El Valor Económico del Agua:
Marco de análisis y reflexiones sobre el caso Monterrey (Transferencias campo-ciudad e inundaciones)

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Serie Webinar Los Valores del Agua, UNAM-Red del Agua-Centro Regional de Seguridad Hídrica, UNESCO

21 de abril, 2021

Capítulo 12 Conclusiones (pp. 169-171)

12.1 ¿Cuál es el valor del agua, *para quién*?

12.2 Reconociendo y resolviendo las complejidades.

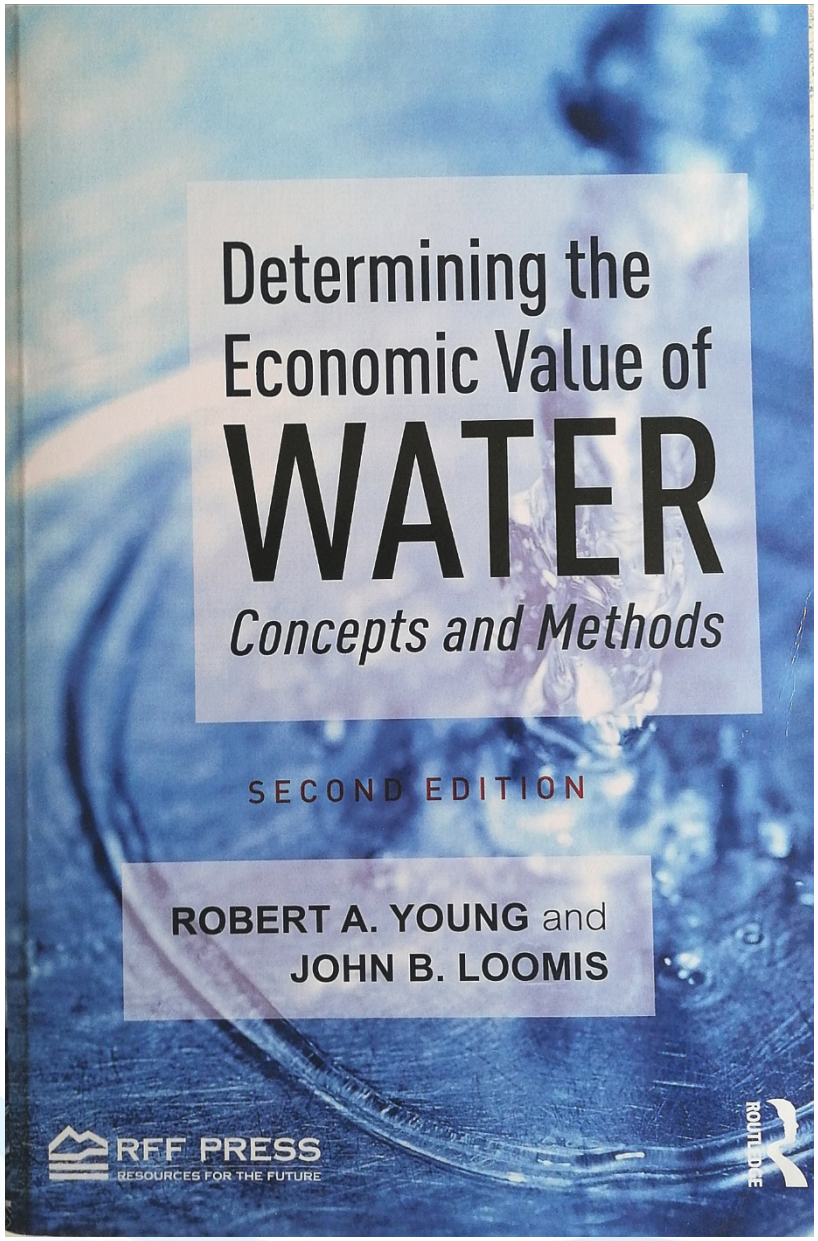
> …Los enfoques para la valoración del agua varían ampliamente a través – y aun dentro de – diferentes dimensiones de usuarios y perspectivas.

12.3 Abordando las posiciones en conflicto.

12.4 Colofón.

> Aún cuando no siempre se reconoce por todos, el agua ciertamente tiene valor. **En algunas perspectivas el valor del agua es infinito***…Los riesgos para subvalorar el agua son demasiado grandes para ignorarlos

*Énfasis propio



- **Contribución de la Economía a la valoración del agua.**
- **No hay un solo valor económico del agua (sino muchos … marcos de análisis y contextos). Su valor marginal va a depender de:**
  - Servicios específicos del agua que se valoran y dónde se va a usar el agua.
  - Características de la región de estudio (bien sea por el lado de la oferta o de la demanda).
  - Contexto de política pública en el que se realiza la valoración.
  - Valoración privada o social (precios de mercado o sociales)
  - Corto o largo plazo.
- **Estimar el valor económico del agua es difícil.**

Competencia intersectorial por el agua… de agricultura a uso urbano Young y Loomis (2014, 13-14)

Primera condición:

$$DB_i + RB_k > FDB_j + FRB_k + TPC + CC$$

DB*i* = Beneficios económicos directos (valor) para el sector destino.

RB*k* = Beneficios económicos para sectores relacionados, de haberlos.

FDB*j* = Beneficios directos no obtenidos (valor no obtenido) en el sector origen.

FRB*k* = Beneficios no obtenidos en sector(es) relacionado(s).

TPC = Costos de transacción y planeación (información, contratación, aplicación de acuerdos de transferencia, costo del diseño del proyecto).

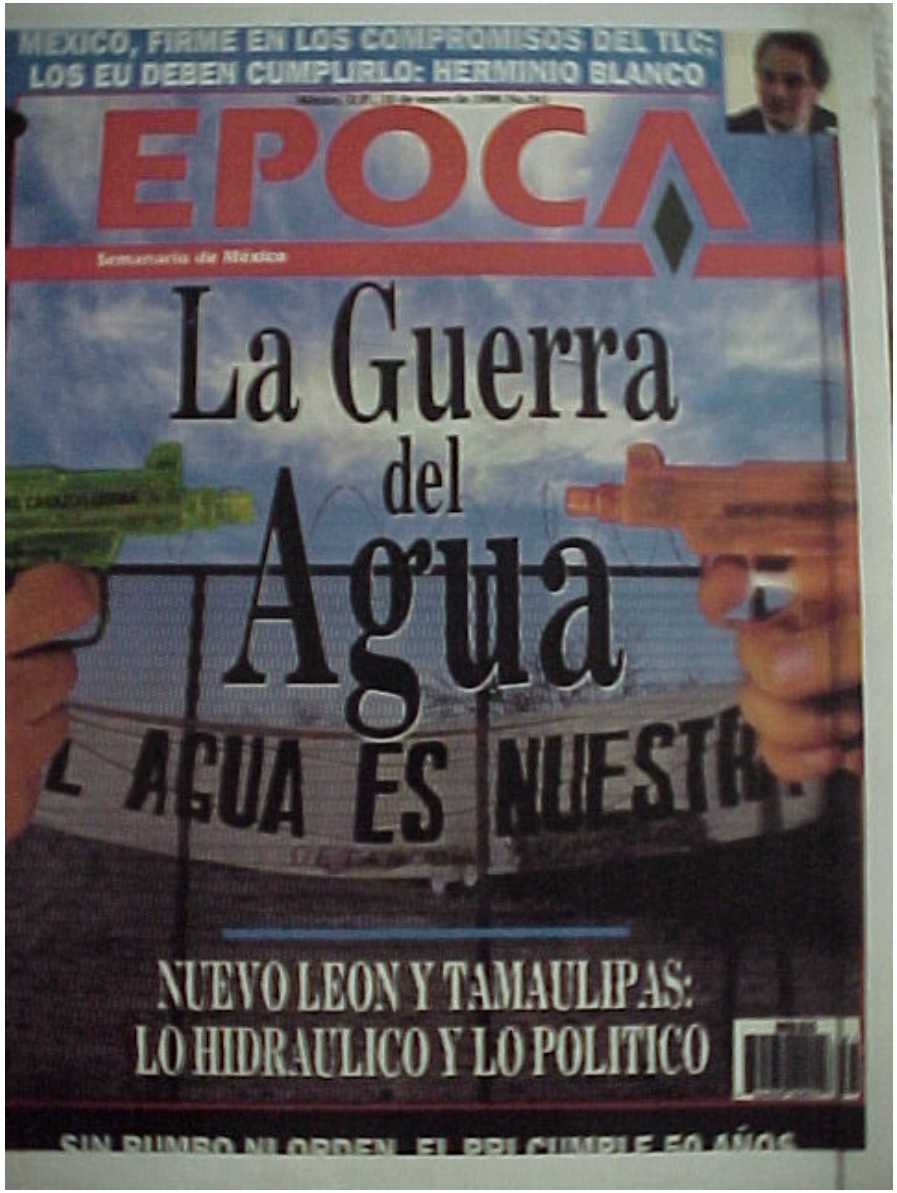
CC = Costos de la conducción del agua y su almacenamiento.

Segunda condición:

$$FDB_j + FRB_k + TPC + CC < AC$$

AC = Costo de la siguiente mejor alternativa de fuente de agua.

La Guerra del Agua entre Nuevo León y Tamaulipas en torno a la Presa *El Cuchillo, 1989-1996*…



WATER GLOBAL PRACTICE • DISCUSSION PAPER

JUNE 2019

Dustin Garrick,
Lucia De Stefano, Laura Turley, Isabel Jorgensen, Ismael Aguilar-Barajas, Barbara Schreiner, Renata de Souza Leão, Erin O'Donnell, and Avril Horne

Dividing the Water, Sharing the Benefits

Lessons from Rural-to-Urban Water Reallocation

WORLD BANK GROUP

IOP Publishing Environ. Res. Lett. 14 (2019) 043003 https://doi.org/10.1088/1748-9326/ab0db7

Environmental Research Letters

TOPICAL REVIEW

Rural water for thirsty cities: a systematic review of water reallocation from rural to urban regions

Dustin Garrick[1], Lucia De Stefano[2], Winston Yu[3], Isabel Jorgensen[4], Erin O'Donnell[5], Laura Turley[6], Ismael Aguilar-Barajas[7], Xiaoping Dai[8], Renata de Souza Leão[9], Bharat Punjabi[10], Barbara Schreiner[11], Jesper Svensson[1] and Charles Wight[1]

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Water reallocation, benefit sharing, and compensation in northeastern Mexico: A retrospective assessment of El Cuchillo Dam

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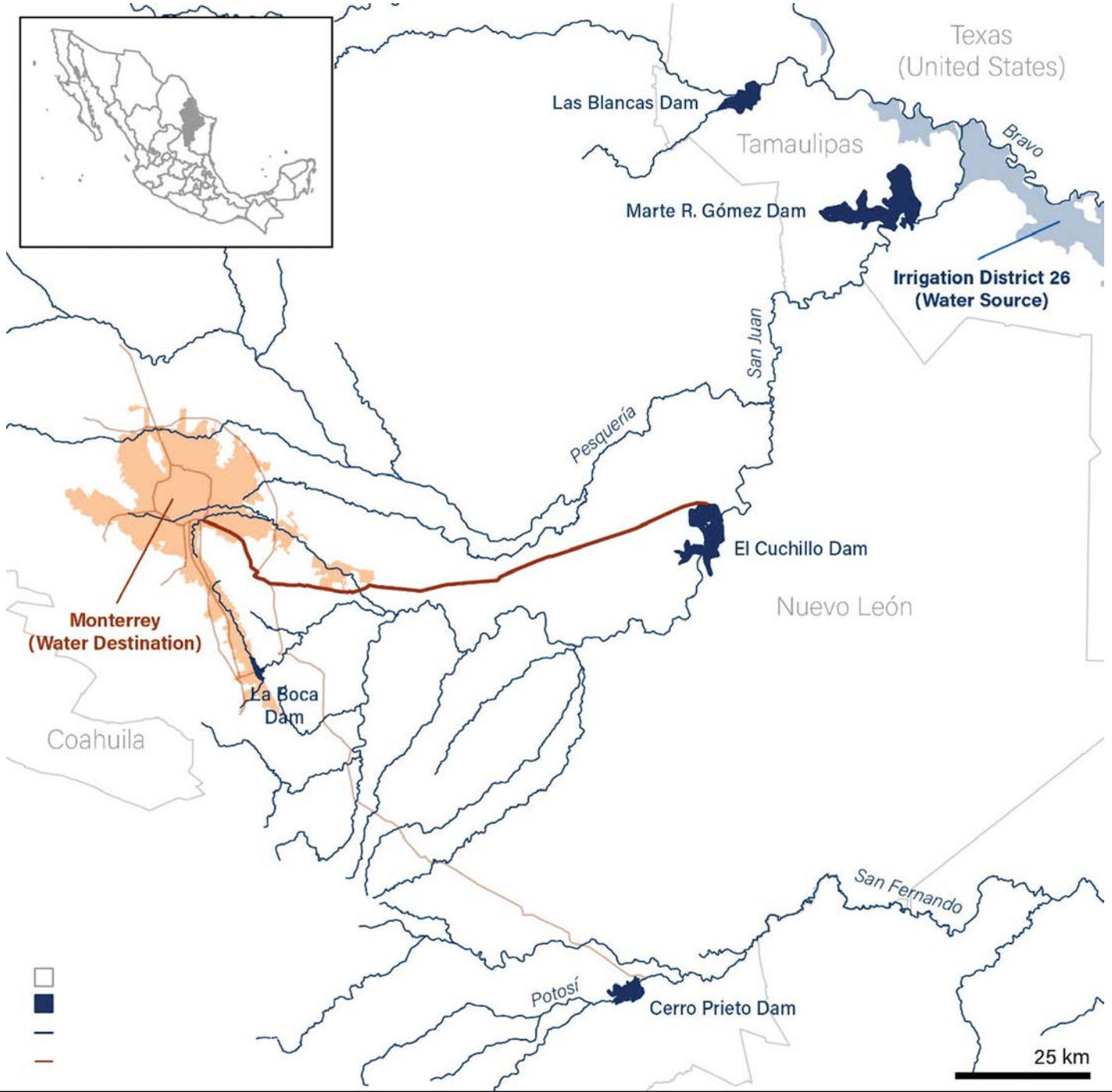
Compensation

ABSTRACT

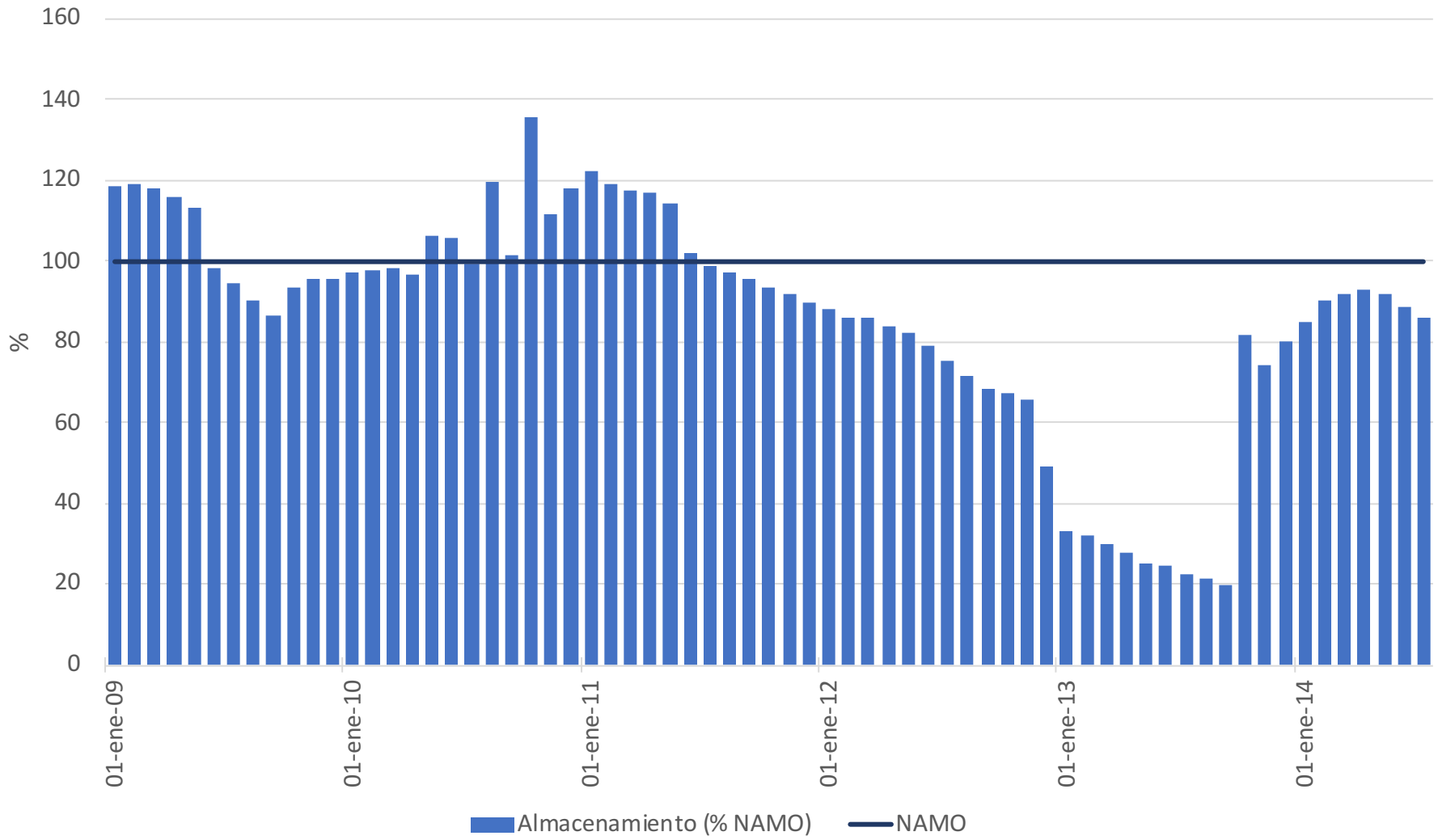
In 1994, former President of Mexico, Carlos Salinas de Gortari inaugurated El Cuchillo reservoir to transfer up to 10 m^3/s from the Lower San Juan River to the city of Monterrey, a major Mexican metropolis. Since 1989, three agreements have been developed to finance, construct and operate the El Cuchillo project to benefit Monterrey and compensate the farmers in the downstream irrigation district. This study reviews the agreements and lessons from implementation experience after 25 years since the project's inauguration. The El Cuchillo demonstrates that water reallocation needs to be designed and assessed within a regional perspective to identify, measure and share the costs and benefits of reallocation between rural and urban regions. This case study shows the need to compensate the region not the individual.

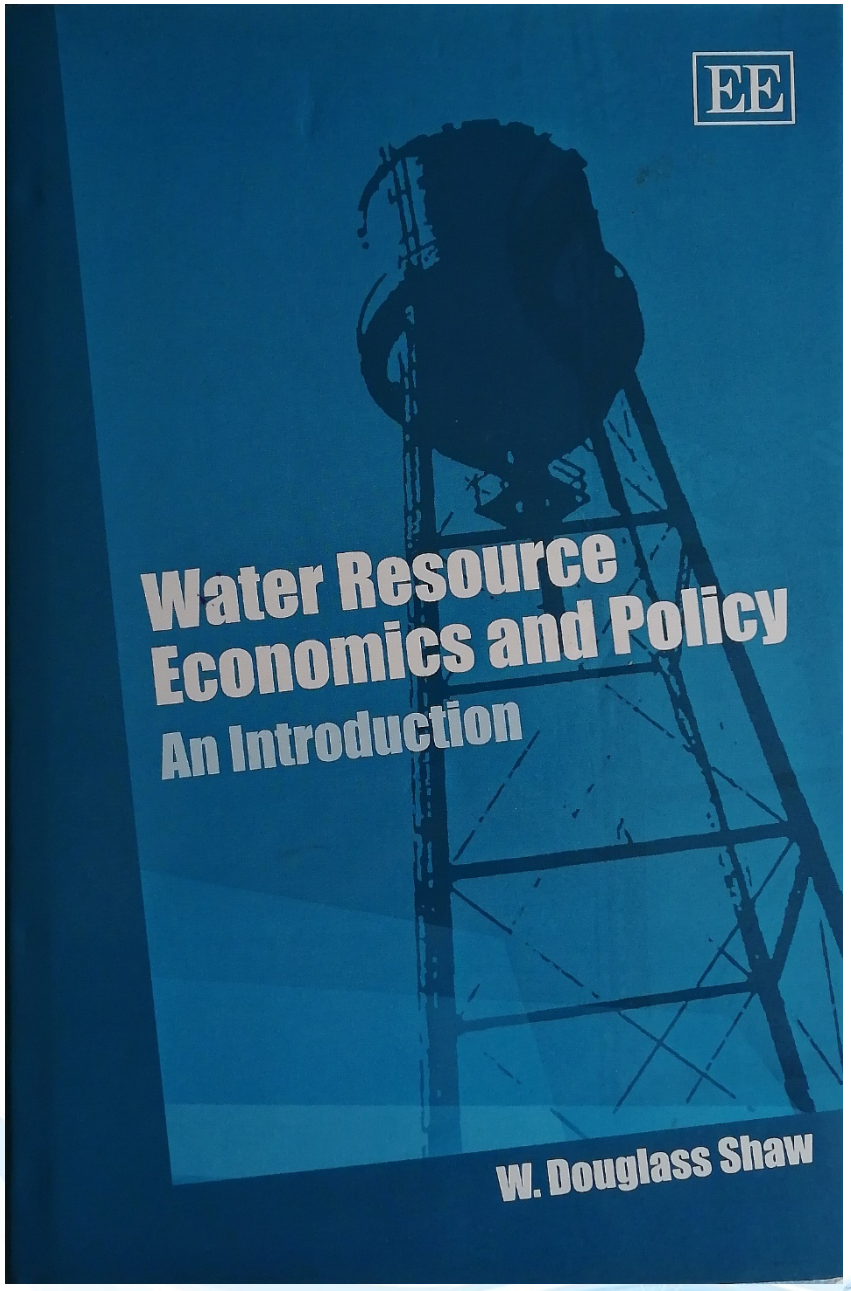

Texas
(United States)
Las Blancas Dam
Tamaulipas
Bravo
Marte R. Gómez Dam
Irrigation District 26
(Water Source)
San Juan
Pesquería
El Cuchillo Dam
Nuevo León
Monterrey
(Water Destination)
La Boca
Dam
Coahuila
San Fernando
Potosí
Cerro Prieto Dam
25 km

En Monterrey…

Los huracanes: una maldición bendita (Horacio Salazar…QEPD)

Almacenamiento conjunto de las tres presas, 01.01.2009 - 01.01.2014 (en %)





- "… Because society's perceptions of the events change, the public needs to be reminded of risks when they have forgotten them …

- All of this is fundamentally tied to economics, because public projects that mitigate against drought or flood are expensive.

- When given a choice, the public may well vote against spending on flood or drought protection programs once concern about such events lessens." (p. 289)

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Building urban resilience and knowledge co-production in the face of weather hazards: flash floods in the Monterrey Metropolitan Area (Mexico)

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ARTICLE INFO

Keywords:
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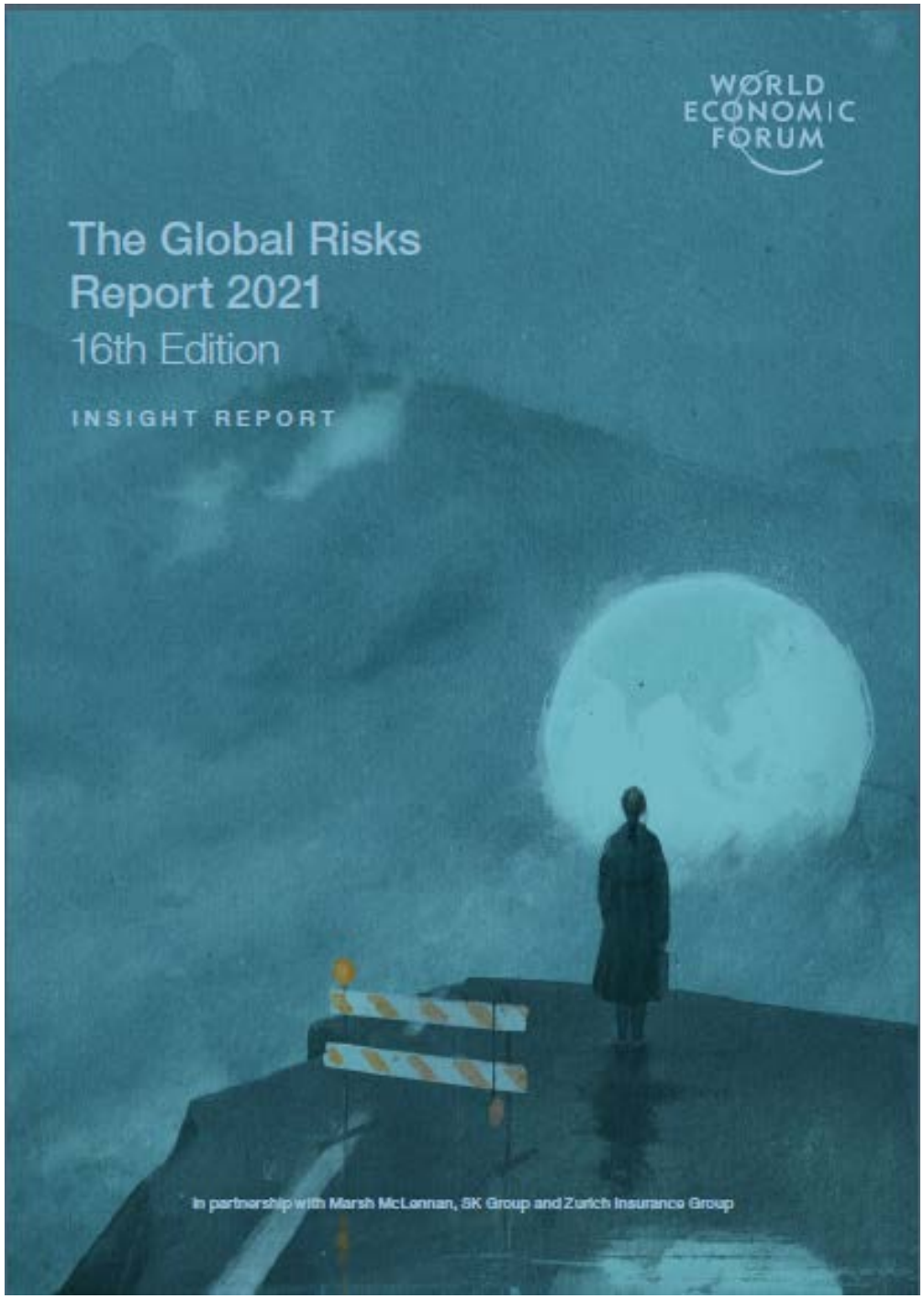
floods
Monterrey
Mexico

ABSTRACT

In 2010, flash floods triggered by Hurricane Alex caused fifteen fatalities in the Monterrey Metropolitan Area (MMA). In contrast, an estimated 225 people died in the 1988 Hurricane Gilbert disaster and reputedly, over 5,000 in the historical flood of 1909. The magnitude of hurricane-related impacts thus appears to be decreasing, indicating higher resilience to this hazard. This paper analyses the process of building resilience to flash floods in the MMA over the last several decades. Knowledge co-production plays a significant role in that process, particularly through the Nuevo Leon State Reconstruction Council, the multi-institutional, public-private-civil group of stakeholders established to guide and coordinate reconstruction efforts following the Hurricane Alex disaster. Findings reveal a complex, protracted and incremental resilience building process, conditioned by the nature of the hazard (infrequent but liable to cause significant damages) and contingent upon the city's socioeconomic and institutional local context. This local context is embedded in a highly fragmented national water governance architecture that lacks inter-institutional co-ordination and has limited the city's adaptive responses. Despite definite gains in building resilience, the city faces challenges notably in terms of the conservation and continuing development of knowledge co-produced in the aftermath of disasters.


WORLD ECONOMIC FORUM
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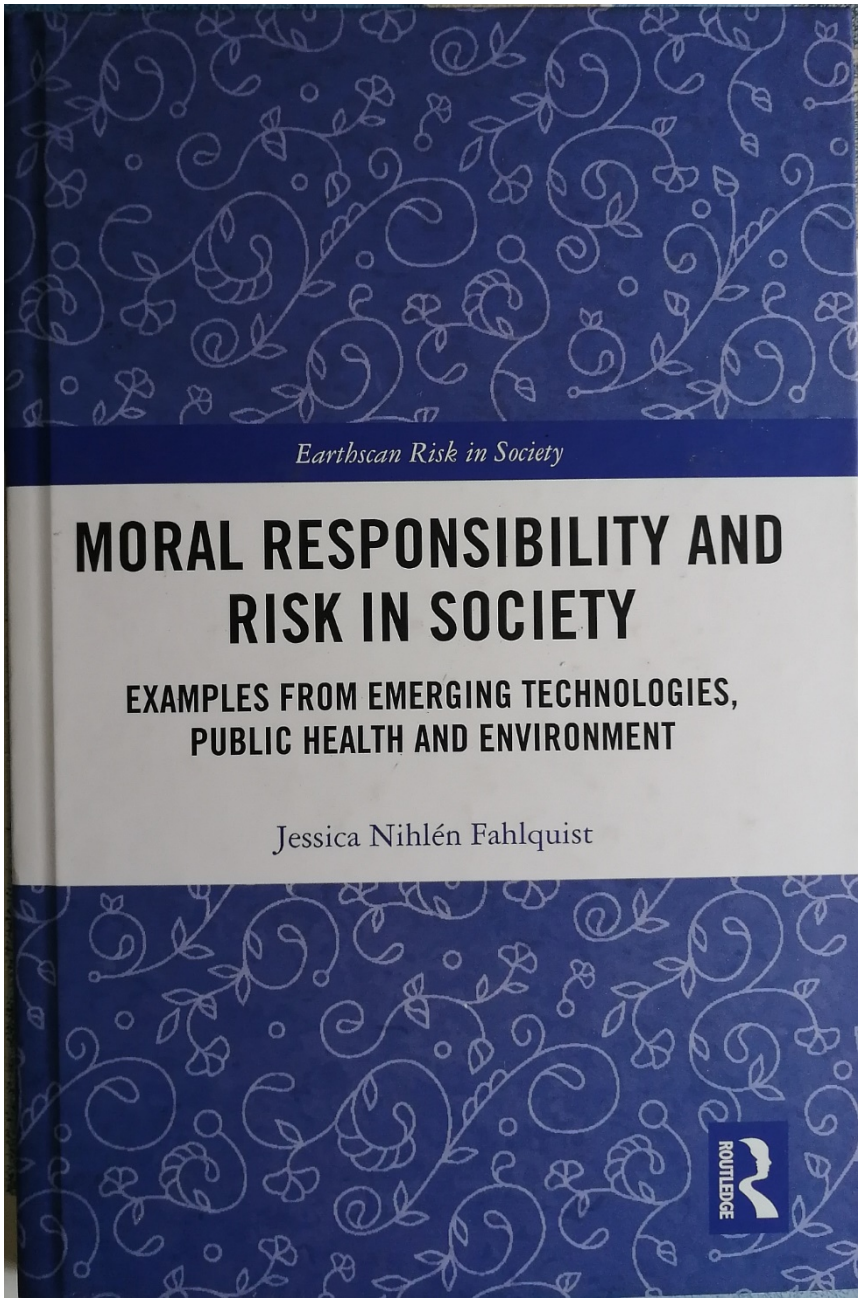
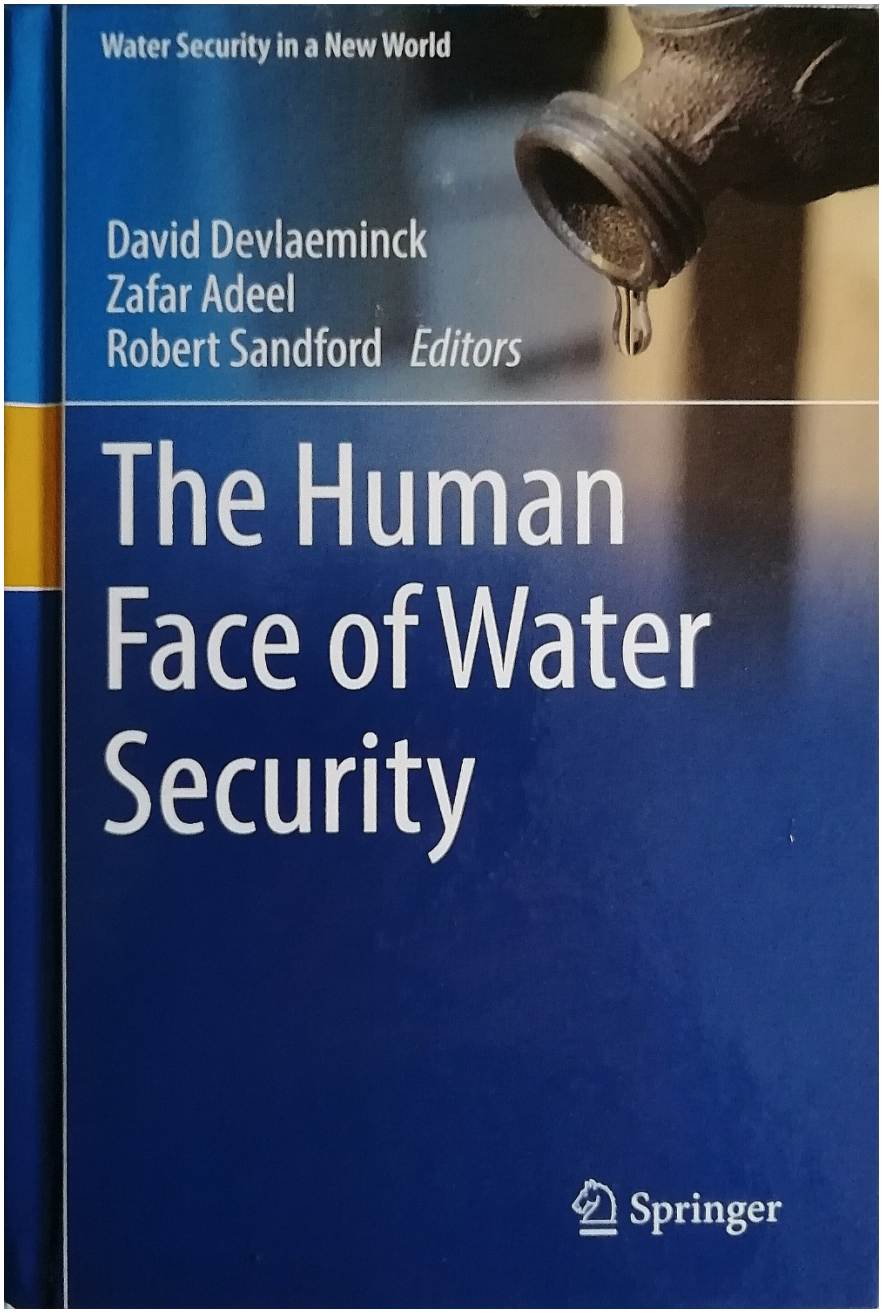
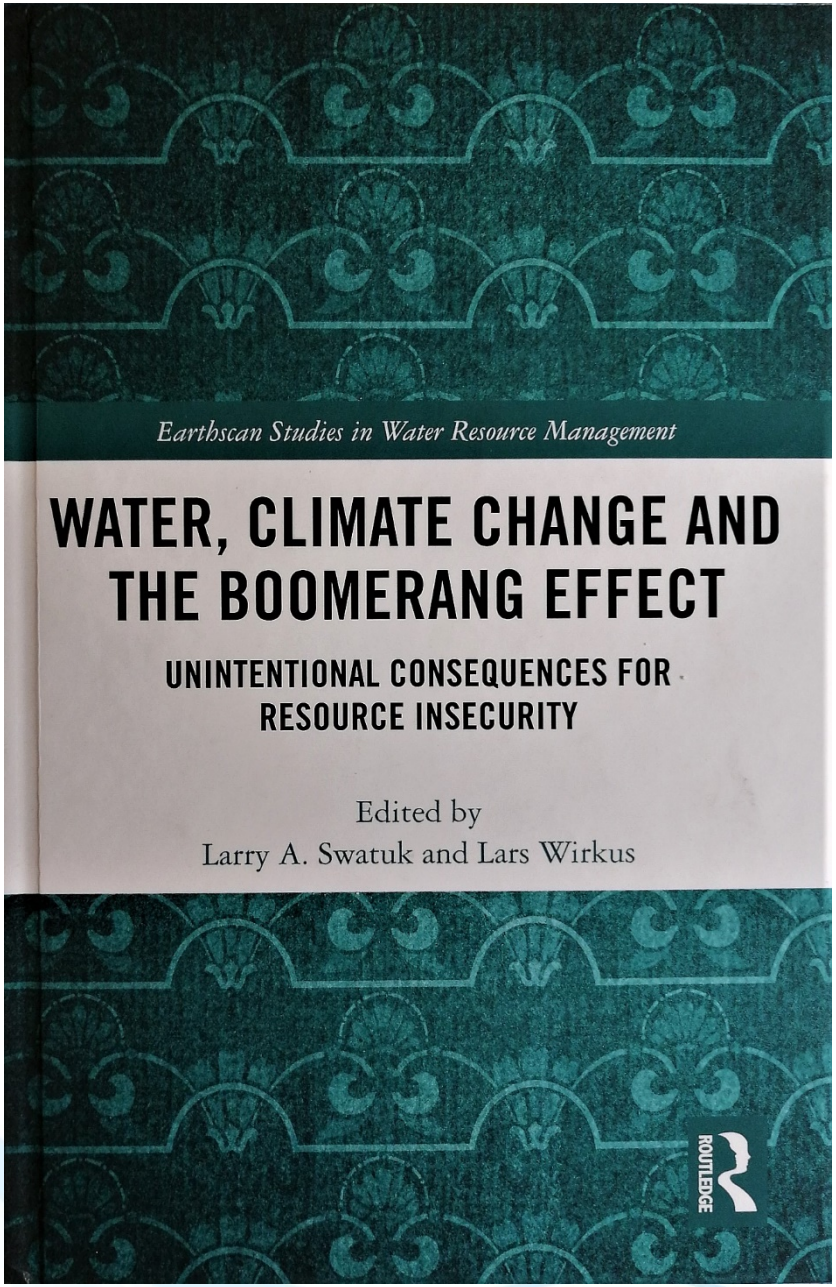
INSIGHT REPORT
In partnership with Marsh McLennan, SK Group and Zurich Insurance Group


Earthscan Risk in Society
MORAL RESPONSIBILITY AND RISK IN SOCIETY
EXAMPLES FROM EMERGING TECHNOLOGIES, PUBLIC HEALTH AND ENVIRONMENT
Jessica Nihlén Fahlquist
ROUTLEDGE


Water Security in a New World
David Devlaeminck
Zafar Adeel
Robert Sandford Editors
The Human Face of Water Security
Springer



- **Los problemas del mañana, ahora.**
- **Necesidad de enfoques más integrados y transdisciplinarios.**

- …Considerar desde el principio en la toma de decisiones las cuestiones sociales, políticas, económicas y de equidad.

- Realizar más investigación aplicada y foros para profesionales, para compartir experiencias sobre enfoques intersectoriales en torno a retos complejos del clima y la seguridad hídrica.

Bibliografía

Brown, C. y Ward M.N. (2013), *Managing Climate Risk in Water Supply Systwms*, Londres, IWA Publishing

Dabelko, G.D. y Parker, M. (2018), "Afterword: From backdraft to boomerang", pp. 180-183, en L. A. Swatuk y L. Wirkus (eds.), *Water, Climate Change and the Boomerang Effect*, Londres y Nueva York, Eartshcan/Routledge.

Griffin, R. C. (2006), *Water Resource Economics.- The Analysis of Scarcity, Policies, and Projects*, Cambridge y Londres, The MIT Press.

OCDE (2000), contraportada de *Frameworks to Measure Sustainable Development*, Paris, Organización para la Cooperación y el Desarrollo Económicos).

Saleth, R. M. y Dinar, A. (2004), *The Institutional Economics of Water.- A Cross-Country Analysis of Institutions and Performance*, Edward Elgar, Cheltenham y Northampton.

Shaw, W. D. (2005), *Water Resource Economics and Policy.- An Introduction*, Edward Elgar, Cheltenham y Northampton.

Young, R. A. (2014), *Determining the Economic Value of Water.- Concepts and Methods*, Abingdon y Nueva York, Resources for the Future and Routledge.