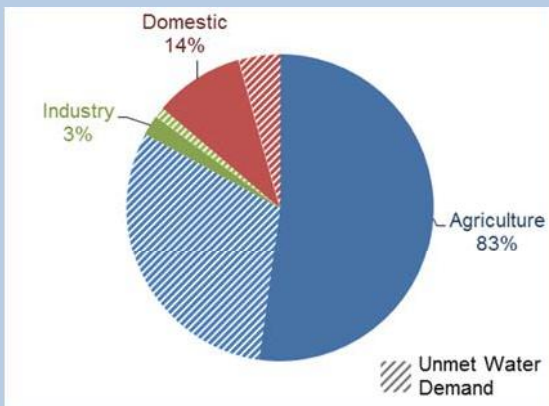


Fig.1: Total, unmet water demand and actual consumption per sector

### Spatial Distribution of Water Demand

The spatial variation of water demand is large, ranging from 0.3 to 64 million m<sup>3</sup>per town. The water demand of Yongsheng County accounts for 40% of the total water demand of Lijiang, due to the dominant agriculture sector in this County.

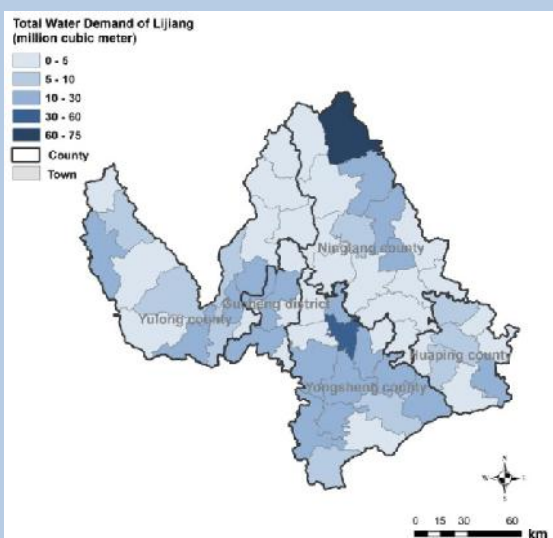


Fig.2: Map of total water demand

### Unmet Water Demand

The unmet water demand shown in Fig.3 considering actual supply capacity in 2011, is almost two times of the unmet water demand if only considering available water resources, which indicates limitation of water supply capacity. The largest unmet demand is in Sanchuang Town, Yongsheng County.

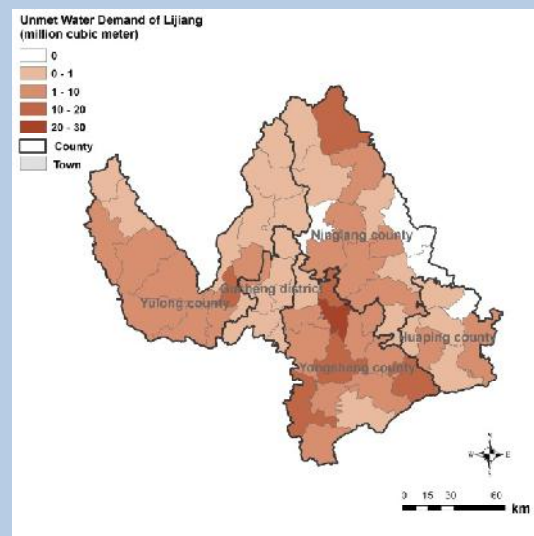


Fig.3: Map of unmet water demand

### Future trends

Exemplary for future trends Fig.4 shows the population development. The population will continue to steadily grow from 1.25 million today up to almost 1.6 million until 2030 to 2040 and thereafter decrease more or less distinctly towards the end of the 21<sup>st</sup> century depending on having an optimistic or pessimistic view.

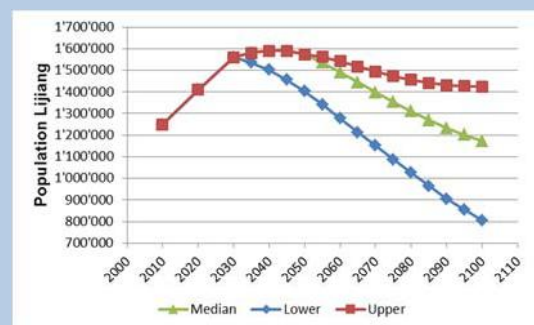


Fig.4: Population development of Lijiang