Scientific Network on Water: RETAC, National Council of Science and Technology (CONACYT)

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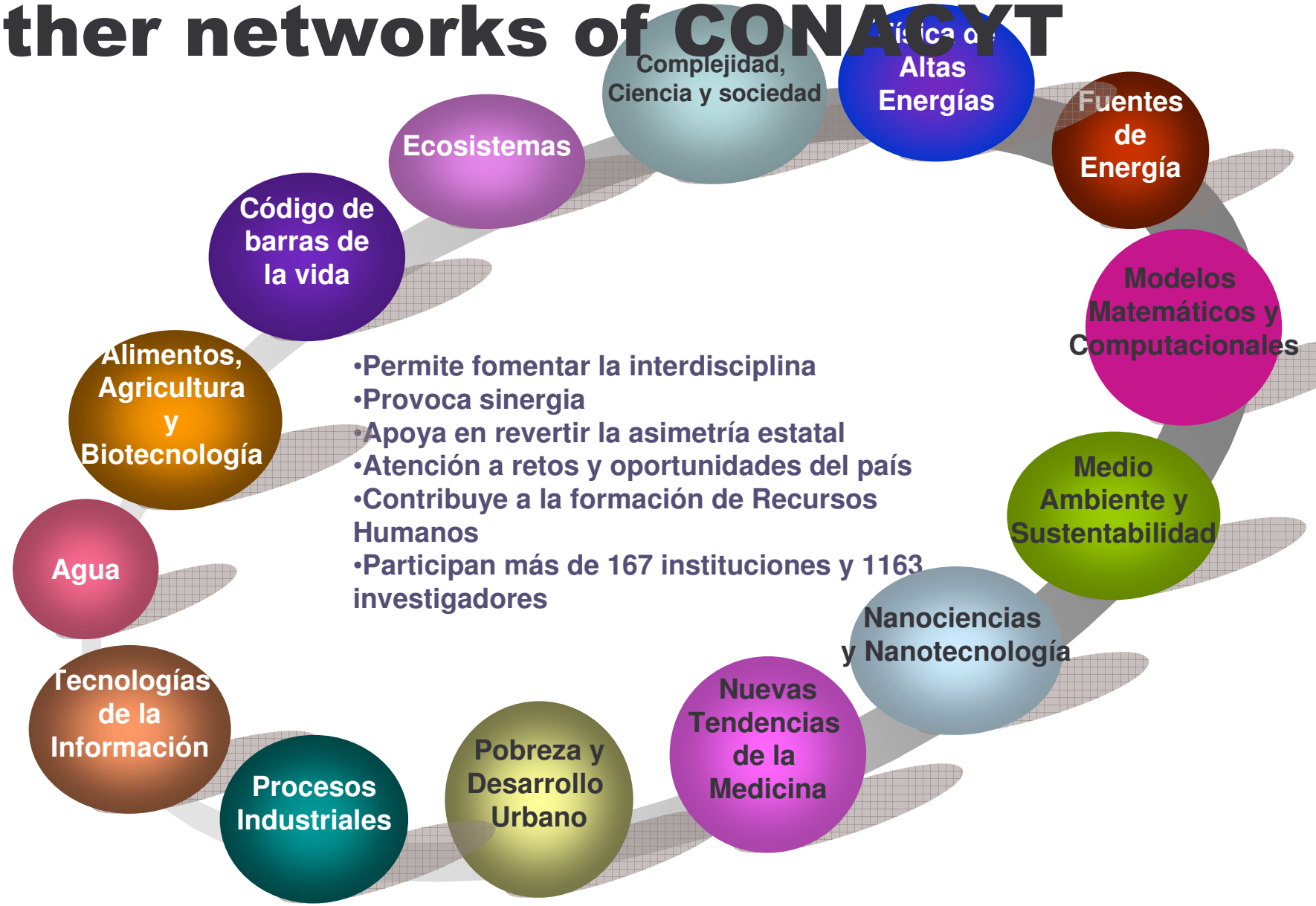
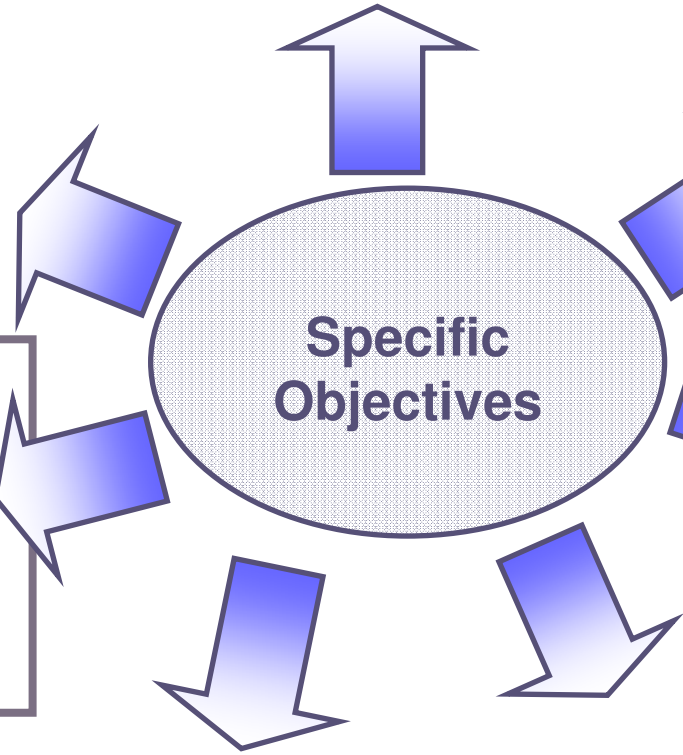
1. Transversity of RETAC with other networks of CONACYT



2. Objetives of RETAC

Elaboration of a National Project of scientific and technological research in water



"State of art" in Mexico of water research

National and international financing of research projects

Catalogue of:
-Human Resources
-Capacity building of human resources
-Infrastructure in Mexico

Feasible projects to link the public with the private sector

Multi-institutional problem-oriented and viable research projects

Strategic and problem-oriented research project to consolidate Mexican society

3. First national and interinstitutional encounter: Who participated?

- 42 national institutions
- Academics, business, social movements and NGO's
- 6 foreign academic institutions:
- USA: Centre for Reservoir and Aquatic Ecosystems Research, Baylor University, Texas, USA; Northern Illinois University; Inter-American Centre: Lerma, Chapala and Santiago Basin
- European Union: Spain: Escuela de Estudios Hispanoamericanos, Consejo Superior de Investigaciones Científicas; France: Universidad Toulouse Le Mirail
- Latin America: University of San Carlos in Guatemala, Universidad of Colombia
- 260 researchers presented individual and collective papers related to water in Mexico
- 260 summary were sent and 112 were selected through peer review
- 112 selected papers were exposed within five different panels
- Participation from 32 states and the D.C.; the missing state of Guerrero was represented by a paper

Interinstitutional Participation

- Centro de Investigación Científica de Yucatán, A.C.
- Centro de Investigación en Geografía y Geomática "Ing. Jorge L. Tamayo", A.C
- Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco
- Centro de Investigación y Desarrollo Tecnológico en Electroquímica
- Centro de Investigaciones Biológicas del Noroeste
- CIBNOR
- CIESAS
- CINVESTAV
- Corporación Mexicana de Investigación en Materiales S. A. de C. V
- El Colegio de la Frontera Norte
- El Colegio de Postgraduados
- El Colegio de San Luis
- El Colegio de Tlaxcala A.C.
- El Colegio de la Frontera Norte
- El Colegio de México
- El Colegio de Michoacán
- El Colegio de Sonora
- Fondo para la Comunicación y la Educación Ambiental A.C.
- Grupo La Norteñita
- IMTA
- Ingeniería de Innovación Integral S.A. de C. V.
- INIFAP
- Instituto Tecnológico de Culiacán
- Instituto Tecnológico de Sonora
- IPN
- Observatorio del agua para el estado de Veracruz, ABCC
- UAEM
- UAM-Ixtapalapa, Xochimilco, Azcapozalco
- UA Querétaro
- UNAM
- Universidad Autónoma Chapingo
- Universidad Autónoma de Aguascalientes
- Universidad Autónoma de Ciudad Juárez
- Universidad Autónoma de Coahuila
- Universidad Autónoma de San Luis Potosí
- Universidad Autónoma de Yucatán
- Universidad Autónoma del Estado de México
- Universidad de Guadalajara
- Universidad de las Américas
- Universidad de Quintana Roo
- Universidad de Sonora
- Universidad Veracruzana

4. Consolidation of water networks with the CONACYT network

- ATL El Portal del Agua desde México, UNESCO-IMTA
- Cátedra UNESCO-IMTA: El Agua en la Sociedad del Conocimiento
- Center for US Mexican Studies, Universidad de California, San Diego
- Centro Interamericano de Recursos del Agua: Cuenca Lerma- Chapala-Santiago
- El Observatorio Ciudadanos del Agua, Saltillo, Coahuila
- Fondo para la Comunicación y la Educación Ambiental A.C, www.agua.org.mx
- Fondo para la Comunicación y la Educación Ambiental, A.C.
- Grupo Interdisciplinario del Agua: GIA, San Cristóbal de las Casas, Chiapas, CONACYT
- HIDRORED- Red de potabilización y depuración de Agua (UAEM, México)
- Instituto de Investigaciones Dr. José María Luis Mora
- La Red de Institutos Nacionales Iberoamericanos de Ingeniería e Investigación Hidráulica (CIP-OEA)
- Observatorio del agua para el estado de Veracruz, ABCC
- PUMAgua, UNAM
- Red de Desarrollo Sustentable de la UAM
- Red de Género, Salud y Ambiente, Centro de Investigación en Materiales Avanzados, SEP-CONACYT
- Red de Investigación Agua, Ciudad y Territorios (CNRS, Francia)
- Red de investigación de Agua UAM
- Red de Investigación sobre Agua - Cuenca del Río Bravo
- Red de Investigadores del Agua en Cuencas del Norte de México. RECUNOR
- Red de Investigadores sobre Agua en la Frontera México-Guatemala-Belice (RISAF)
- Red de Investigadores Sociales en Agua, Colegio de Posgraduado
- Red del Agua de la Academia Mexicana de Ciencias
- Red Franco Mexicana del Agua (IRD)
- Red Internacional de Investigación La Salle (RIILSA)
- Revista Digital Independiente Voz Universitaria (UNAM)
- UNIVERSIA México-Red de Universidades Red de Oportunidades


5. Analysis of crucial themes

Five thematic panels

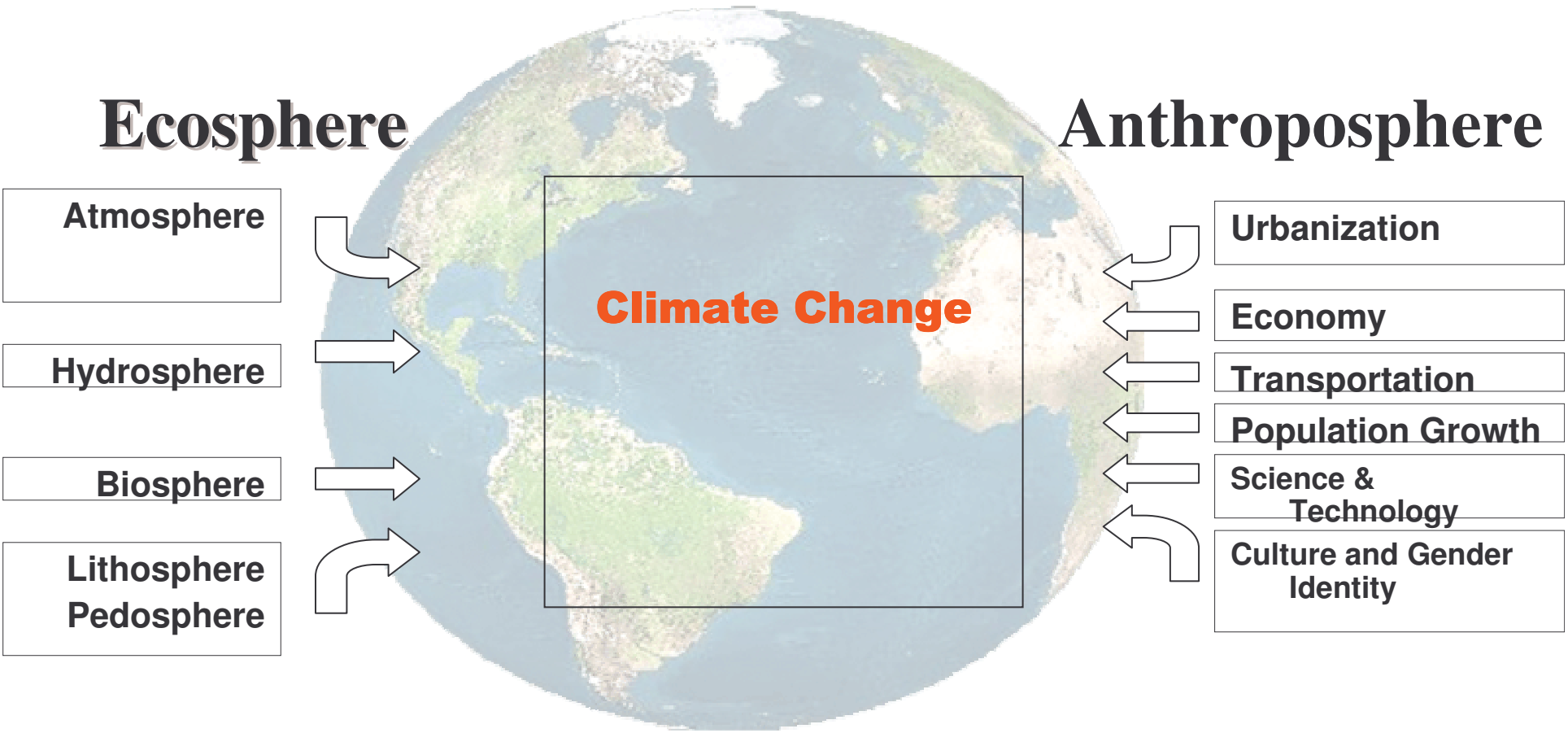
1. Hydrological processes and integral water basin management and groundwater
2. Availability of water, its interaction with ecosystems and its uses (irrigation, industrial and domestic efficiency)
3. Quality of water and health concerns
4. Social effects and hydro conflicts
5. Institutions, policy, juridical aspects and economy of water

Scientific innovation: Constructivism and risk society

- Water resources in Mexico are getting scarce and highly polluted.
- An enormous lack of water efficiency in irrigation exists together with processes of deterioration of basins, ecosystems and soils.
- The water problems are anthropogenically created and could be changed (constructivist approach)
- Accelerated modernity, population growth, lack of sustainable agricultural practices, deterioration of biodiversity and destruction of basins and coastal ecosystems (mangroves) have created new threats and risks within a paradigm of "reflexive modernity" (Beck; Giddens).
- These changes deteriorate further the water resources and require a paradigm shift of the model of development in order to reduce conflicts related to scarce and polluted water resources.
- Micro-regional models would permit to develop transdisciplinary and participative approaches, able to propose integral water management beyond electoral cycles and budget constrains where civil society, business and government participate.
- The ongoing economic crisis and the changes in the international order create opportunities for social and environmental changes not yet taken into account in Mexico.
- The critical situation of hydro resources is threatening the water security above all of the most vulnerable (women, children, poor urban and indigenous) living in regions of high environmental risks, river basins, abrupt mountains and urban slums.
- There is an urgency to act. Non-acting increases daily the costs: prevention is cheaper to conserve human lives and infrastructure than reactive behaviours, but government is still sub-estimating the concrete threats and existing risks.

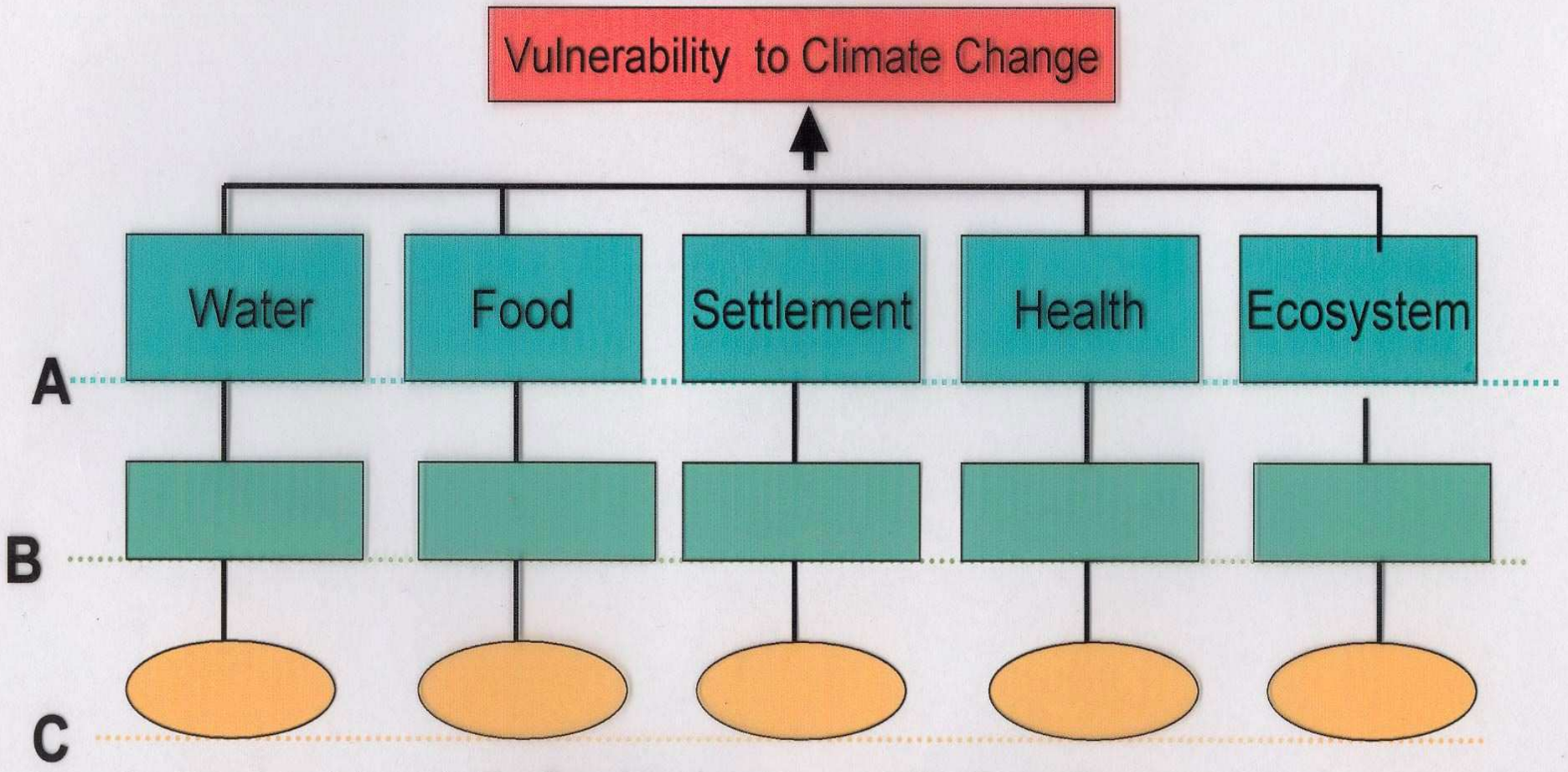
6. Challenges for water research in Mexico

Transversal approach to climate change



7. Perspectives Environmental and water security: Urbanization, climate change, and scarcity and pollution of water

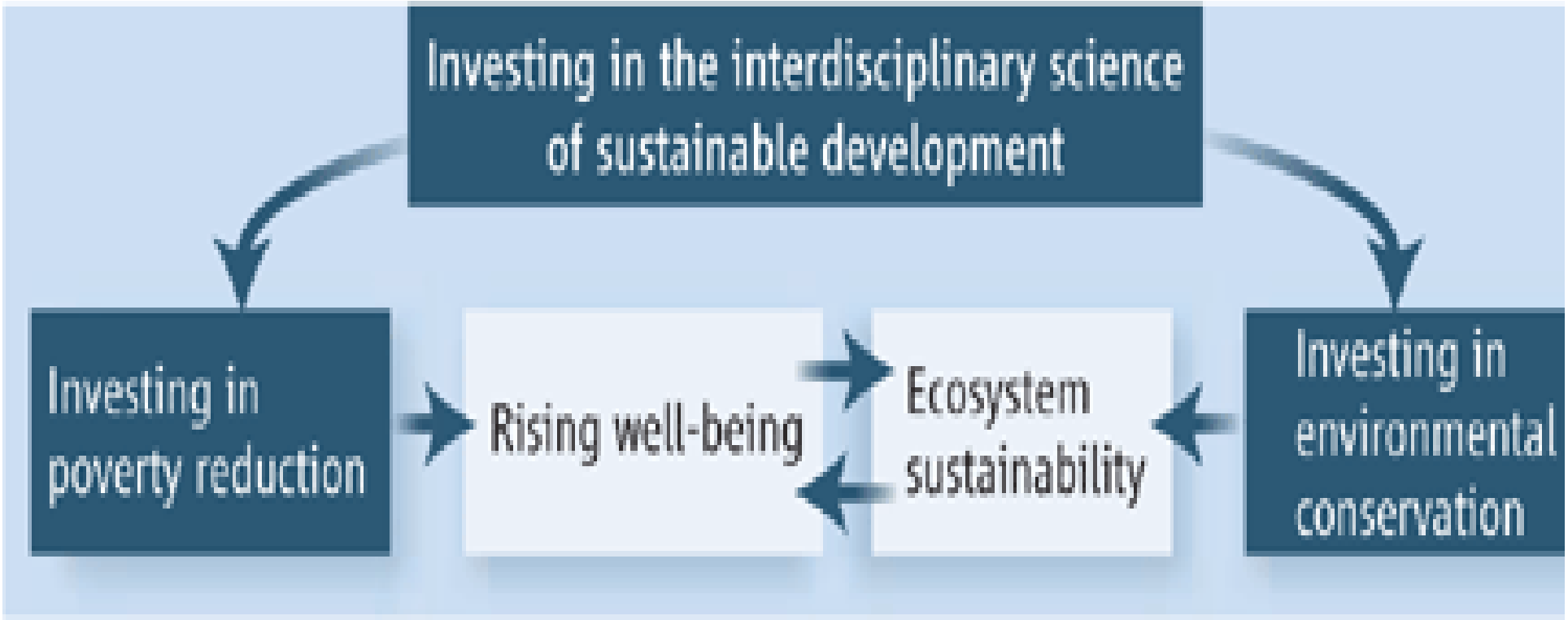
Assessing Vulnerability (R.T. Watson, et al. 1998. IPCC)



A: Sectoral level; B: Coping level; and C: Sensitivity level

Vulnerability = *f*(sensitivity, adaptability, exposure)

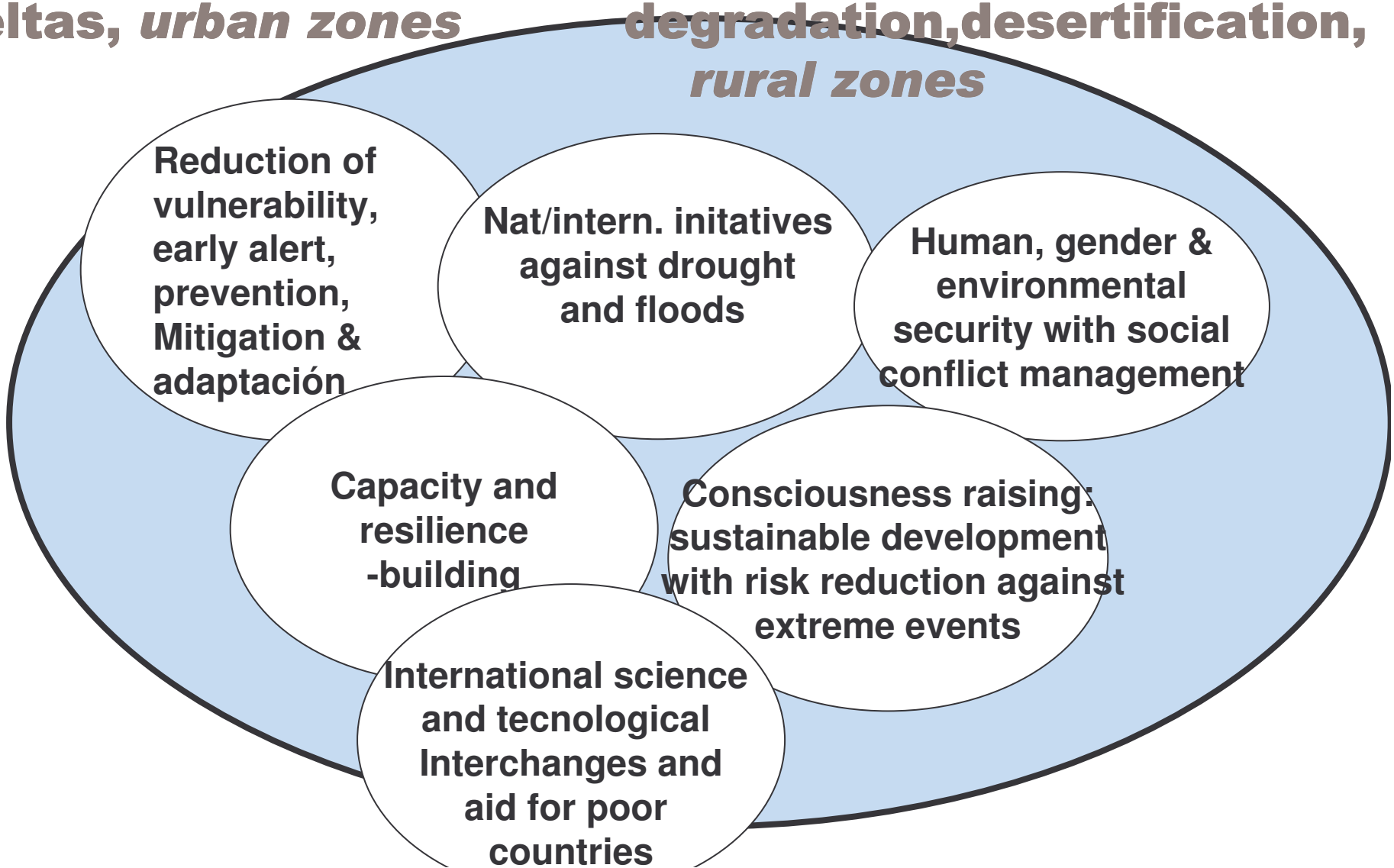
Integral proposal of poverty alleviation and environmental recovery to reduce migration



Keys of Water Research in Mexico

Floods: in plains, rivers, deltas, *urban zones*

----Drought: salinization, land degradation,desertification, *rural zones*



Goals: to achieve environmental & human security with equity/equality

Sustainable development is achieved when communities account with the capacity and the necessary means to eliminate, mitigate and adapt to threats in the human and environmental sphere with preventive instead of reactive policies and practices that are oriented to respect human rights and create the ability to negotiate peacefully the upcoming conflicts.

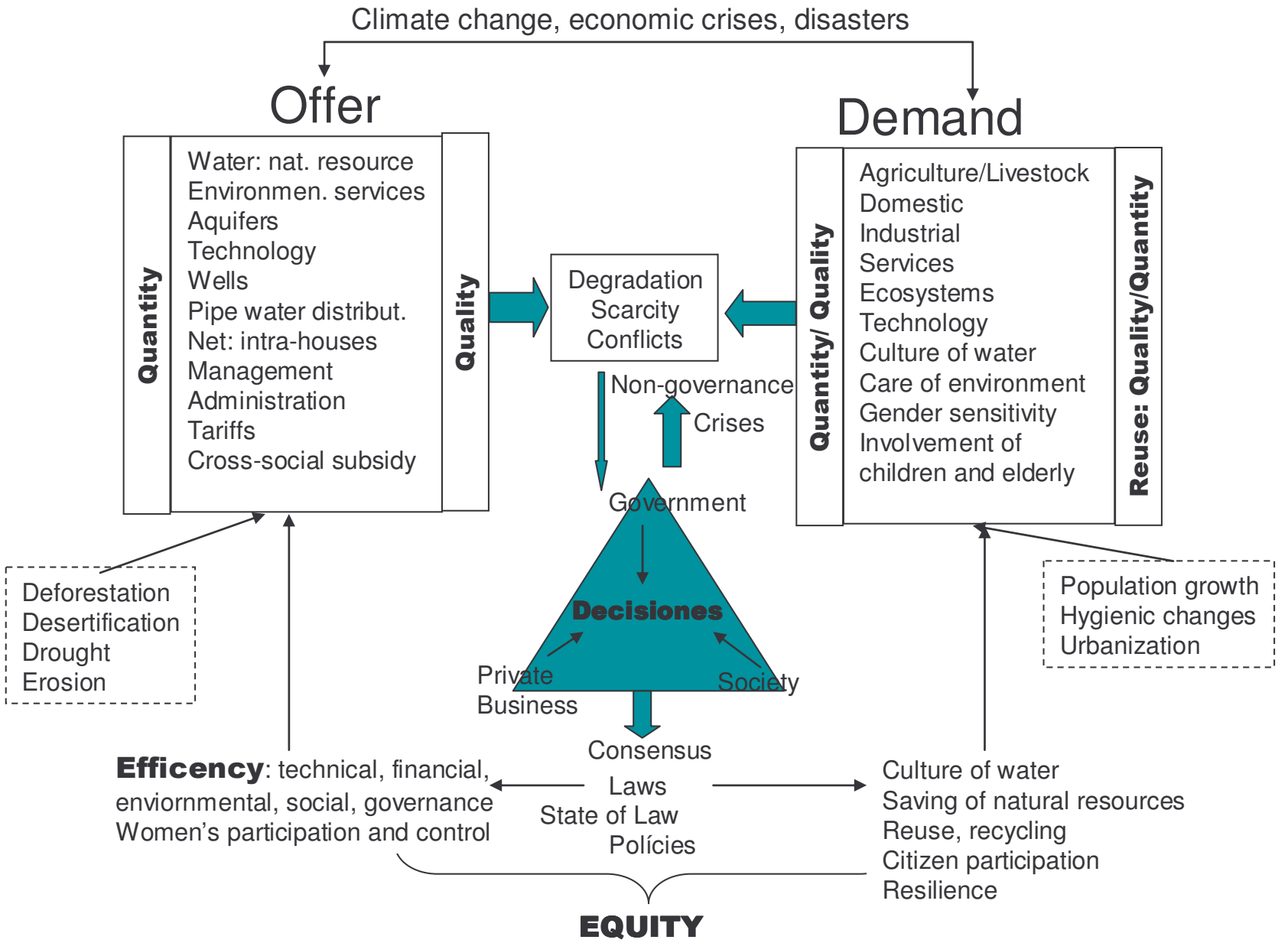
7. Human, Gender and Enviromental Security: a HUGE security

Obstacles to a HUGE security

- **Top-down imposed policies:** unequal development, environmental destruction, injustice, concentration of wealth, health/education insecurity, and fragile governance
- **From above:** fragile organizations, unemployment, gender violence, low educational level, lack of solidarity, hunger, malnutrition and violent conflicts
- **Lack of peaceful conflict resolution:** intolerance, authoritarian imposition of solutions, public violence, lack of transparency and militarism

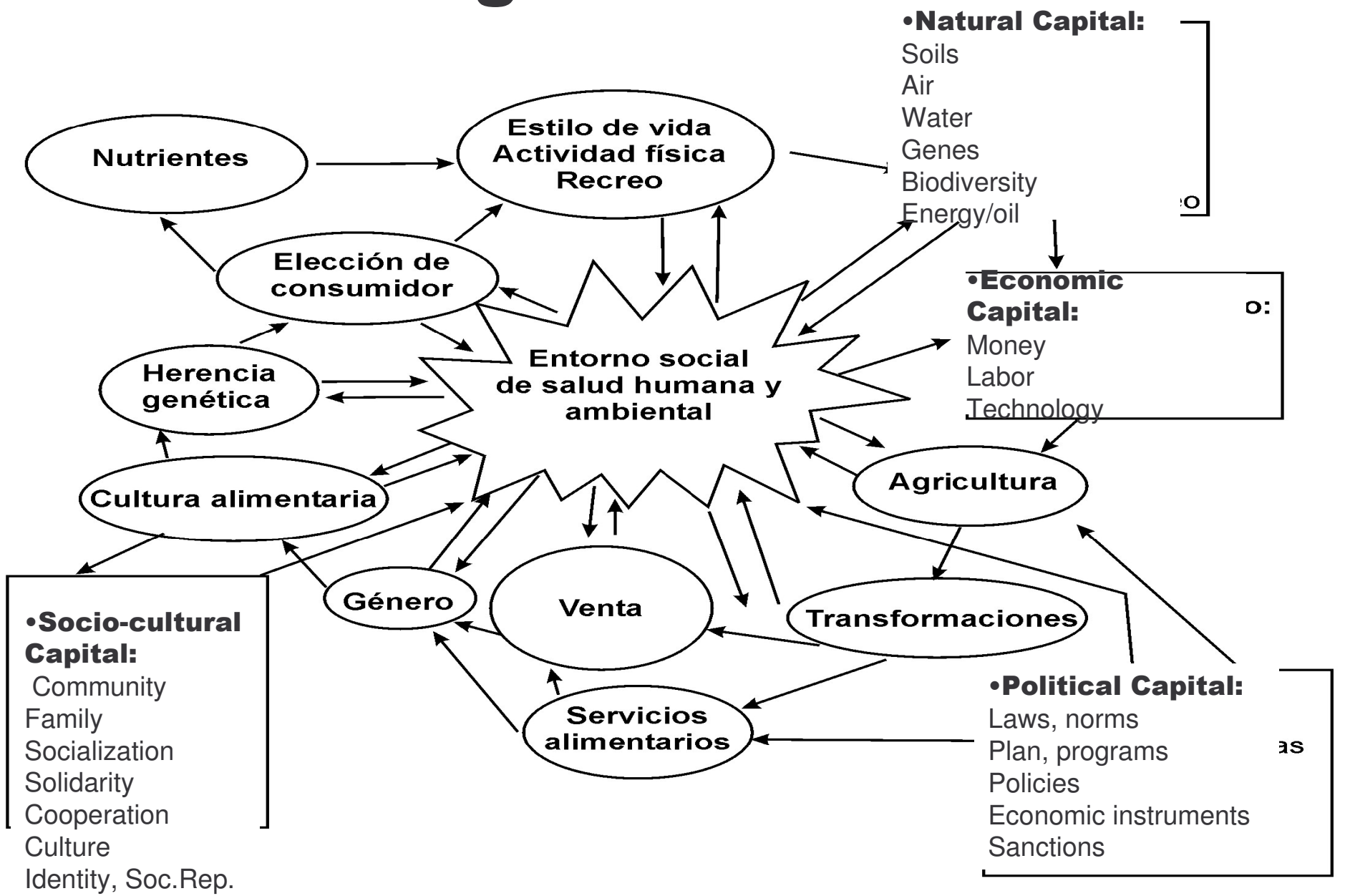
Alternatives: A HUGE solution of solidarity with sustainable processes where intra and intergenerational equity and development is reinforced with societal collaboration and peaceful conflict resolution. Thus threats and risks are reduced by proactive actions and mechanisms of mitigation, adaptation and resilience.

Efficiency and Equity with Natural Resources



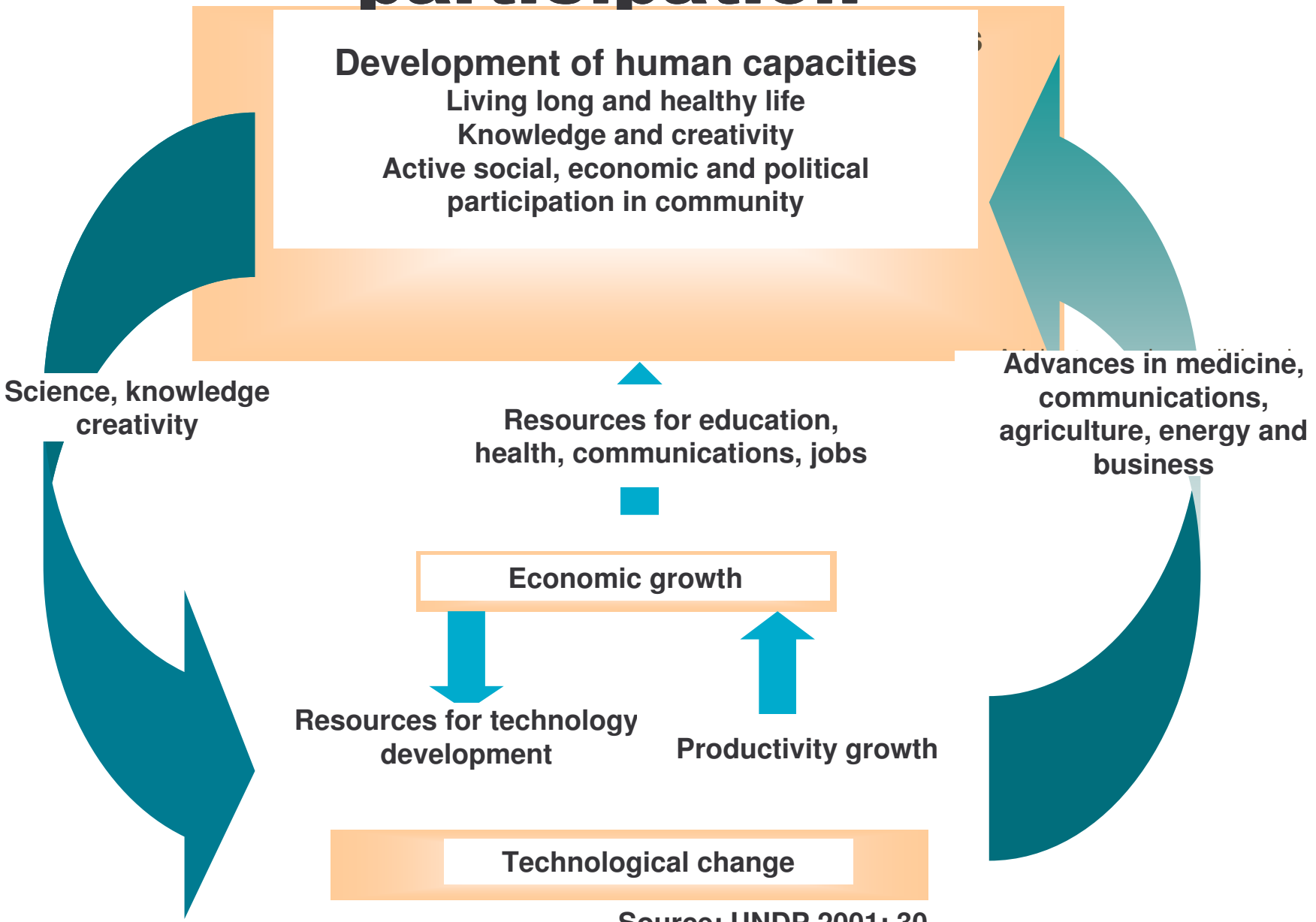
Fuente: Oswald y Sandoval, 2006

Health integrated in environment



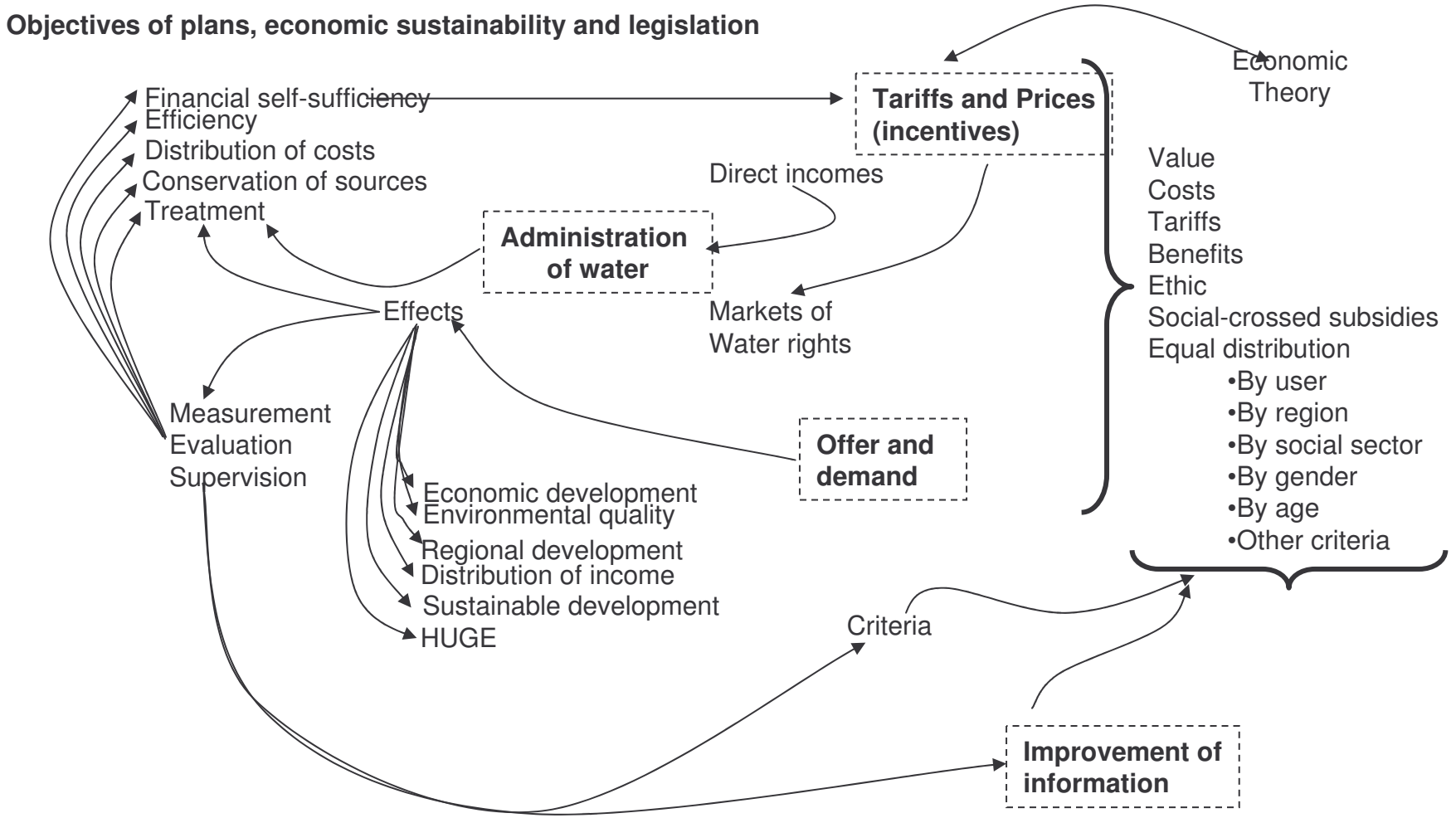
Fuente: Lang y Heasman, 2005: 39, modificado por Oswald, 2006

Capacity building and societal participation



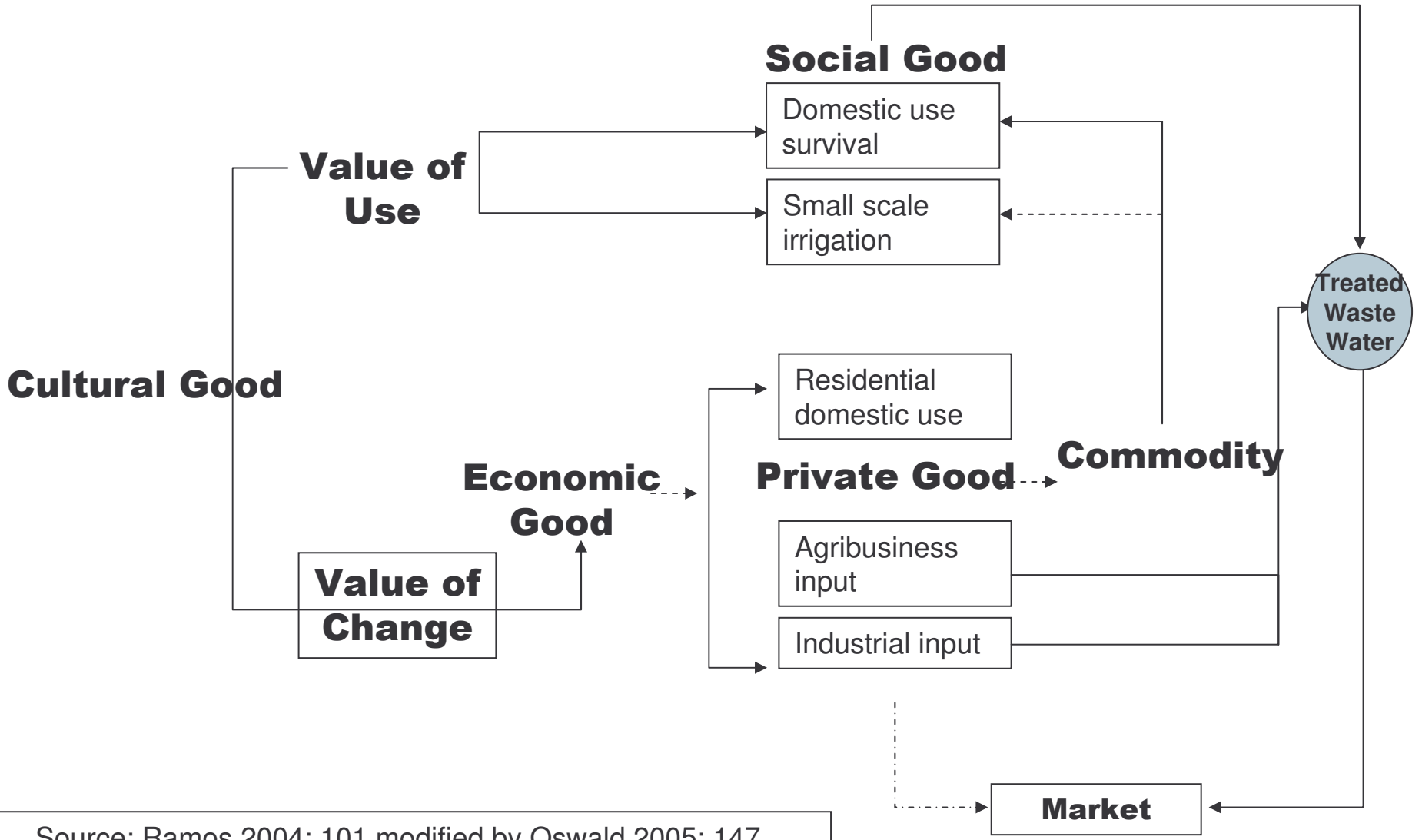
Source: UNDP 2001: 30

Sustainable Economy of Water



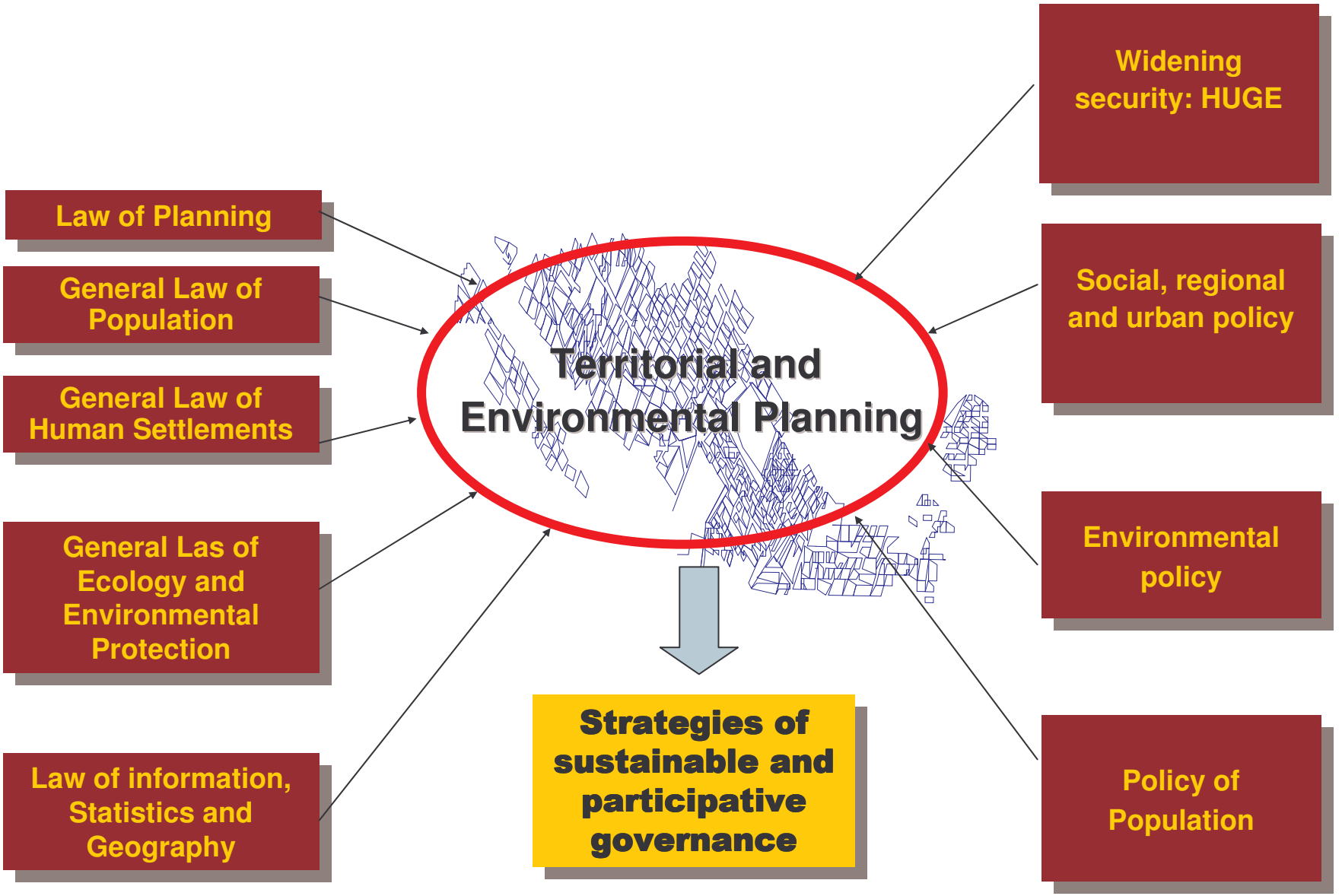
Source: Sandoval 2000, modified by Oswald 2005: 153

Logics of Value of Water



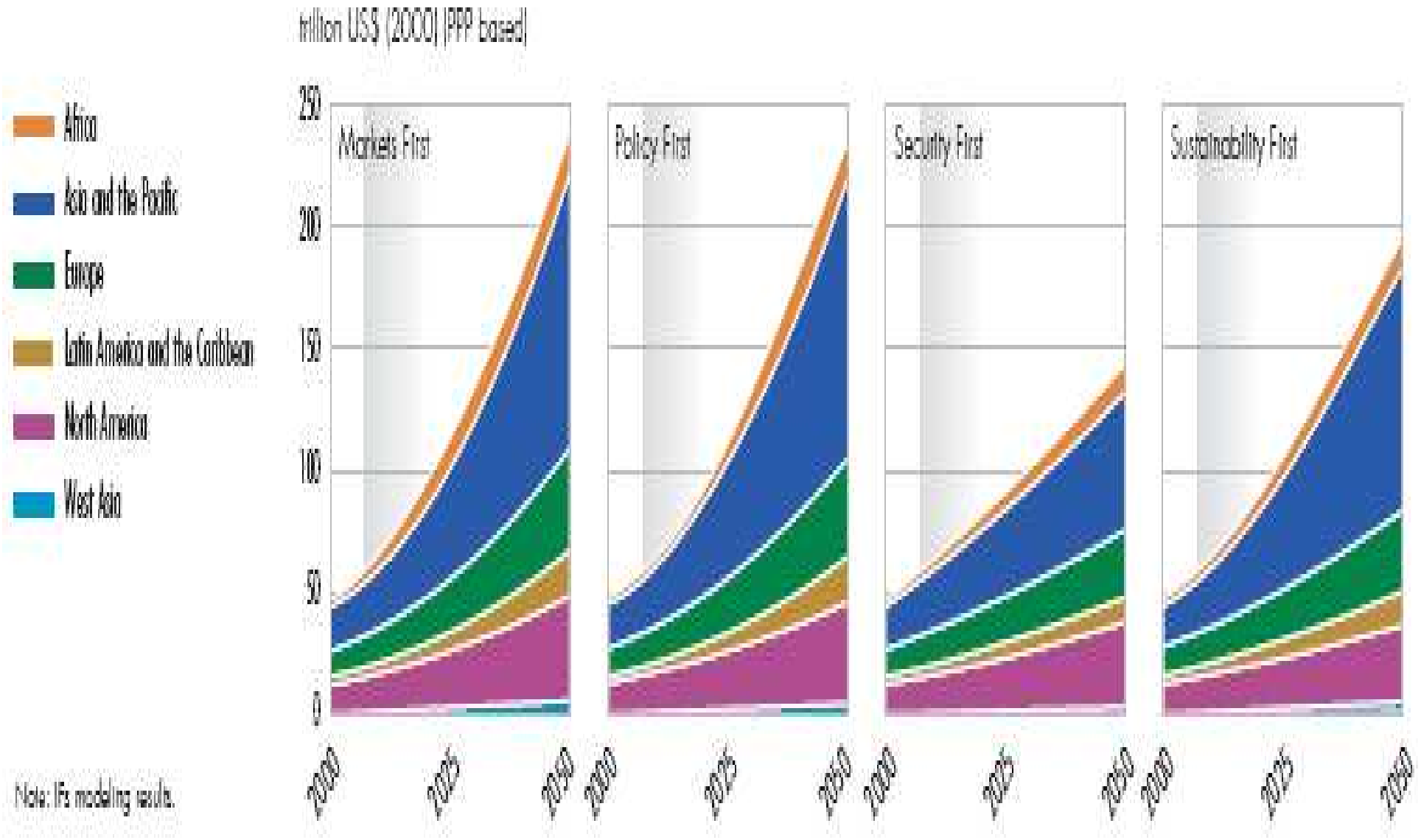
Source: Ramos 2004: 101 modified by Oswald 2005: 147

Democratic and participative governance

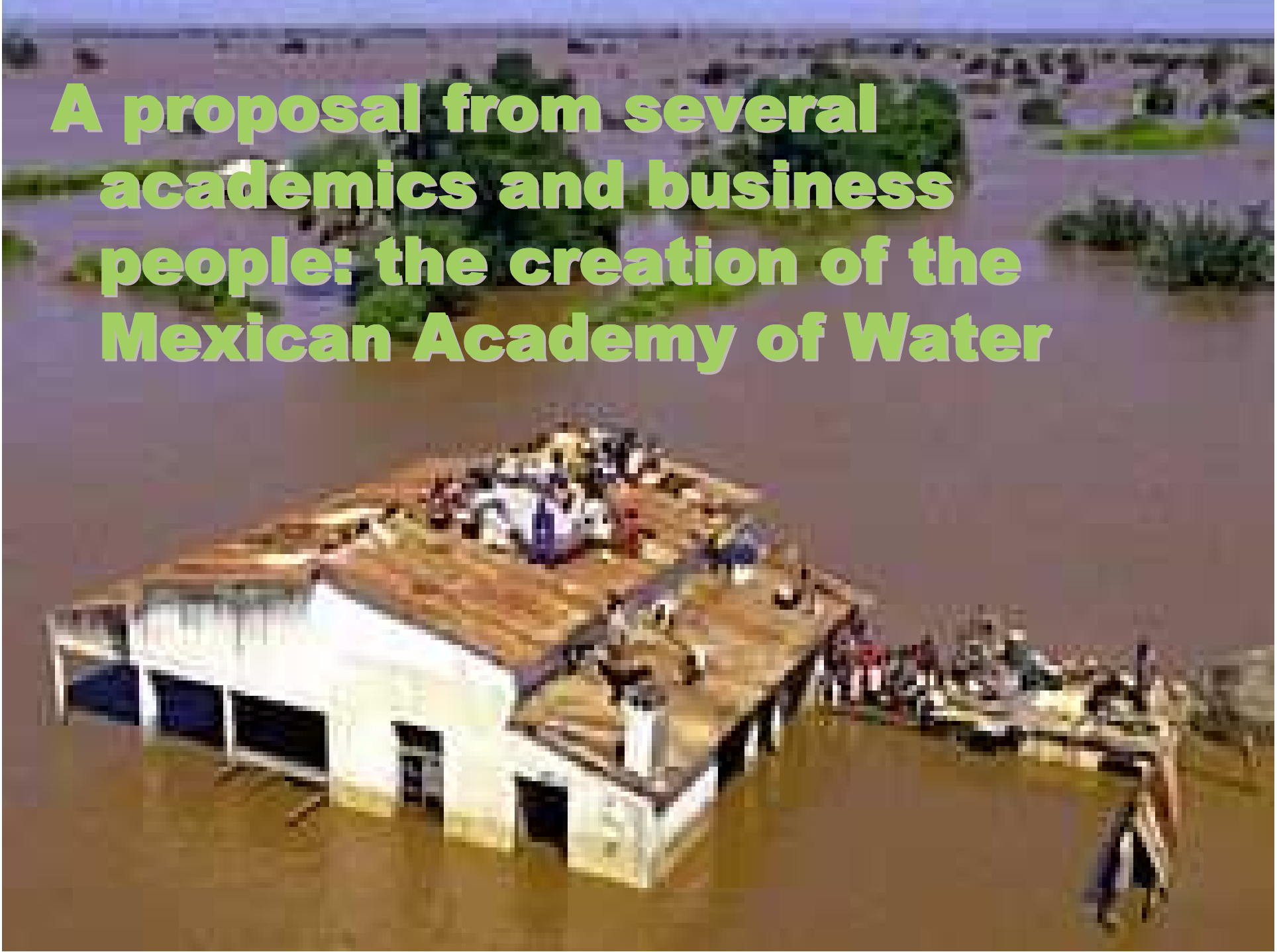


Four Models of Development

(Source: UNEP, GEO-4, 2007)



A proposal from several academics and business people: the creation of the Mexican Academy of Water



A good starting point: a collective challenge

Thanks for your attention

uoswald@gmail.com

http://www.afes-press.de/html/download_oswald.html