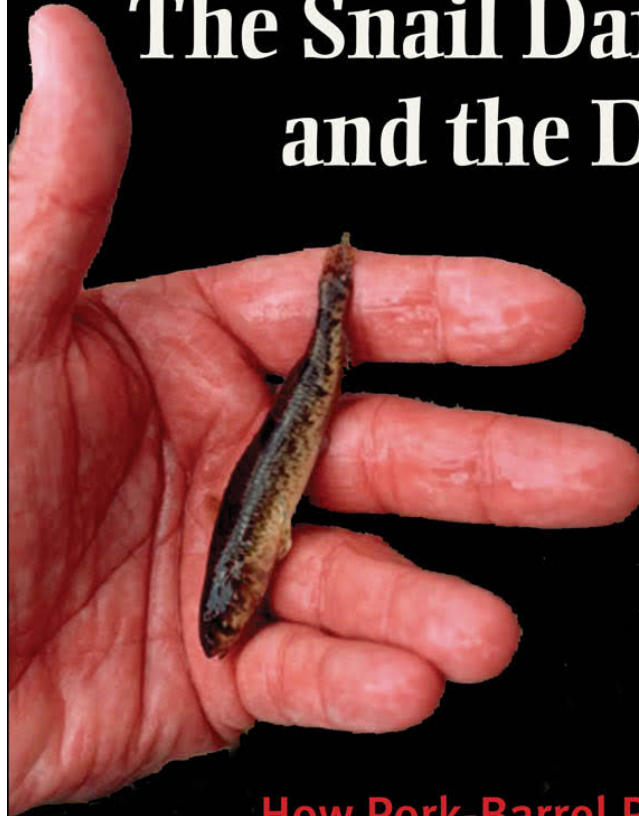


ZYGMUNT J. B. PLATER

The Snail Darter and the Dam



How Pork-Barrel Politics
Endangered a Little Fish and
Killed a River

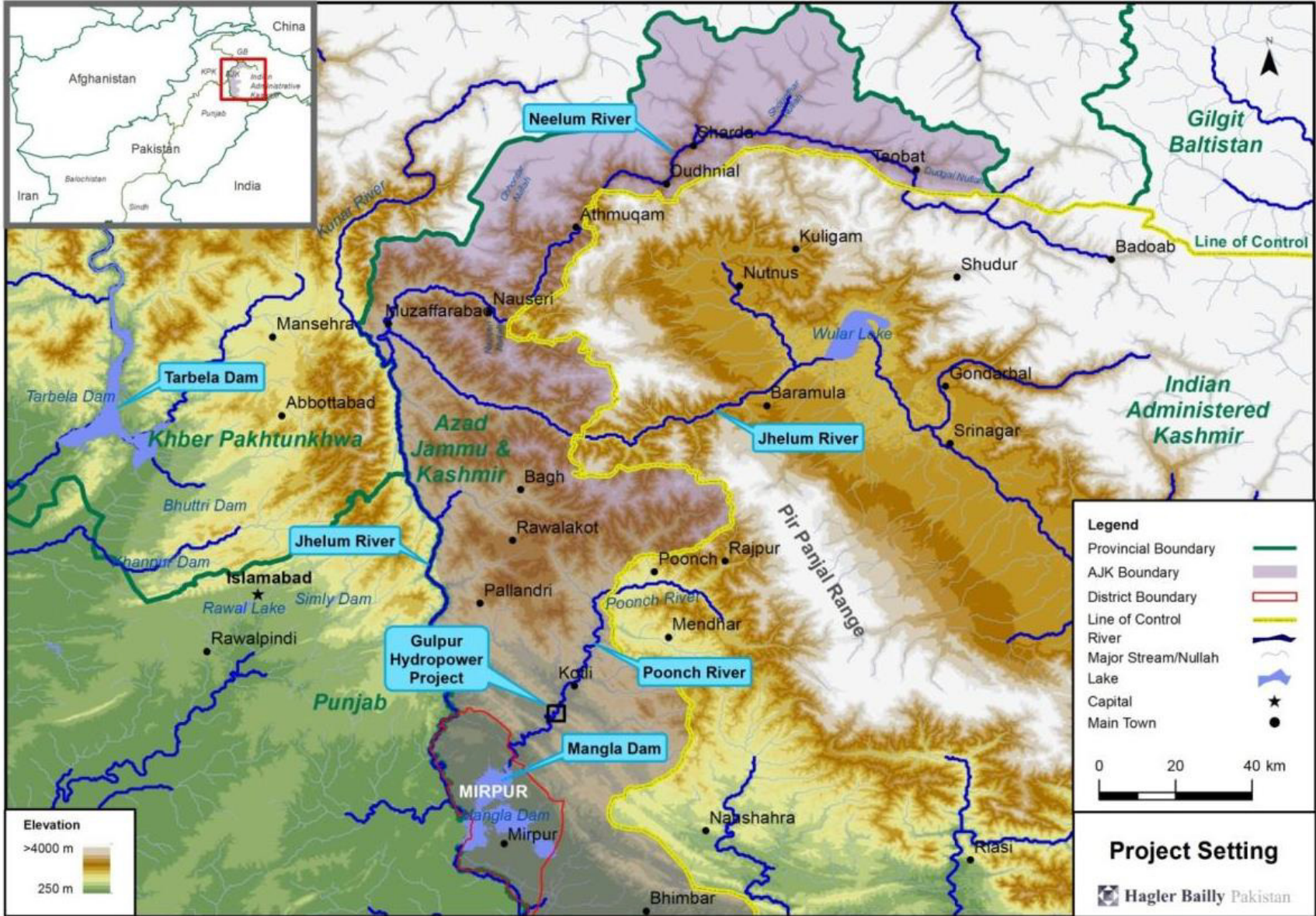


The Kashmir Catfish and the Dam

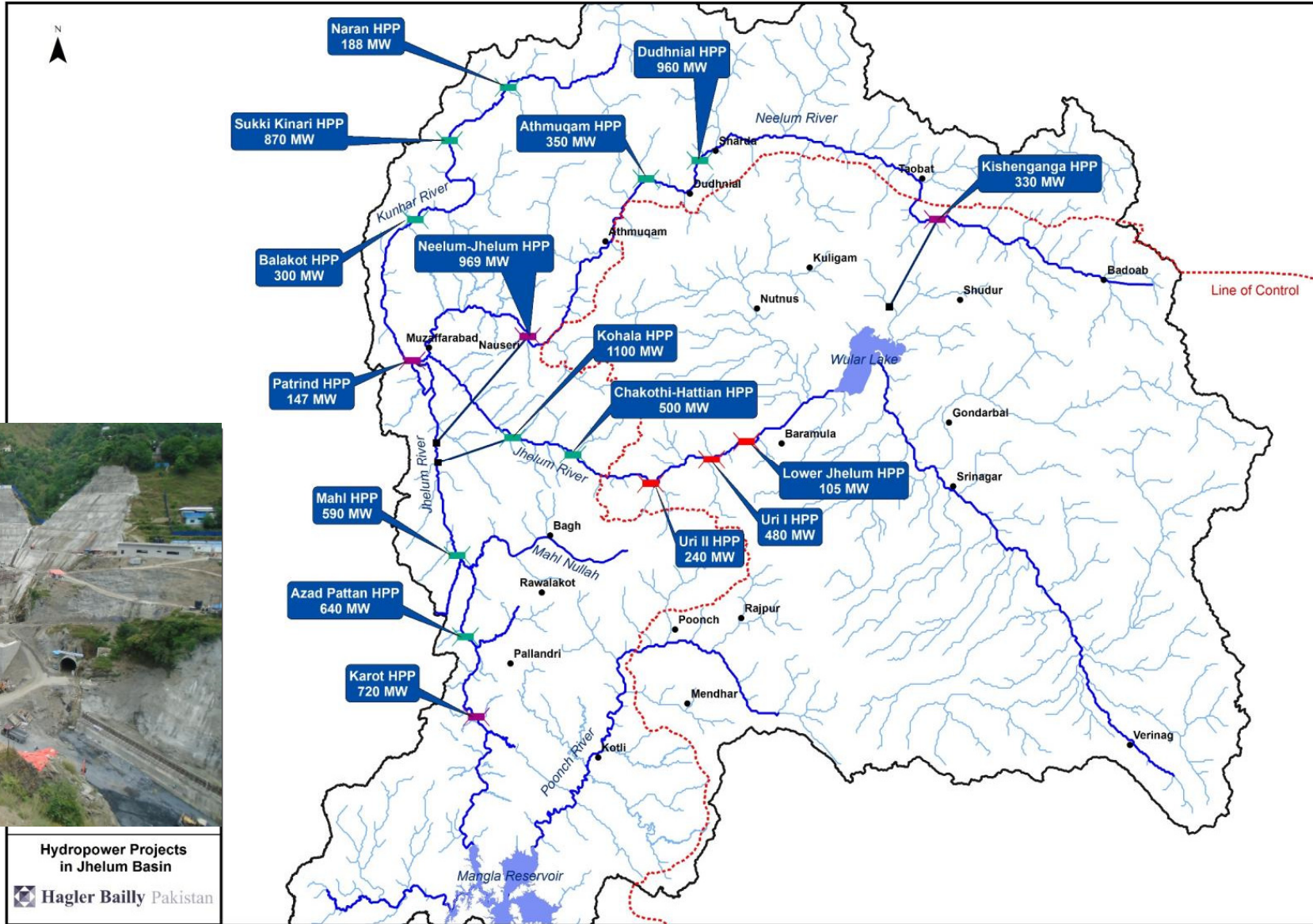
Hassan Bukhari

December 3, 2016

13th Annual Fulbright and Humphrey Alumni Conference



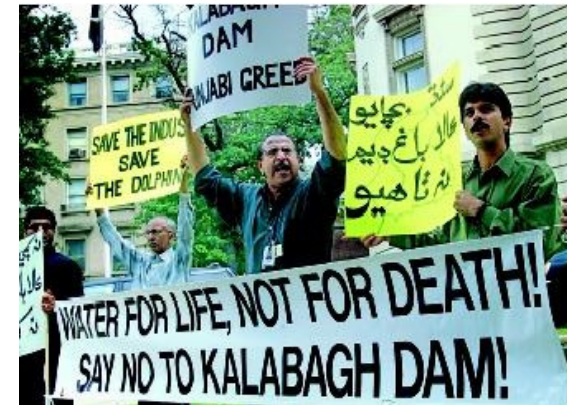
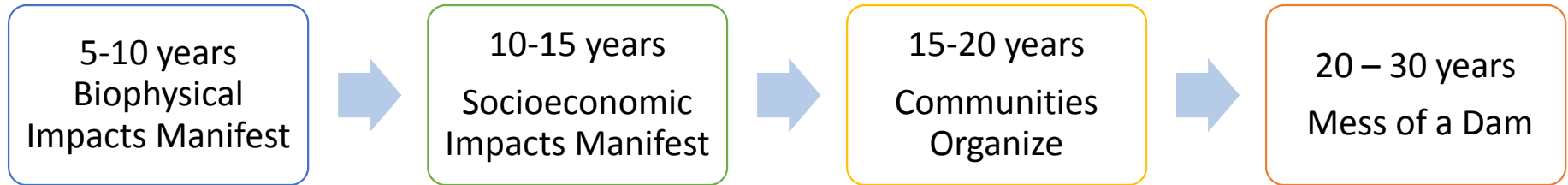
Shown ~ 7000 MW
Mangla ~ 1000 MW



Can Pakistan afford Sustainability?

International Finance Corporation
Performance standard requirement

- After construction of a dam:

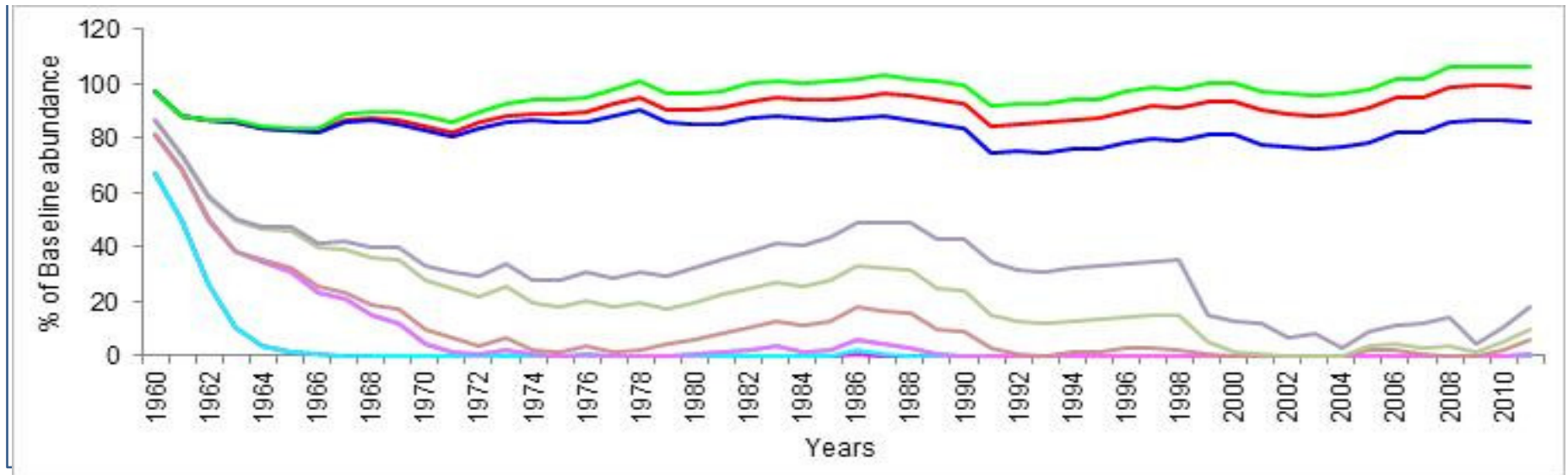


First step in sustainability

- **Ensure Environmental Flows**
- Environmental flows describe the quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems

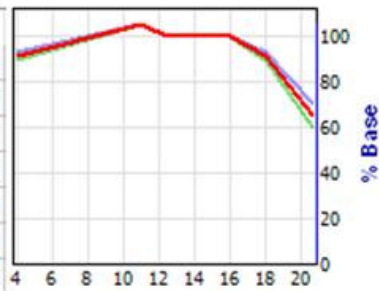


Rivers are Complicated Systems!



Wet season onset [F season]

Desc	cal week	Y1
Min	4.000	-0.500
Min Base	11.000	0.200
	12.500	0.010
Median	14.000	0.000
	16.000	0.000
Max Base	18.000	-0.500
Max	20.700	-2.000



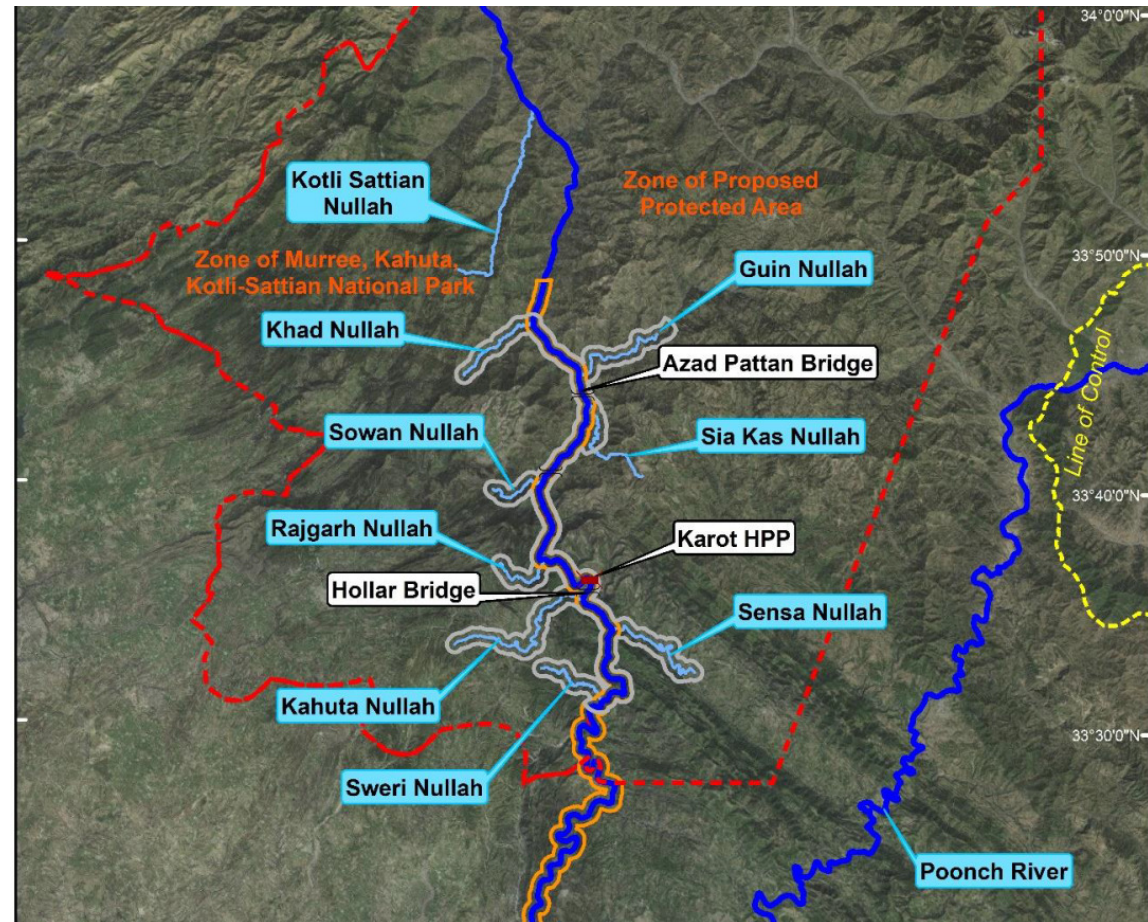
TOTP
PO4P
S
COD

Birds
Mammals

Peer reviewed by the International Court of Arbitration

Biodiversity Management Plan

- Prevent the irreversible
 - Set required Eflow
- Mitigation
 - Protection
- Implementation
 - Watch and ward
 - Develop capacity



Training



Hatchery



Consultations



Community Consultation with Men



Community Consultation with Women



Consultation with NGOs and Scientists



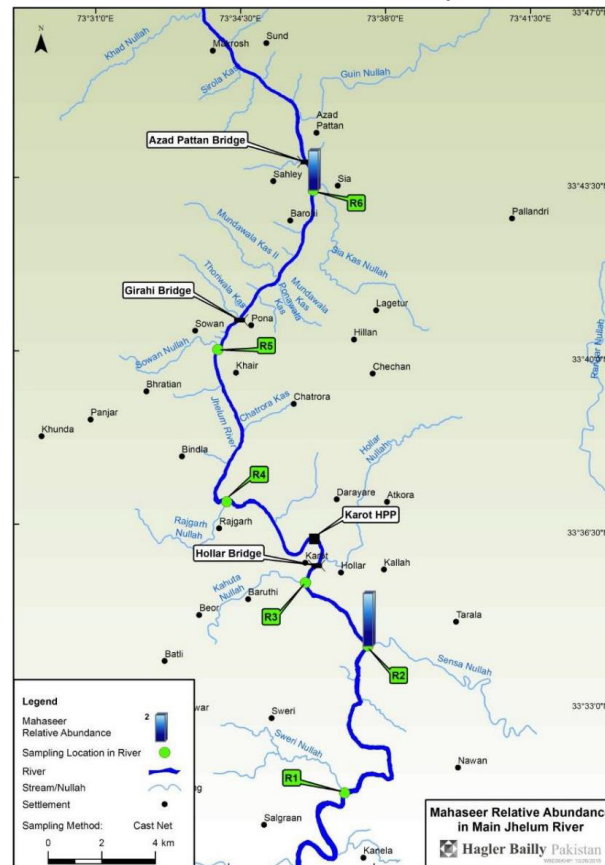
Consultation with Environmental Protection Agency, -AJK, Hydro-electric Board-AJK and Forest Department-AJK

Continuous Monitoring

- Latest techniques
 - Electrofishing
 - Tag and release
- Increase understanding
- Create data
- Track progress
 - Targets and Triggers



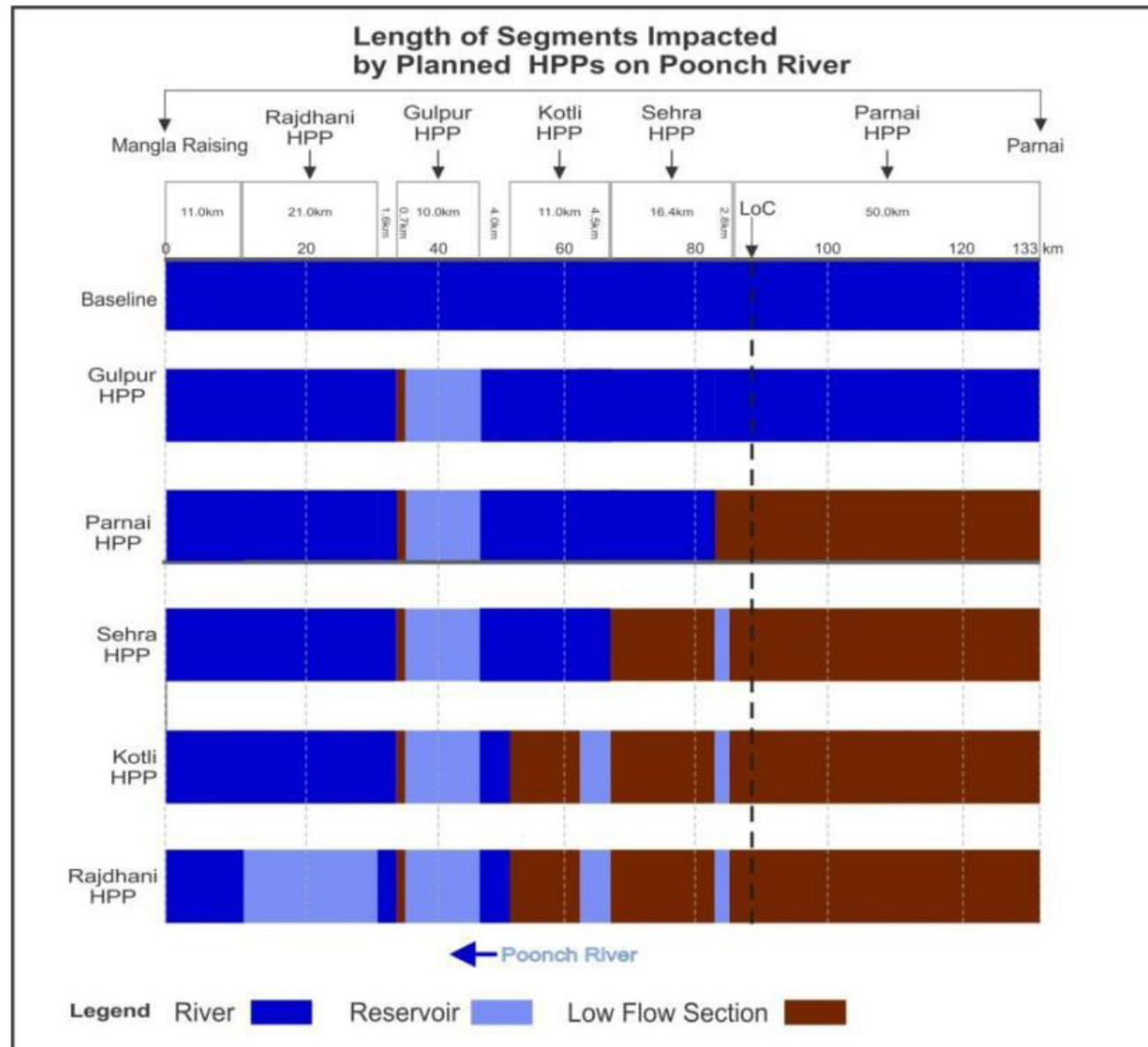
April 2016



October 2015



Cumulative Impacts



Conclusion

- Net Gain for the Kashmir Catfish
 - As required by IFC
 - Increased Government Regulation

Goal:

Survival of our native species
for the next 100 years



