

*East Asia Sea Congress –The Science of Ecosystem Based Management  
Manila, 25 November 2009*

**SOCIAL-ECOLOGICAL CONNECTIVITY AND ADAPTABILITY OF  
RIVER-COASTAL STREAM IN THE CONTEXT OF ICM :  
*The Case of Siak River Basin, Indonesia***



**Luky Adrianto**



**Center for Coastal and Marine Resources Studies  
Bogor Agricultural University**



# OUTLINE

- Introduction
- Social-Ecological System of River-Coastal Stream
- Social-Ecological Adaptability of River-Coastal Stream :  
The Case Study of Siak River-Coastal Stream
- Concluding Remarks



# INTRODUCTION

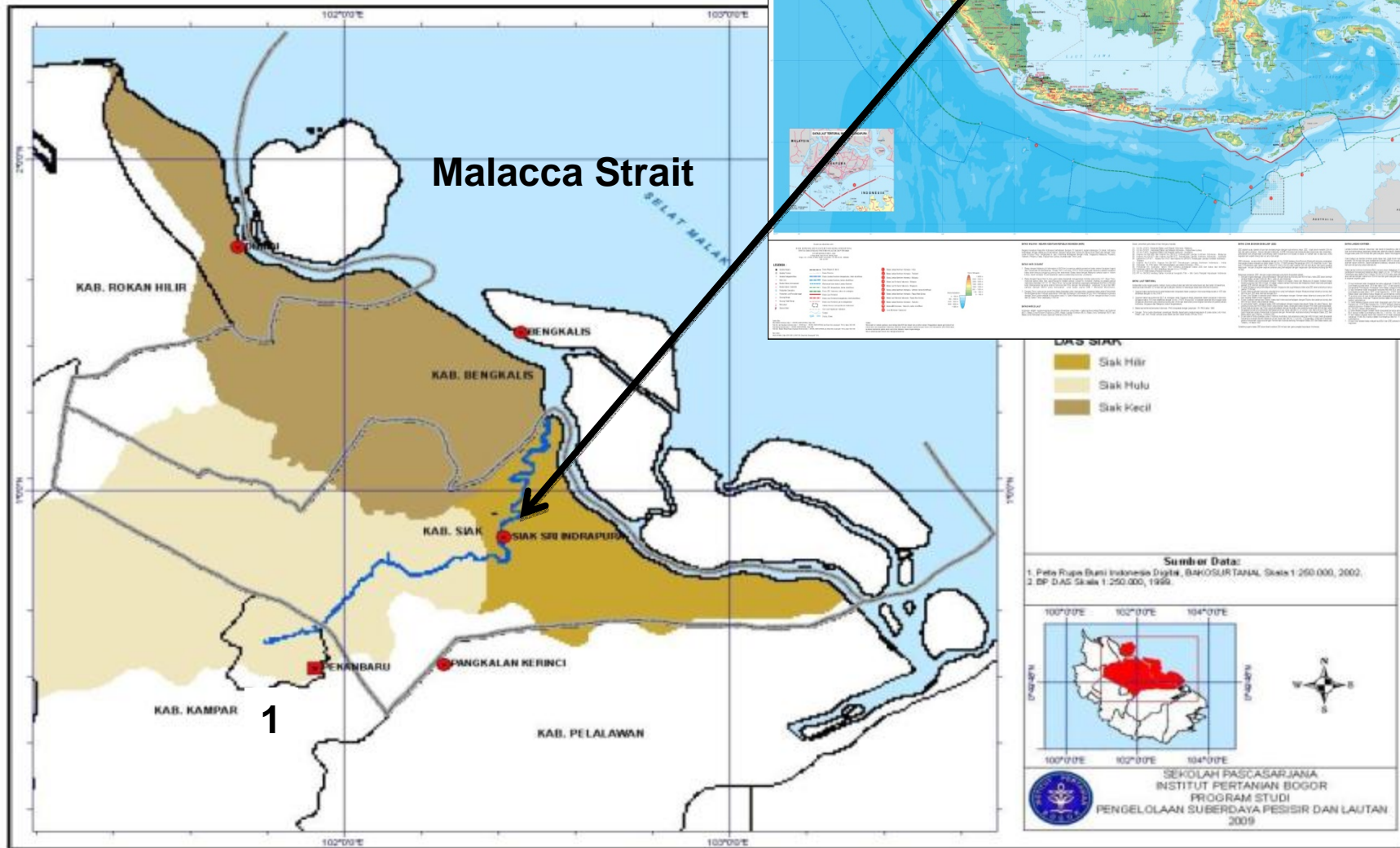
- Siak River-Coastal Stream is one of the longest aquatic stream in Sumatera, along more than 400 km
- The system involves 5 districts in Riau Province
- The system has been deteriorating due to partial policies and anthropogenic reasons.



**Need changes**



# THE LOCATION

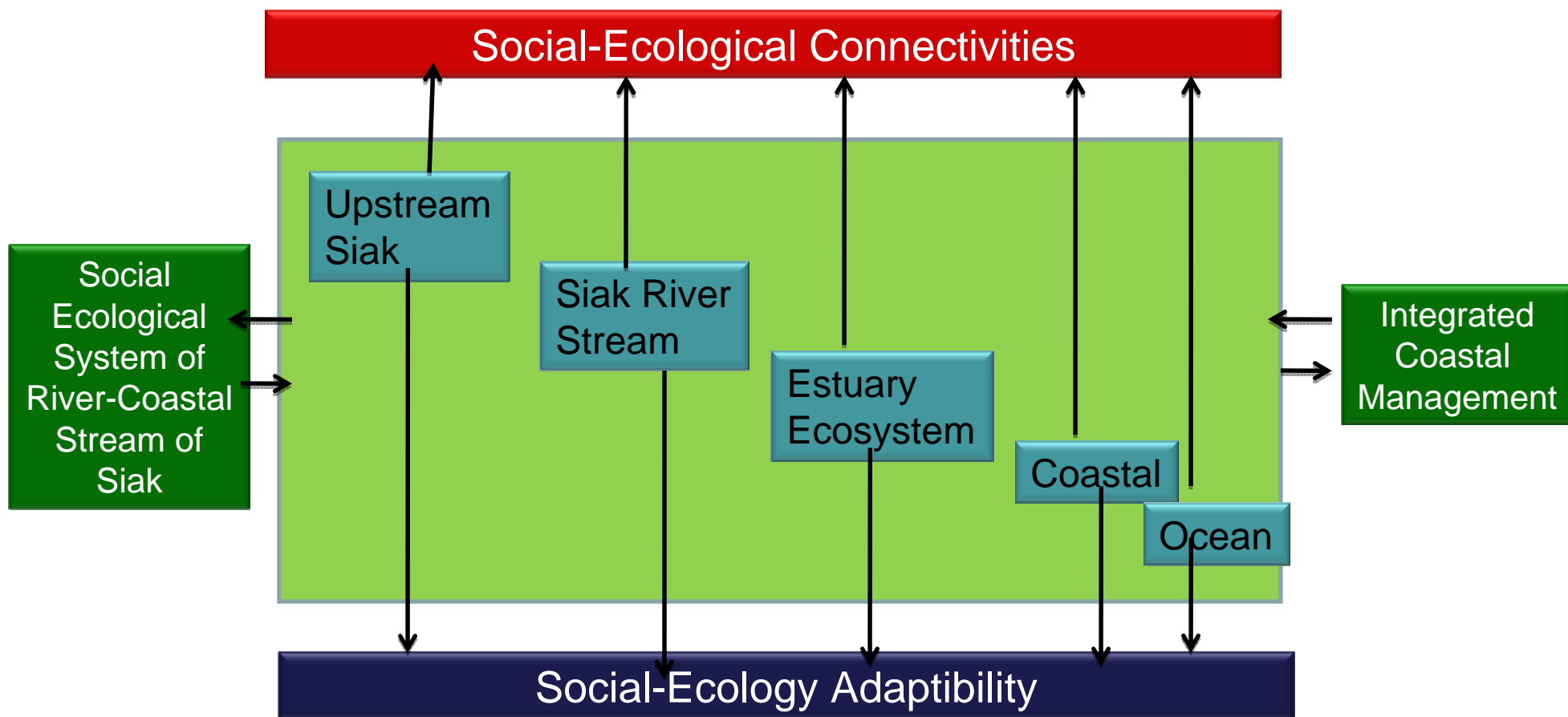


# THE OBJECTIVES

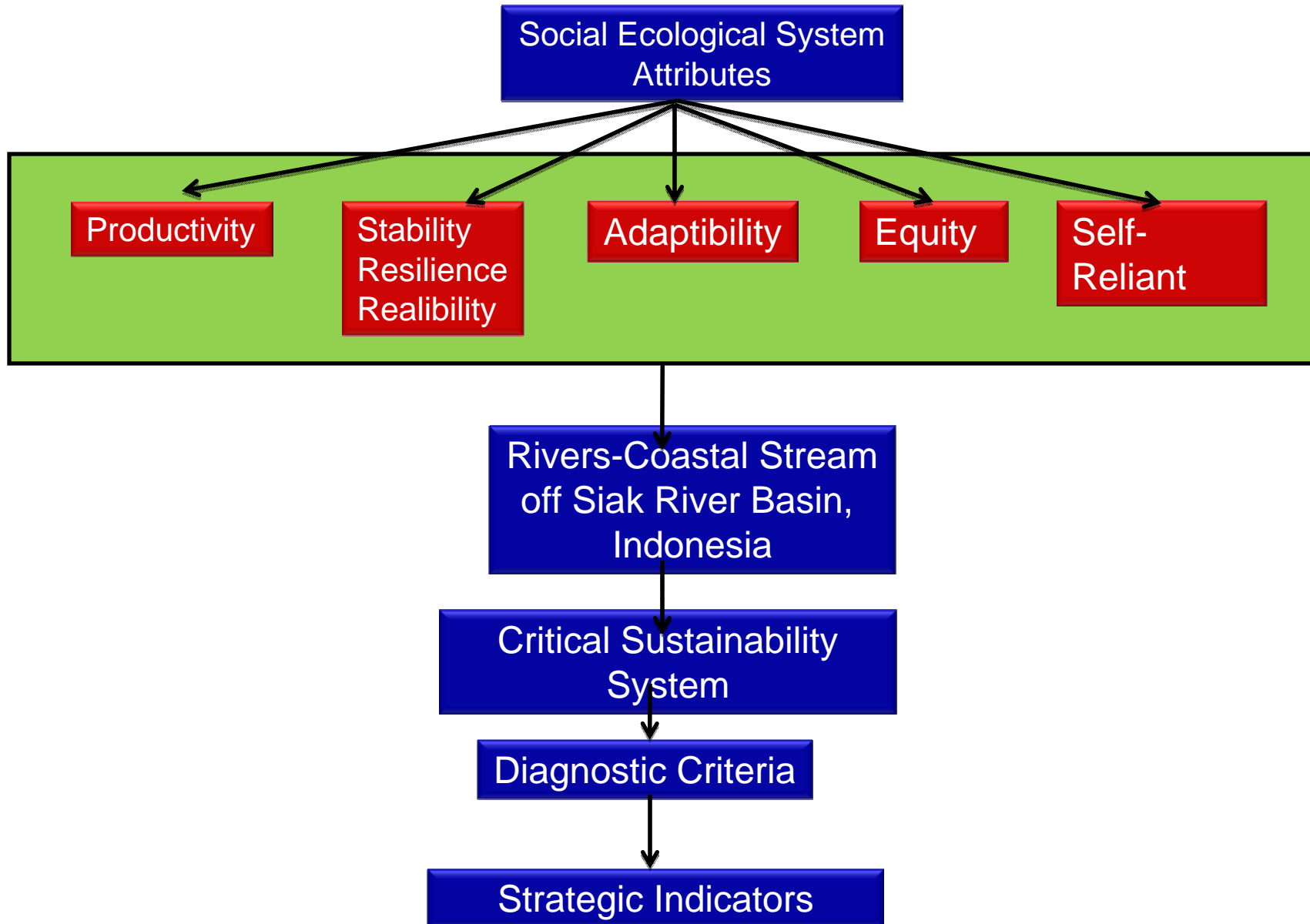
- Identifying social-ecological connectivity of river-coastal stream of Siak River Basin.
- Identifying adaptation of social-ecological system in the river-coastal stream of Siak River Basin
- Understanding the need of integration scheme for the management of river-coastal stream of Siak River Basin



# FRAMEWORK OF THINKING



# INDICATOR DEVELOPMENT APPROACH



# CONCEPT AND DEFINITION

**A social-ecological system (SES)** is a ... system of biological unit/ecosystem unit linked with and affected by one or more social systems (Anderies et al. 2004)

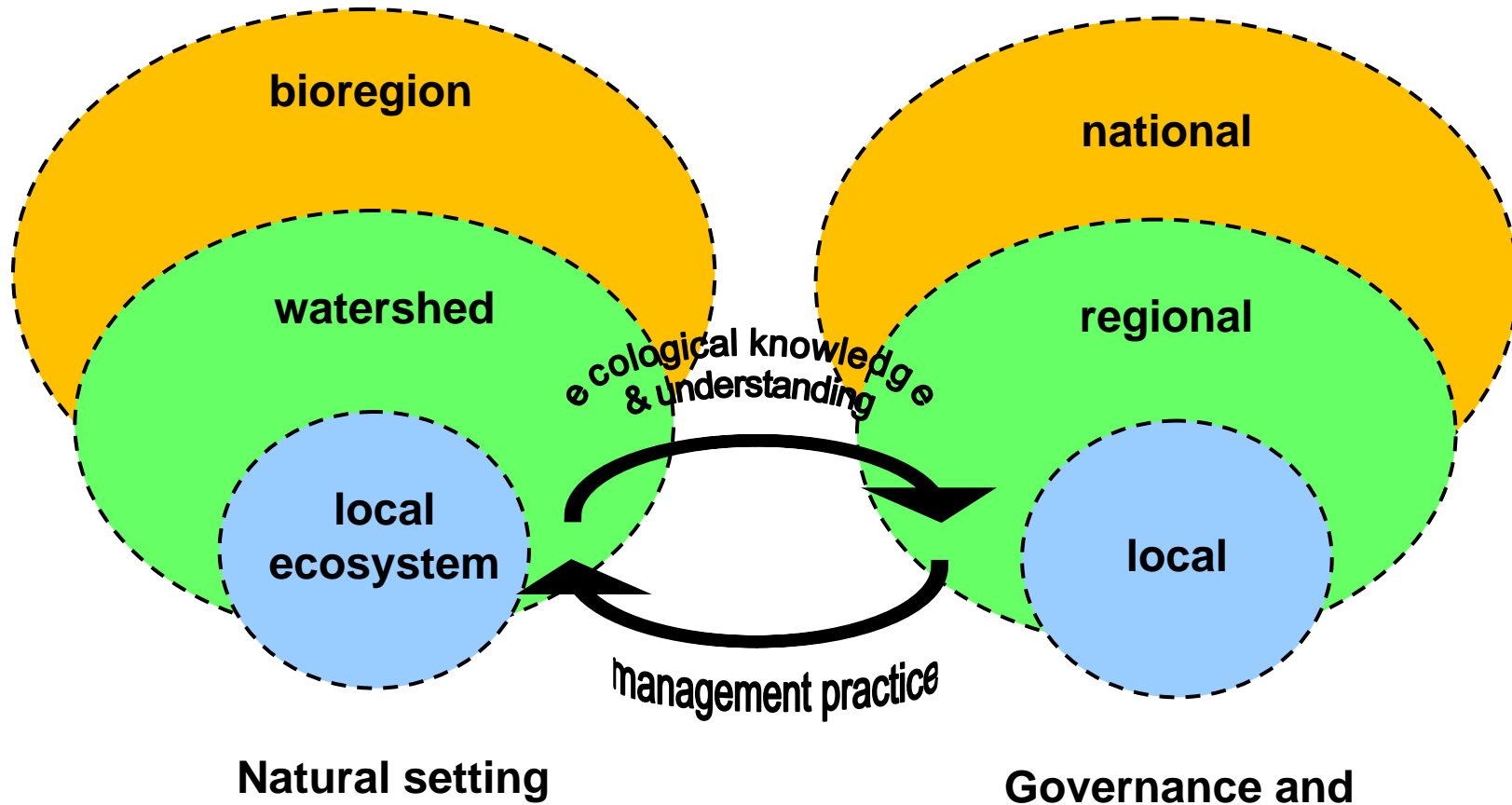
e.g. Coastal zone, mangroves, lakes, coral reefs, beach, upwelling system, coastal-rivers system and the associated social actors, structures and processes



# ECOSYSTEM BASED MANAGEMENT

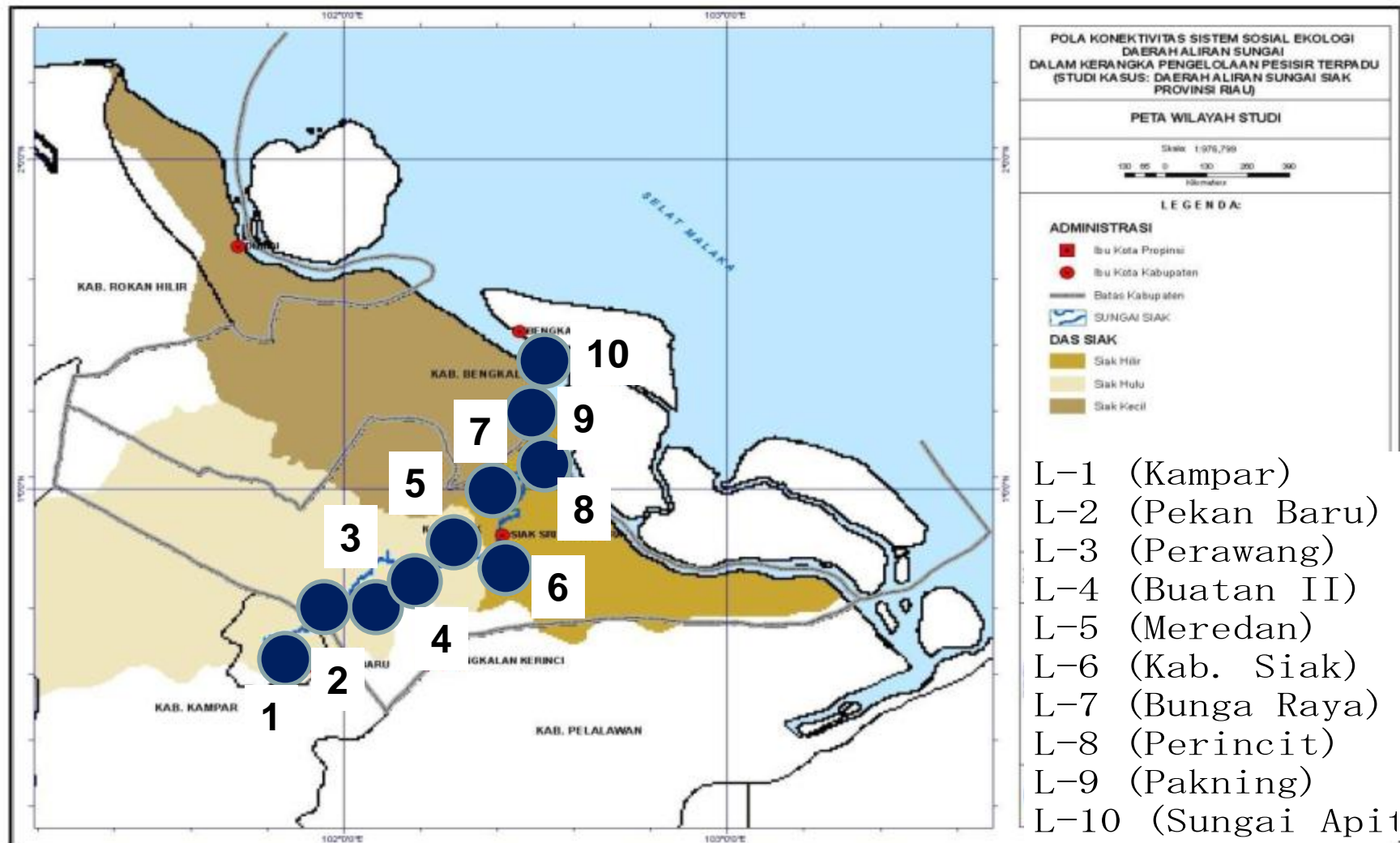


# SOCIAL-ECOLOGICAL SYSTEM

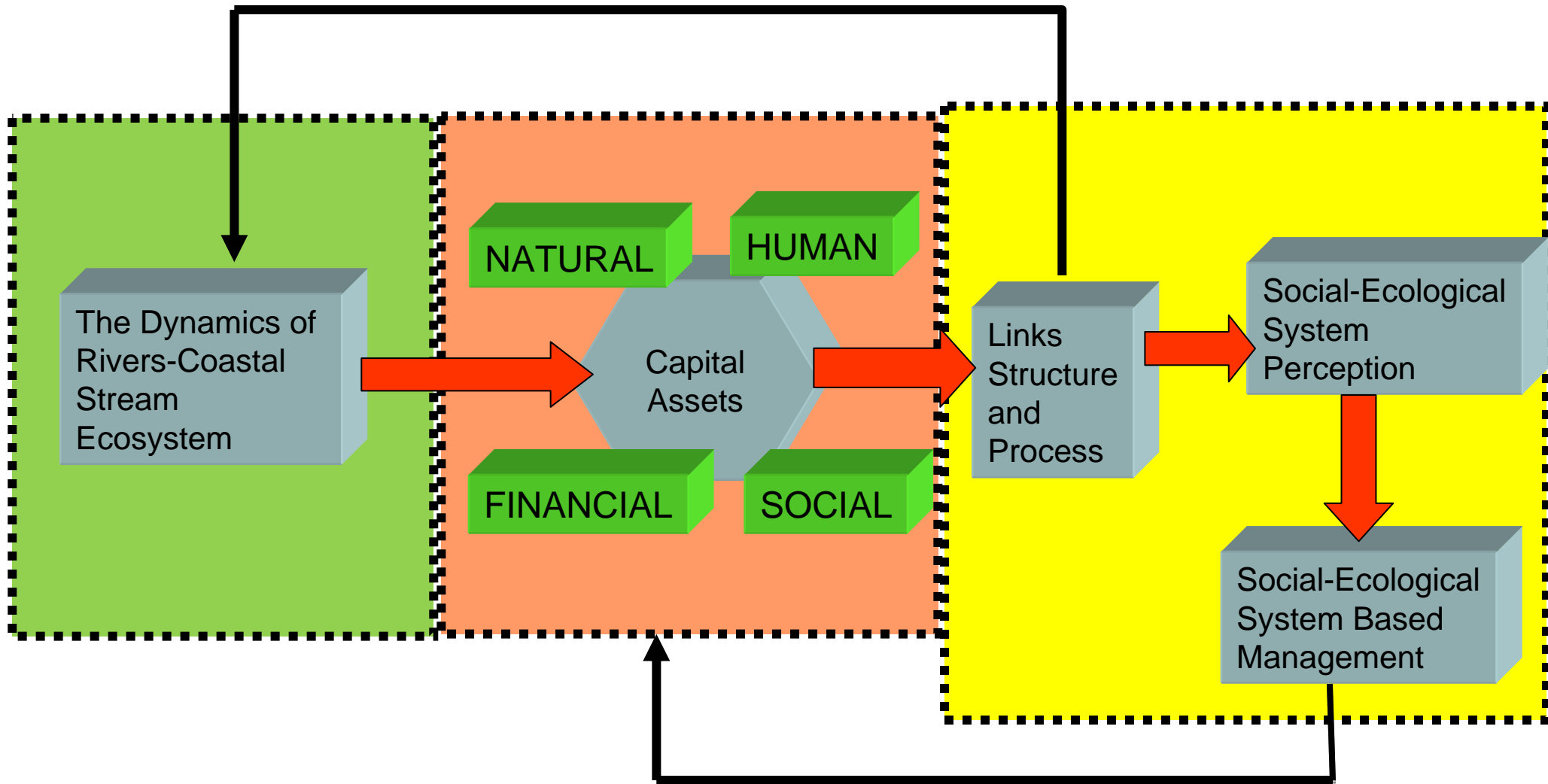


Source : adapted from Glaser (2008)

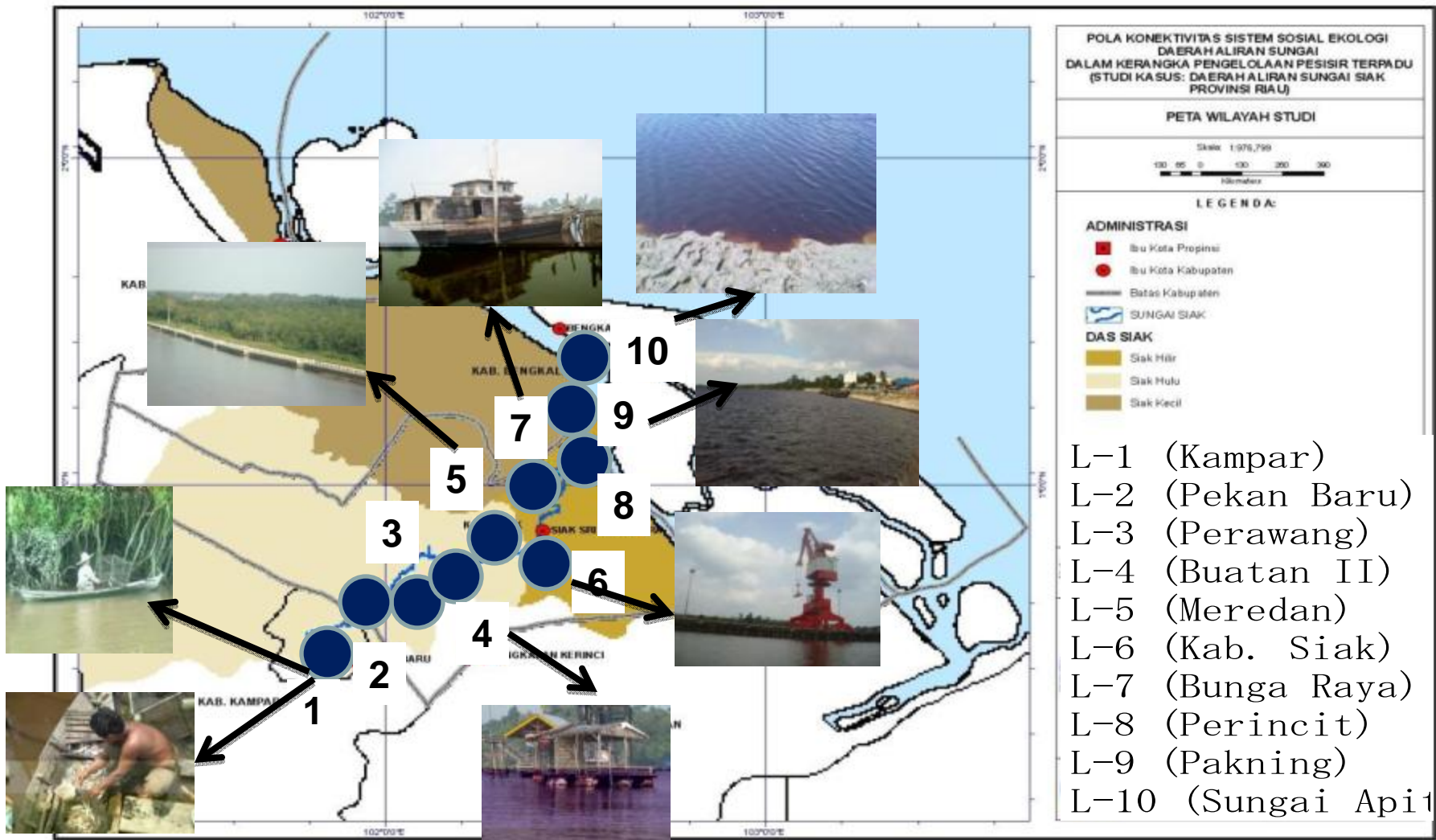
# THE SES SAMPLING SITES



# ANALYSIS FRAMEWORK



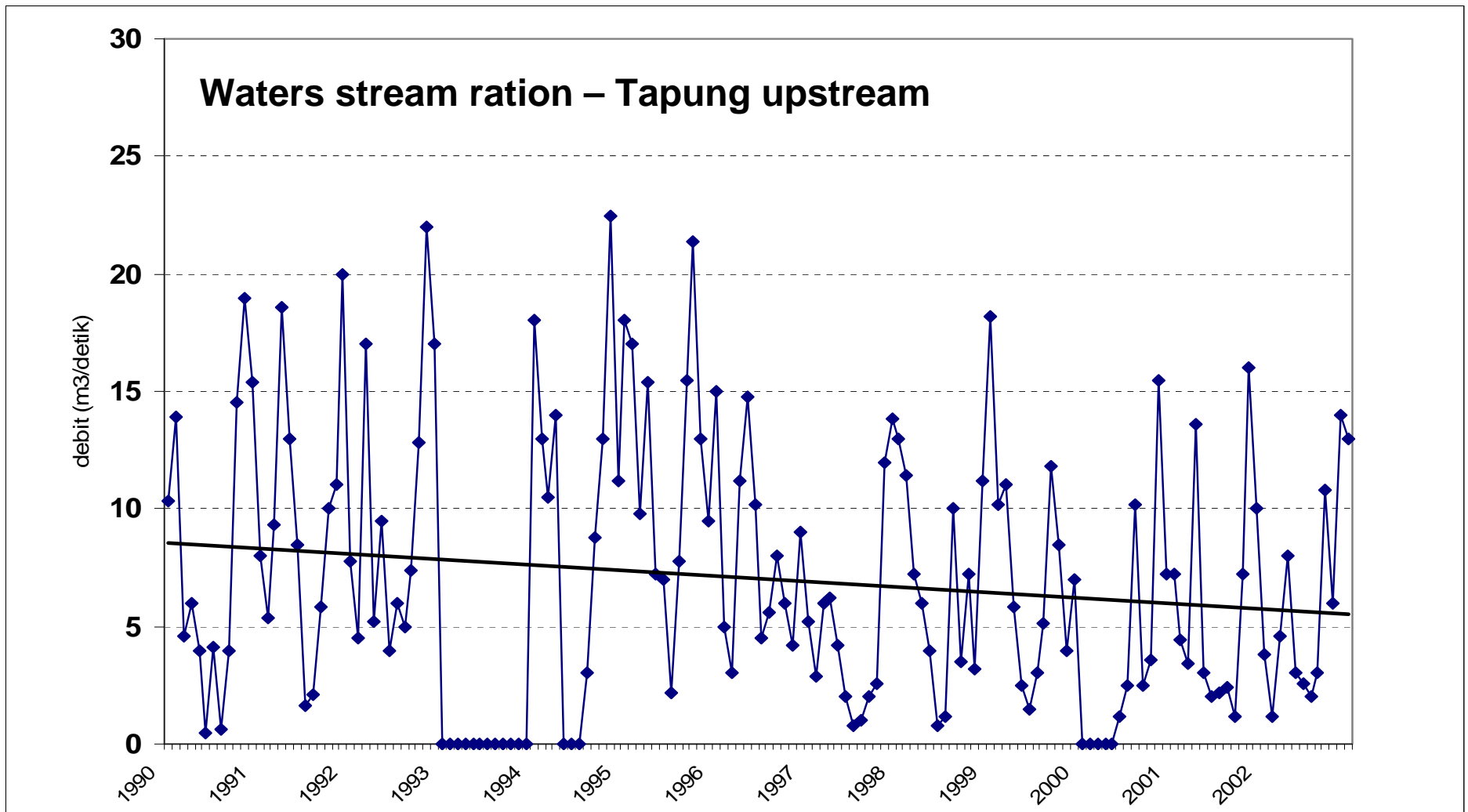
# SOCIAL-ECOLOGICAL SYSTEM OF RIVER-COASTAL STREAM



# SOCIAL-ECOLOGICAL STREAM

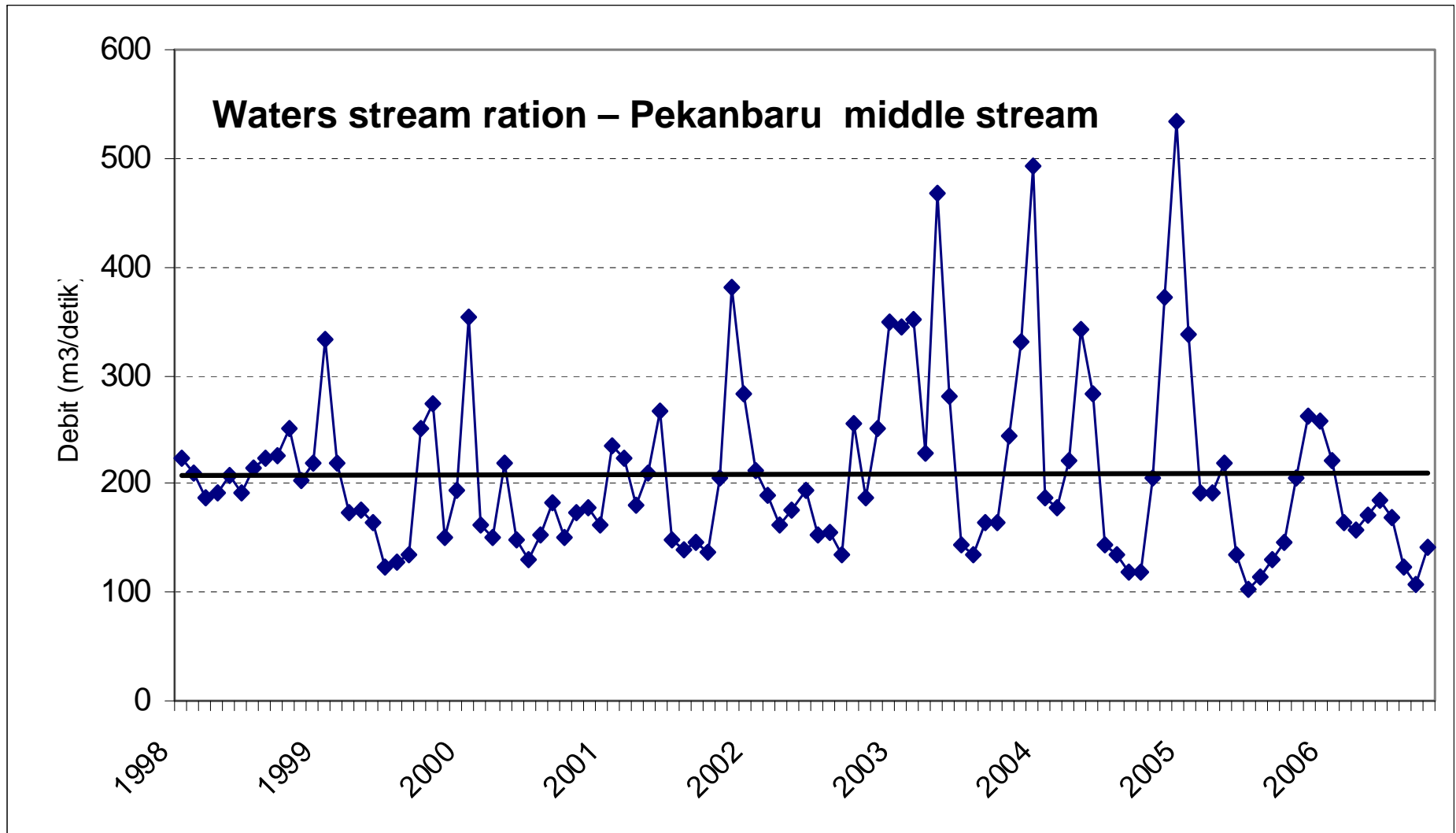


# SOCIAL-ECOLOGICAL SYSTEM OF RIVER-COASTAL STREAM



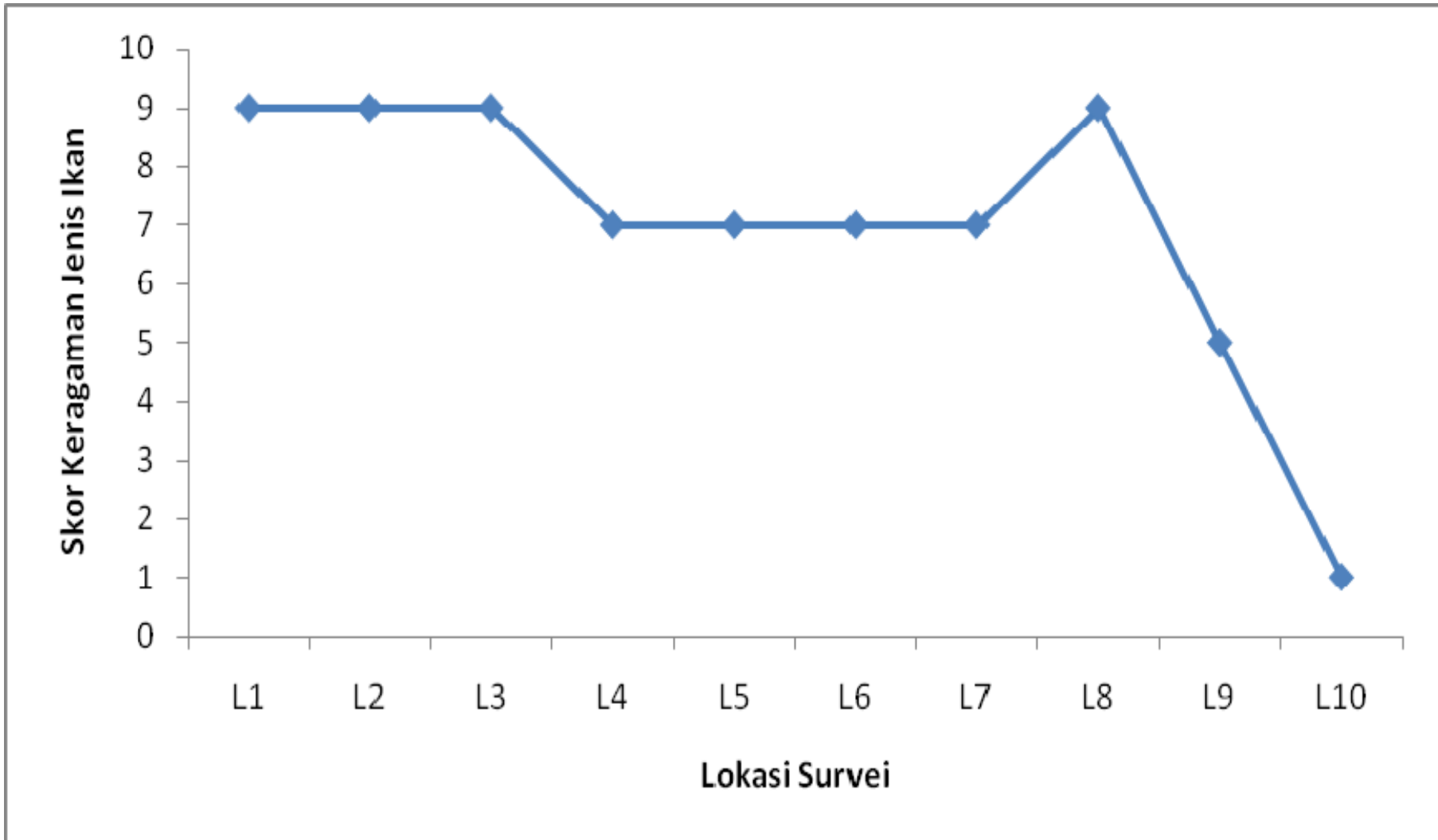
Source : BPPT (2008)

# SOCIAL-ECOLOGICAL SYSTEM OF RIVER-COASTAL STREAM



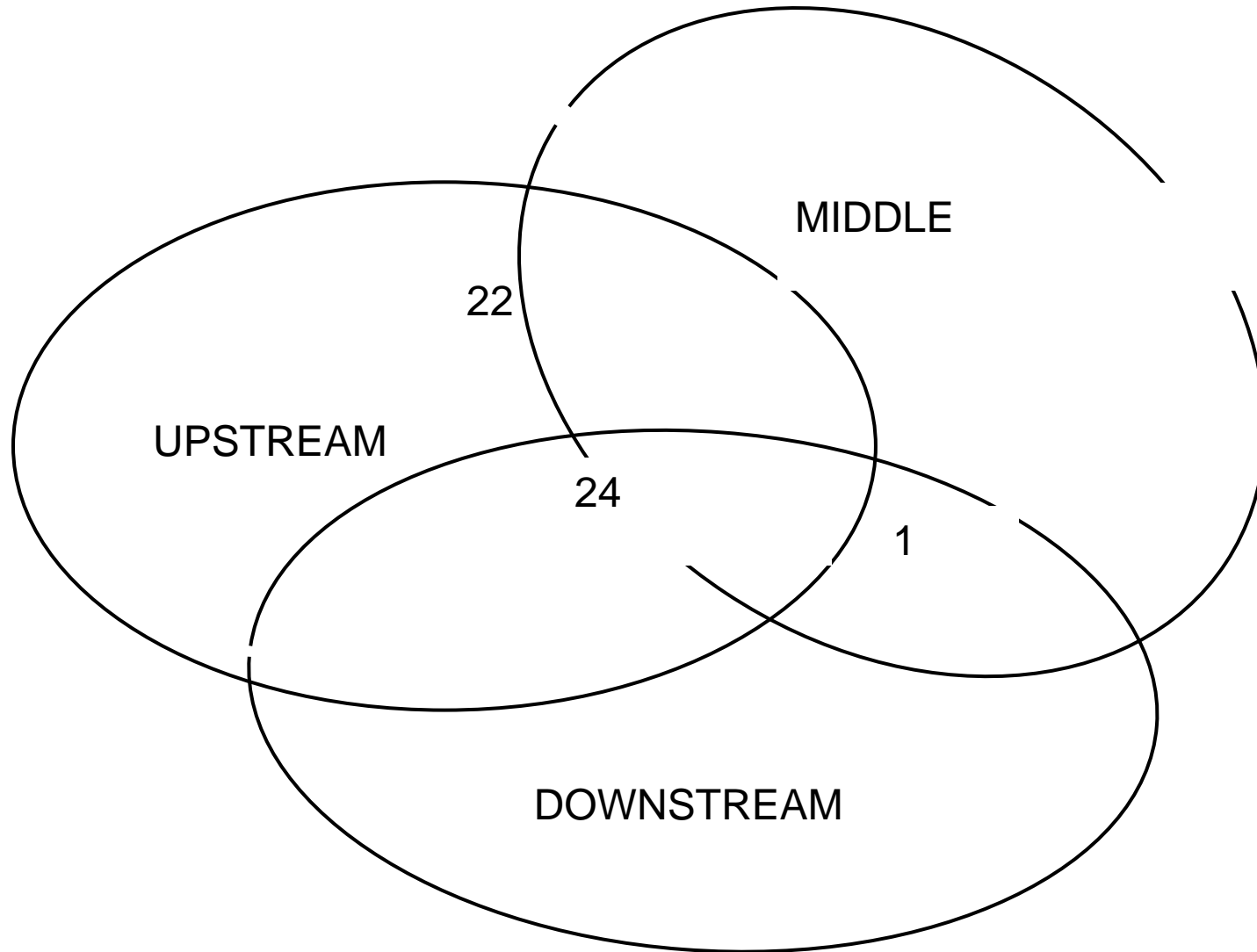
Source : BPPT (2008)

# DYNAMIC OF SOCIAL-ECOLOGICAL ADAPTABILITY



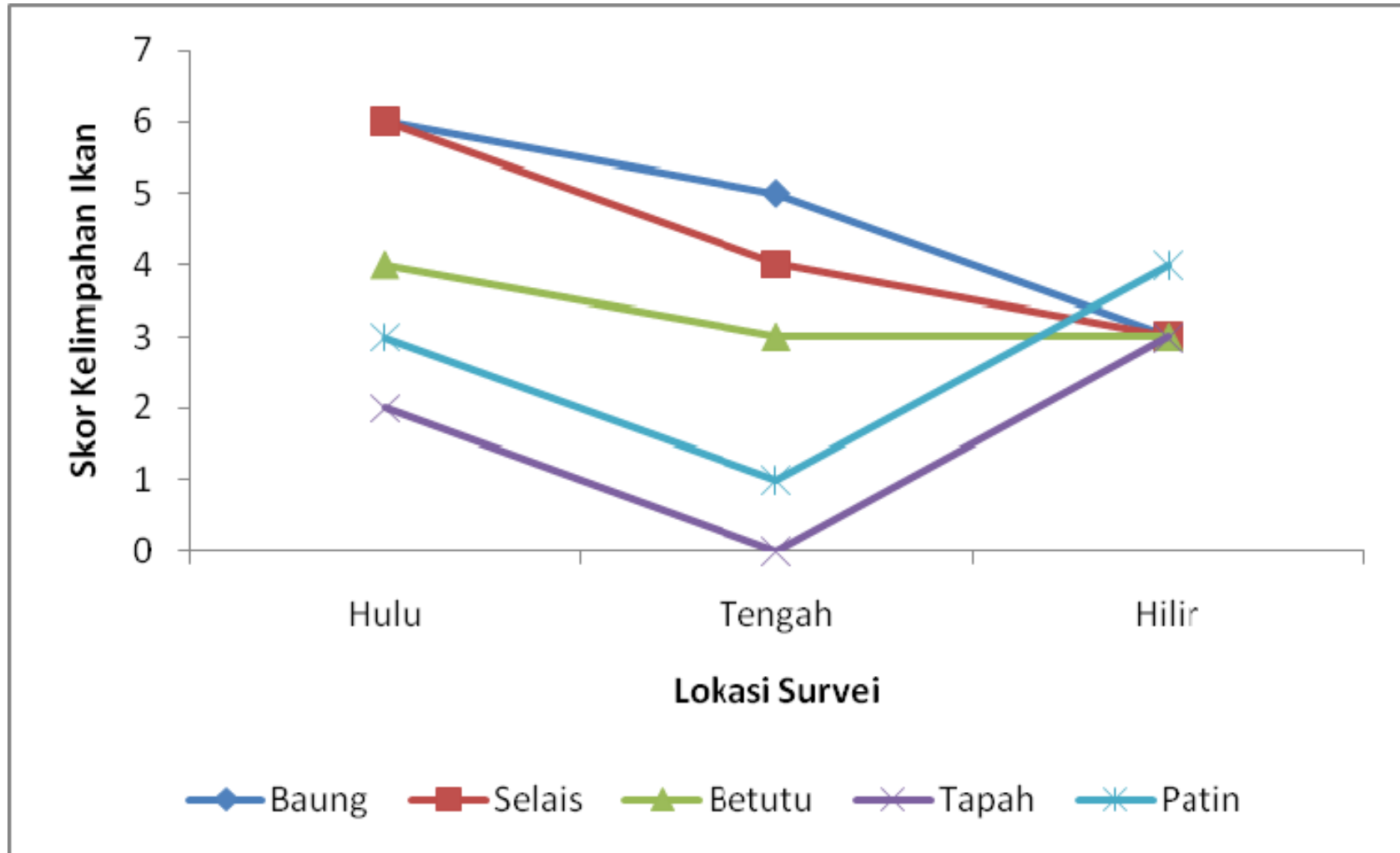
Index of Fish Diversity Along River-Coastal Stream

# DYNAMIC OF SOCIAL-ECOLOGICAL ADAPTABILITY



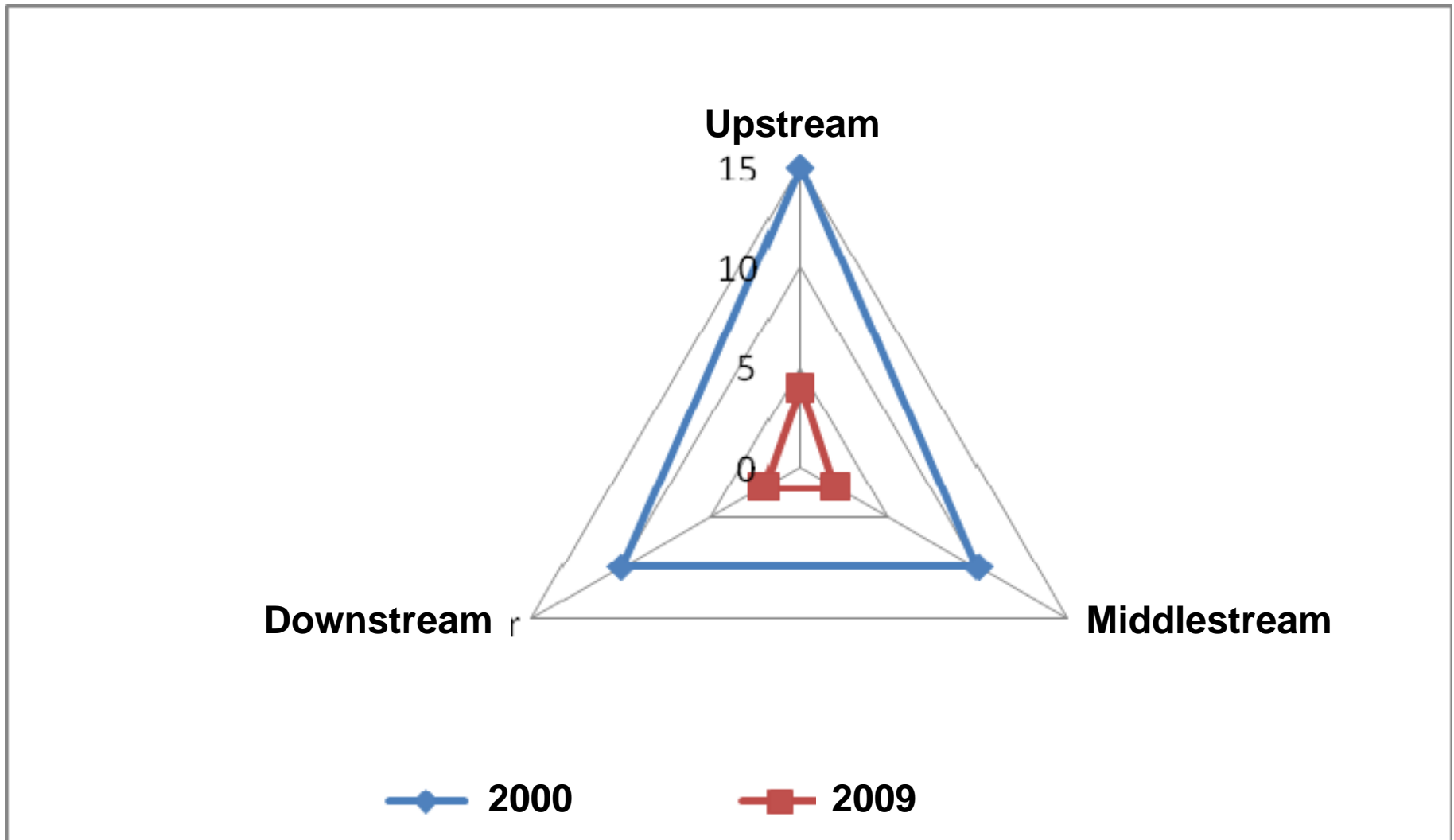
Index of Fish Species Number Along River-Coastal Stream

# DYNAMIC OF SOCIAL-ECOLOGICAL ADAPTABILITY



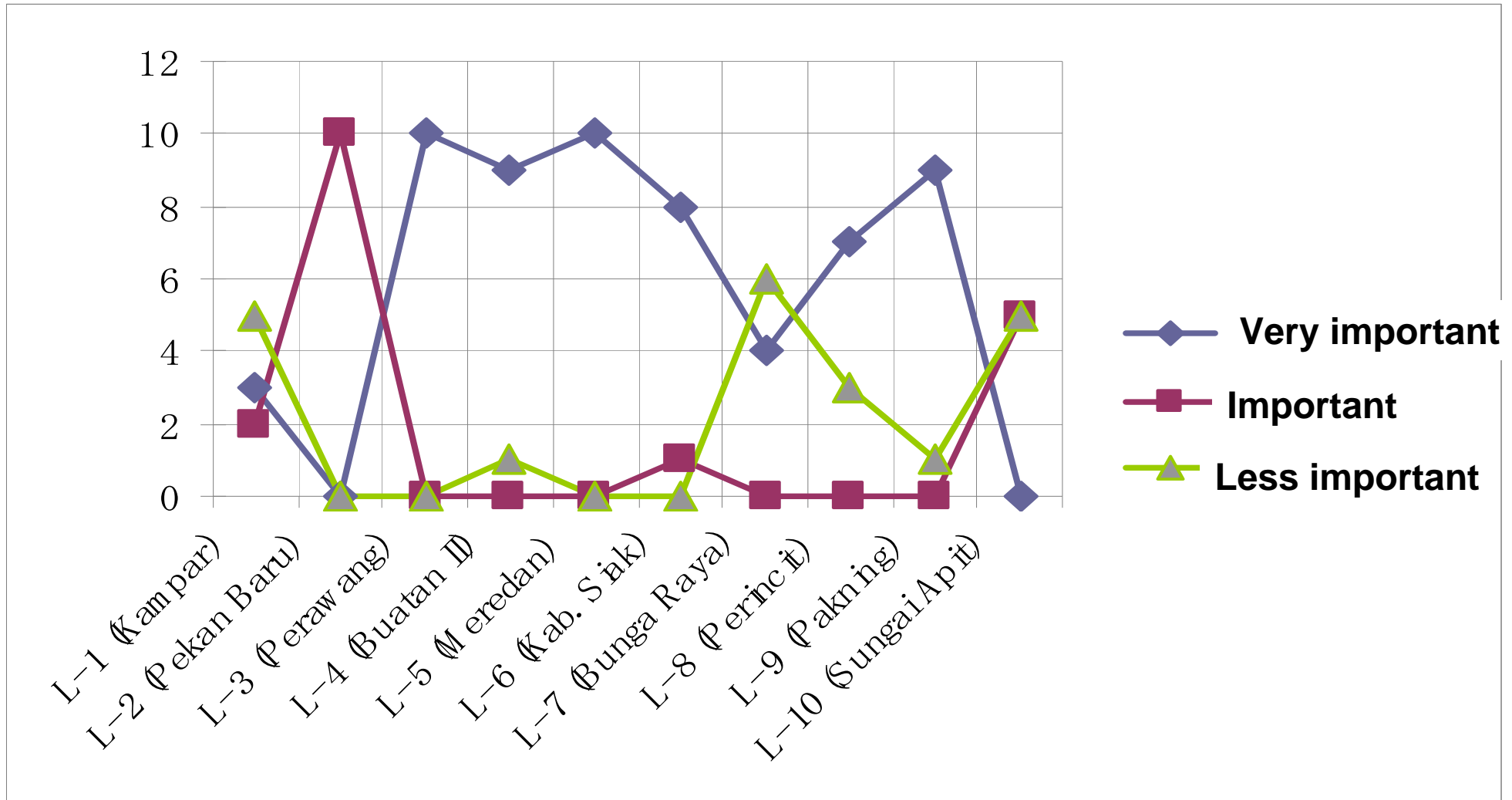
Index of Fish Target Along River-Coastal Stream

# DYNAMIC OF SOCIAL-ECOLOGICAL ADAPTABILITY



Trend Catch Rate of Fish

# DYNAMIC OF SOCIAL-ECOLOGICAL ADAPTABILITY



Index of Perception of Resources

# CONCLUDING REMARKS

- Dynamic pattern of social-ecological connectivity and adaptability is likely influenced by the dynamics of resources degradation from upstream to downstream
- Adaptability pattern of fisheries-related livelihood is dominated to plantation and micro-industrial related livelihood
- Adaptation of community is considered high, meaning that resilience of community to resources degradation would be very essential to be maintained
- Refining river-coastal stream ecosystem should be considered using integrated approach (*Integrated Coastal Management*) for Siak Wetland Ecosystem

**TERIMAKASIH**  
**THANK YOU**

