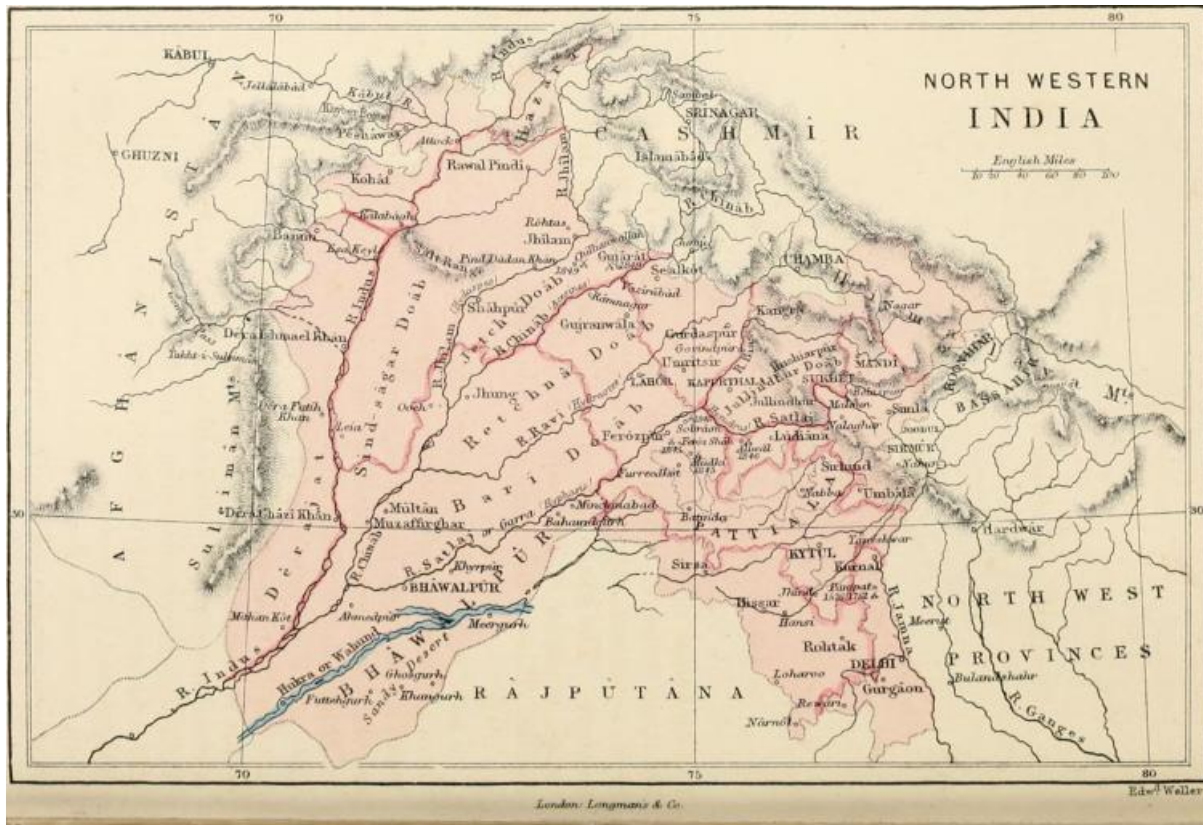


Spring School on Water Systems, Science & Practice Lahore University of Management Sciences

Module 4: Water Law, Governance and Institutions

Instructors: Mr. Ahmed Rafay Alam and Ms. Laila Kasuri



(Map of Rivers of Undivided India)

Session 1: Introduction to International Water Law (Rafay)

The session will focus on understanding water rights, riparianism and the common law basis for water rights; basic concepts in water law including the “reasonable use” doctrine under riparianism; prior Appropriation as a foundation for water rights: introduction and elements; operation and administration of the system; in-stream flows; “beneficial use” and “waste” as limitations on the right to appropriate and international water law.

Themes:

1. An introduction to the concept of water law
2. Transboundary water laws
3. Legal introduction to the Indus Waters Treaty

Readings:

- Chapter 4 ([Definitions and Sources of Water Law](#)) in Caponara, “Principles of Water Law and Administration: National and International”(2nd Edition, Taylor & Frances, London, 2007);



- Wolf, “[Criteria for equitable allocations: The heart of international water conflict](#)”, Natural Resources Forum, Vol. 23 # 1, February 1999;
- Wolf & Newton, “[Case Study of Transboundary Dispute Resolution: The Indus Water Treaty](#)”; and
- Salman, “[The Bagliar difference and its resolution process – a triumph for the Indus Waters Treaty](#)”, Water Policy 10 (2008) 105-117.

Additional Resources:

The [FAO’s Aquastat database](#) is an excellent resource and the [International Law Project](#) houses just about everything there is on international water law.

Session 2: Pakistani Law and Governance (Rafay)

The session will focus on water law in Pakistan (drainage acts, WAPDA etc.), ground water & water quality law and controls and other governance and legal challenges in Pakistan.

Themes:

1. Federal laws and institutions
 - 1) The Constitution
 - 2) WAPDA & IRSA
 - 3) Easements Act
 - 4) Impact of 18th Amendment on policy initiatives
2. Provincial laws and institutions
 - 1) Irrigation laws
 - 2) Environmental laws
3. Local laws and institutions
 - 1) Local Governments and WASAs

Readings:

- [Constitution of the Islamic Republic of Pakistan, 1973](#) (Articles 141, 142, 144, 153, 154, 155 and 161(2));
- [Water Apportionment Accord](#);
- Condon et al, “[Indus Basin, Challenges and Responses](#)”, Water Policy 16 (2014) 58-86

Additional Resources:

- Re Hydropower Benefits:
 - o “[Studies and Policies for Benefit Sharing on Hydropower Projects Among Stakeholders](#) (Volume 1)”, Water Sector Capacity Building and Advisory Services Project, Ministry of Water & Power, Government of Pakistan
- Re Indus Basin:
 - o Kamal et al, “[Development of Integrated River Basin Management for Indus Basin](#)” (WWF-Pakistan, 2012);
 - o Mustafa et al, “[Understanding Pakistan’s Water Security Nexus](#)” (USIP, 2013)

The [Pakistan Water Gateway](#) has some good resources

For questions and comments, please email rafay@saleemalam.com



Session 3: Water Policy Analysis and Conflict Negotiation

Instructor: Laila Kasuri

This session will focus on policy analysis and its applications to water resources, including approaches and methods for policy cycle.

History of Water Policy

- Frontinus, Sextus Julius (97 AD), *The Water Supply of the City of Rome*. Available on several web sites (<http://www.iath.virginia.edu/waters/front.html>). A translation by Clemens Herschel was published by the New England Water Works Association (1973). Many water management problems never change. An organized quantitative approach has long been fundamental to effective water management.
- [Approaches to Long-Term Water Planning \(2008\)](#)
- [Reflections of a Practitioner – John Briscoe](#)

History of Policy Analysis

- Loucks, D.P., J.R. Stedinger, and D.A. Haith (1981), *Water Resource Systems Planning and Analysis*, Prentice-Hall, Englewood Cliffs, NJ. Still the most coherent single work applying operations research methods to water resource planning problems.

Eightfold Path to Policy Making

- Rational Model Extension
- Applications

Techniques to analyse decisions

- Cost-benefit
- Operations Research
- Risk Analysis
- Sensitivity Analysis

Water Resources Conflict

- Game Theory
- Nash Equilibrium

Additional Readings:

Agre, P.E. and D. Chapman (1990), "What are plans for?," in Maes, P. (ed.) (1990), *Designing Autonomous Agents*, MIT Press, Cambridge, MA, pp. 17-34

Braybrooke, D. and C.E. Lindblom (1970), *A Strategy of Decision: Policy Evaluation as a Social Process*, Free Press, N.Y., 264 pp

Hirsch, R.M. (1978), *Risk Analyses for A Water-Supply System - Occoquan Reservoir, Fairfax and Prince William Counties, Virginia*, Open File Report 78-452, U.S. Geological Survey, Reston, VA, also in *Hydrologic Science Bulletin*, Vol. 23, No. 4, pp. 475-505.

Jenkins, M.W. and J.R. Lund (2000), "Integrated Yield and Shortage Management for Water Supply Planning," *Journal of Water Resources Planning & Management*, Vol. 126, No. 5, pp. 288-297.

Palmer, R.N., W.J. Werick, A. MacEwan, and A.W. Woods (1999), "Modeling Water Resources Opportunities, Challenges and Trade-offs: The Use of Shared Vision Modeling for Negotiation and Conflict Resolution," in E.M. Wilson (ed.), *Proceedings of the 26th Annual Water Resources Planning and Management Conference*, ASCE, Reston, VA.