

Water for Food and Human Wellbeing in Latin America: Status and Challenges in a Globalized World

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Outline

- ✓ Who was involved, why and for what this book?
- ✓ Most relevant findings on water and food security progresses and nexus in LA
- ✓ Main messages: where is LA standing now and what are the challenges ahead?

Who was involved?

| | |
|-------------|---|
| Argentina: | M.J. Fioriti (Subs.de Recursos Hídricos. Min. Planificación, Argentina) |
| Brazil: | Pedro Jacobi y Vanessa Empinotti (Universidad de Sao Paulo) |
| Chile: | Guillermo Donoso (Pontificia Universidad Católica de Chile) |
| Colombia: | Diego Arévalo (WWF-Colombia) |
| Costa Rica: | Patricia Phumpiu (Centro Tecnológico del Agua, Monterrey) |
| Mexico: | Rosario Pérez Espejo (Universidad Nacional Autónoma de Mexico) |
| Perú: | Julio Kuroiwa (Universidad Nacional de Perú) |



Water Observatory Botin Foundation, Spain



Over 50 different authors from
11 nationalities

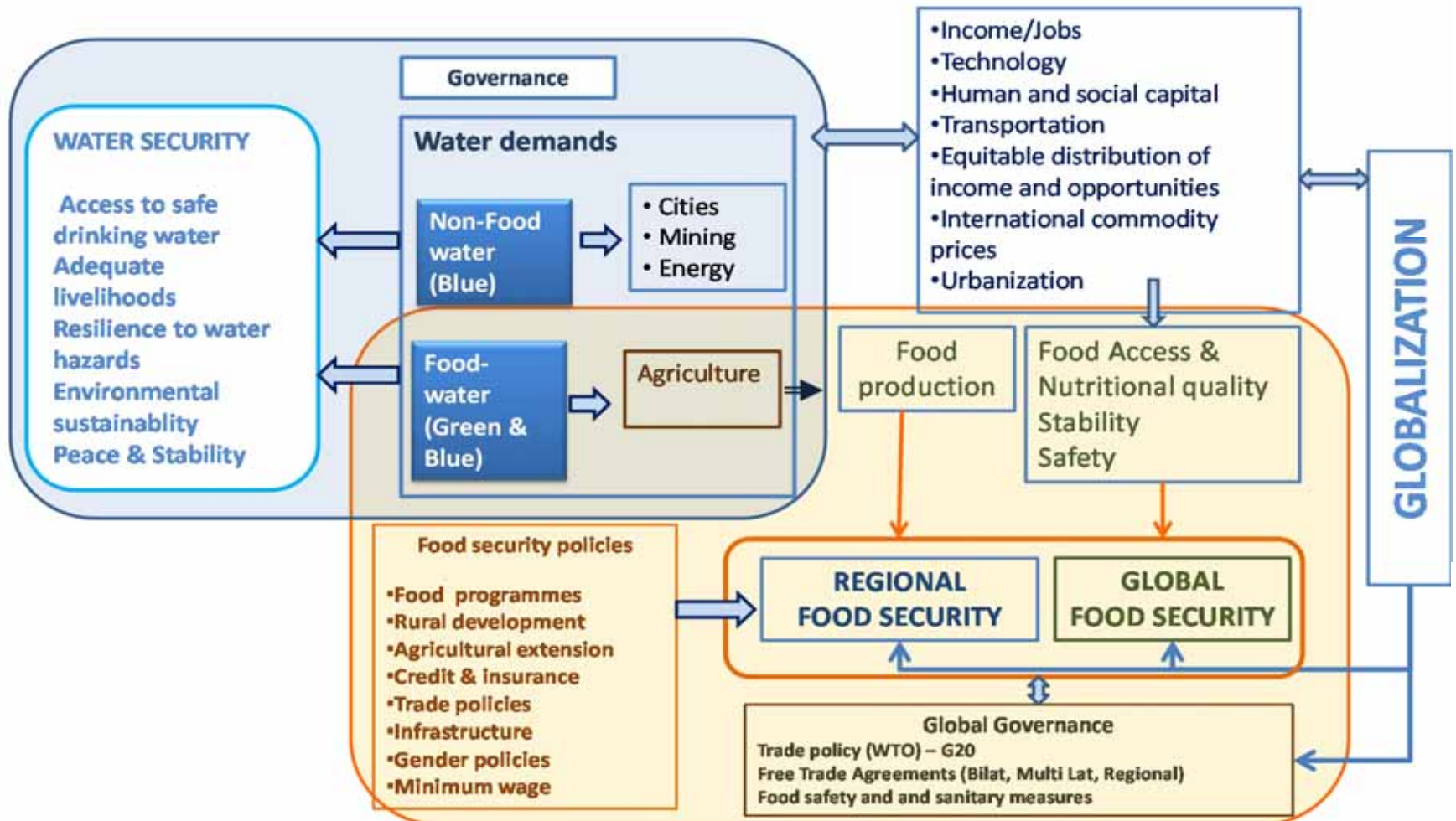
Why this book?

- ✓ Ongoing socio-economic mega-trends and growing globalization of LA countries have deep implications for *regional* and *global* **water and food security**
- ✓ Yet, analysis of water and food security in LA have been disjointed, and barely any report has address the **nexus** between **water and food** security in LA
- ✓ The strategic value of LA natural endowment offers a double-side topic of research. It provides an opportunity for development but also entails large environmental trade-offs.

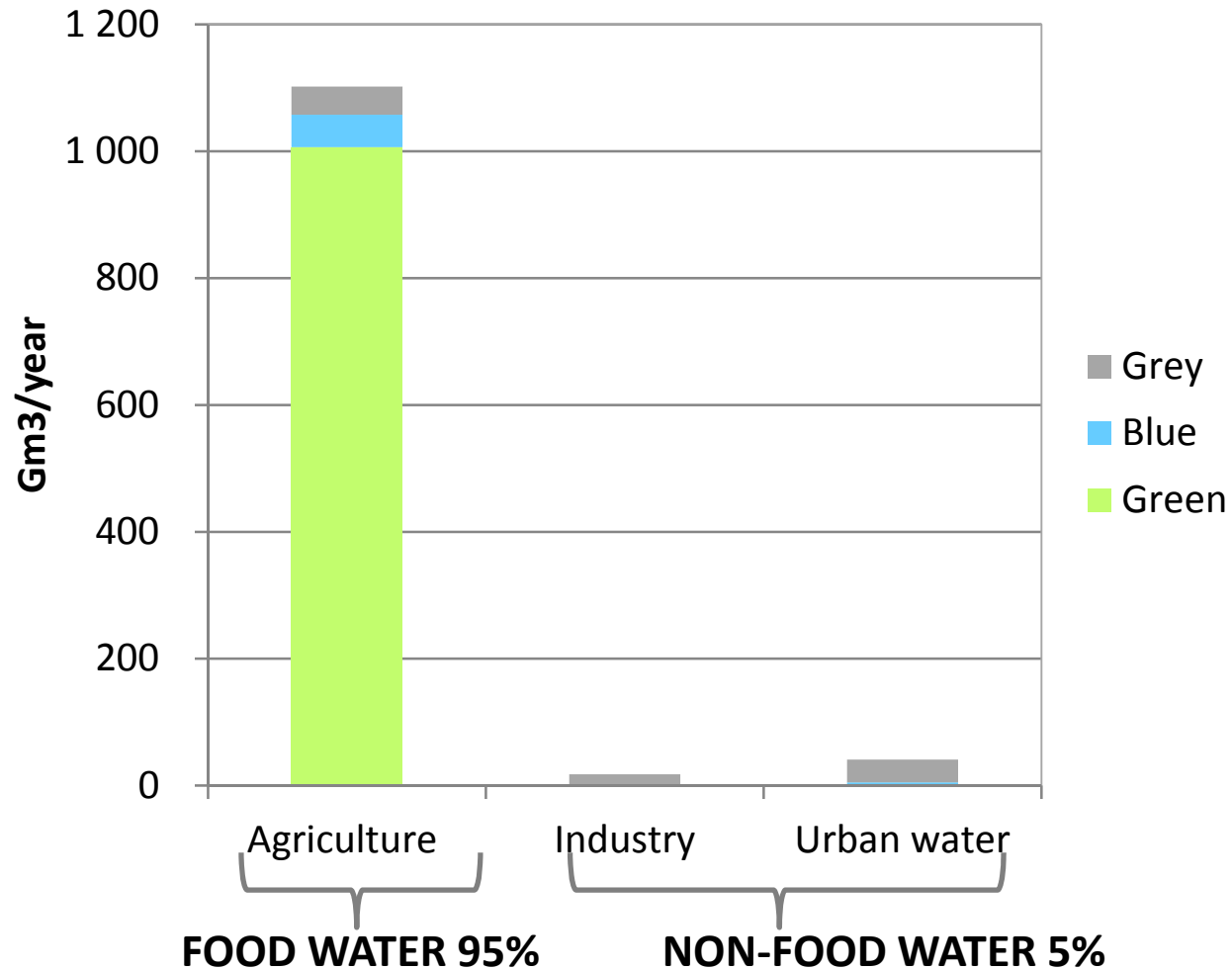
Book objectives

- ✓ Comprehensive diagnosis of water and food security in LA and linking them to the major socio-economic trends
- ✓ Assess the growing importance of LA in global water and food security
- ✓ Generate policy-relevant and country-specific findings, with the aim of facilitating policy debates in the region
- ✓ Review the critical changes that are taking place in the institutional and governance spheres

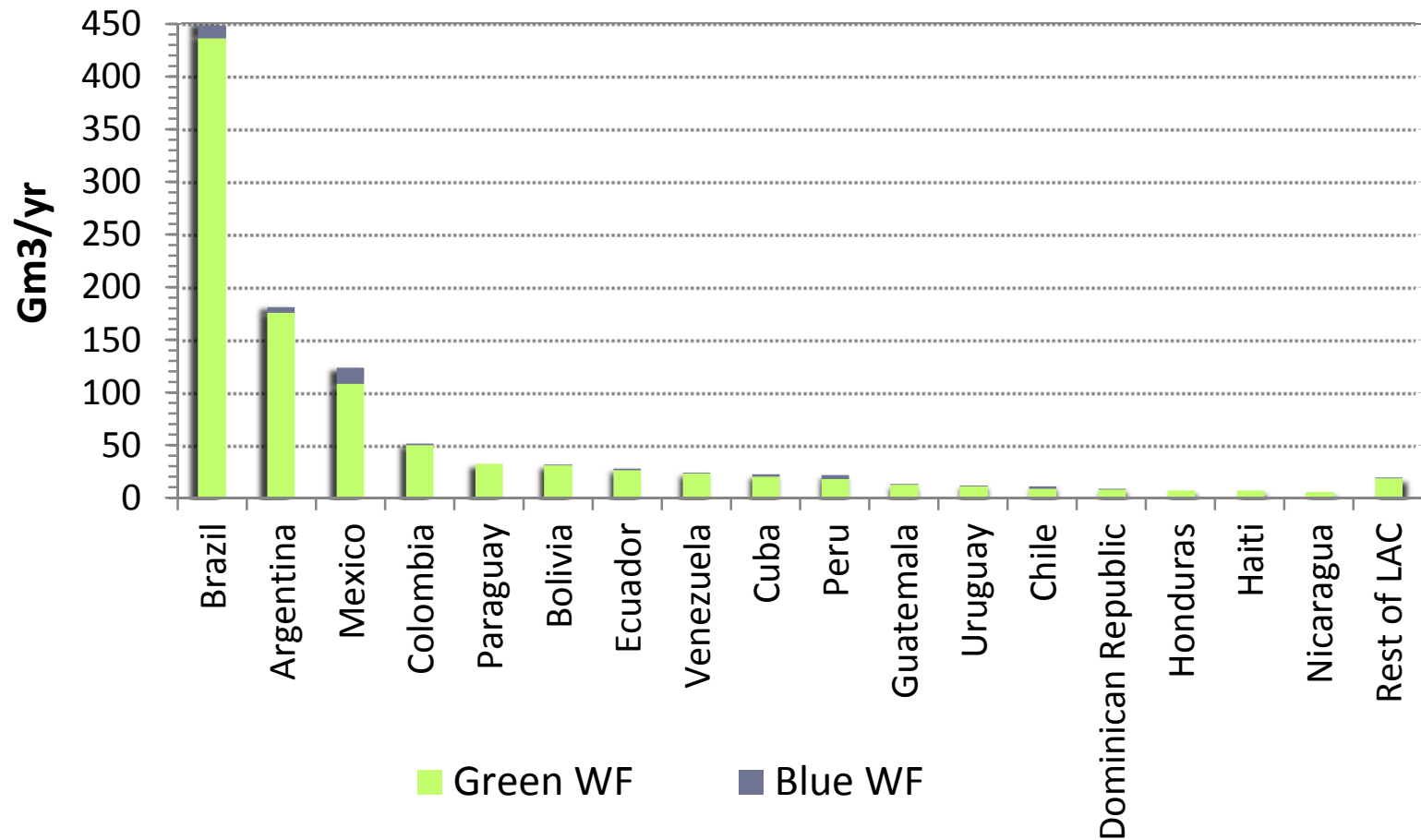
Approach



The importance of food-water and non-food water

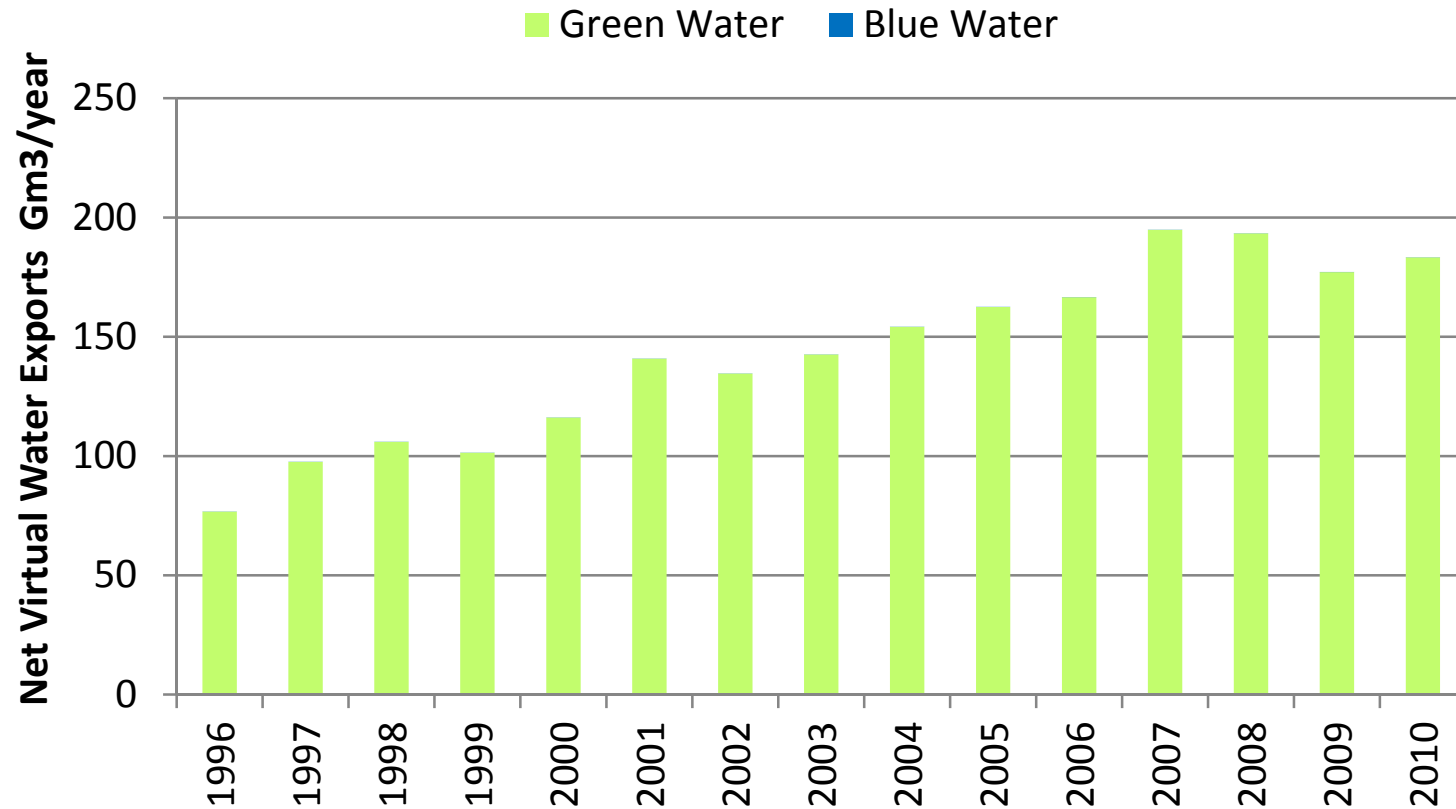


Green and Blue Food-Water importance



Source: Own elaboration based on WFN (2011)

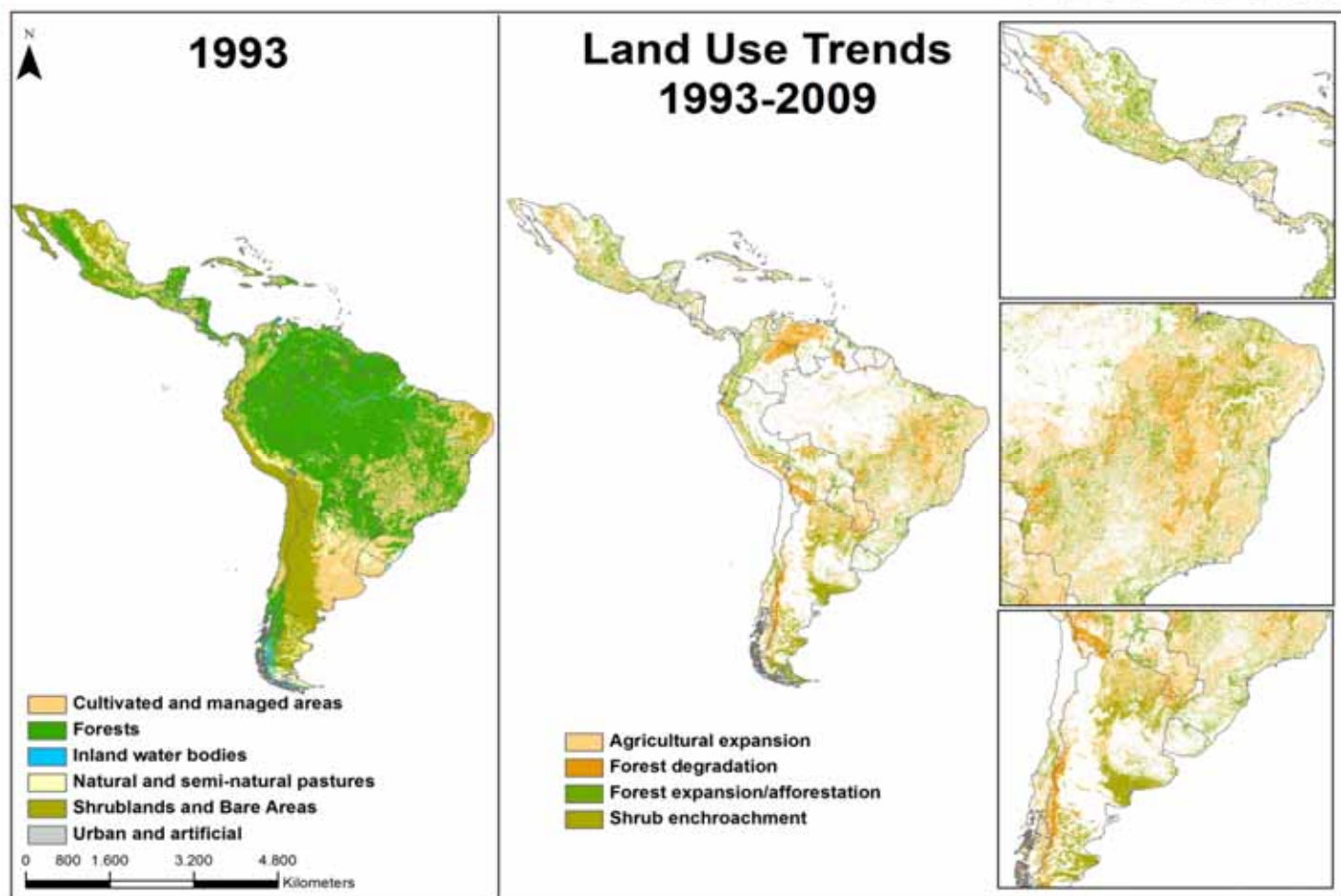
Contribution of LA to global water and food security



LA is growing virtual water exporting region and yet two countries (Brazil and Argentina) are responsible for 13% of global VWT

Source: Own elaboration based on WFN (2011) and FAO (2013)

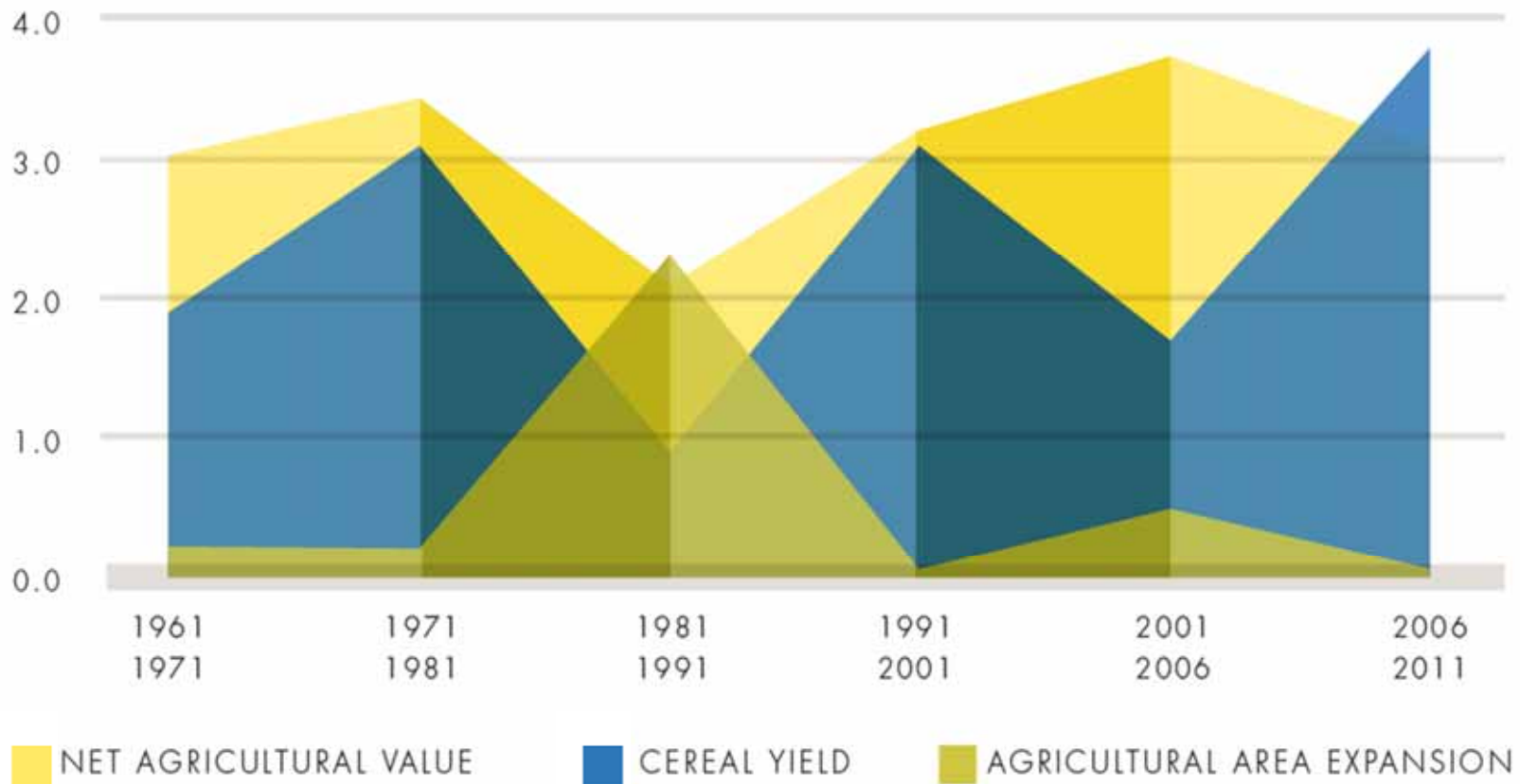
Impacts linked to food water use: Land Use Changes



1 mill sq. Km of forest loss since 1990. But yet, symptoms of forest recovery also are emerging

Decoupling agriculture from land expansion

Annual compound growth rate (%)

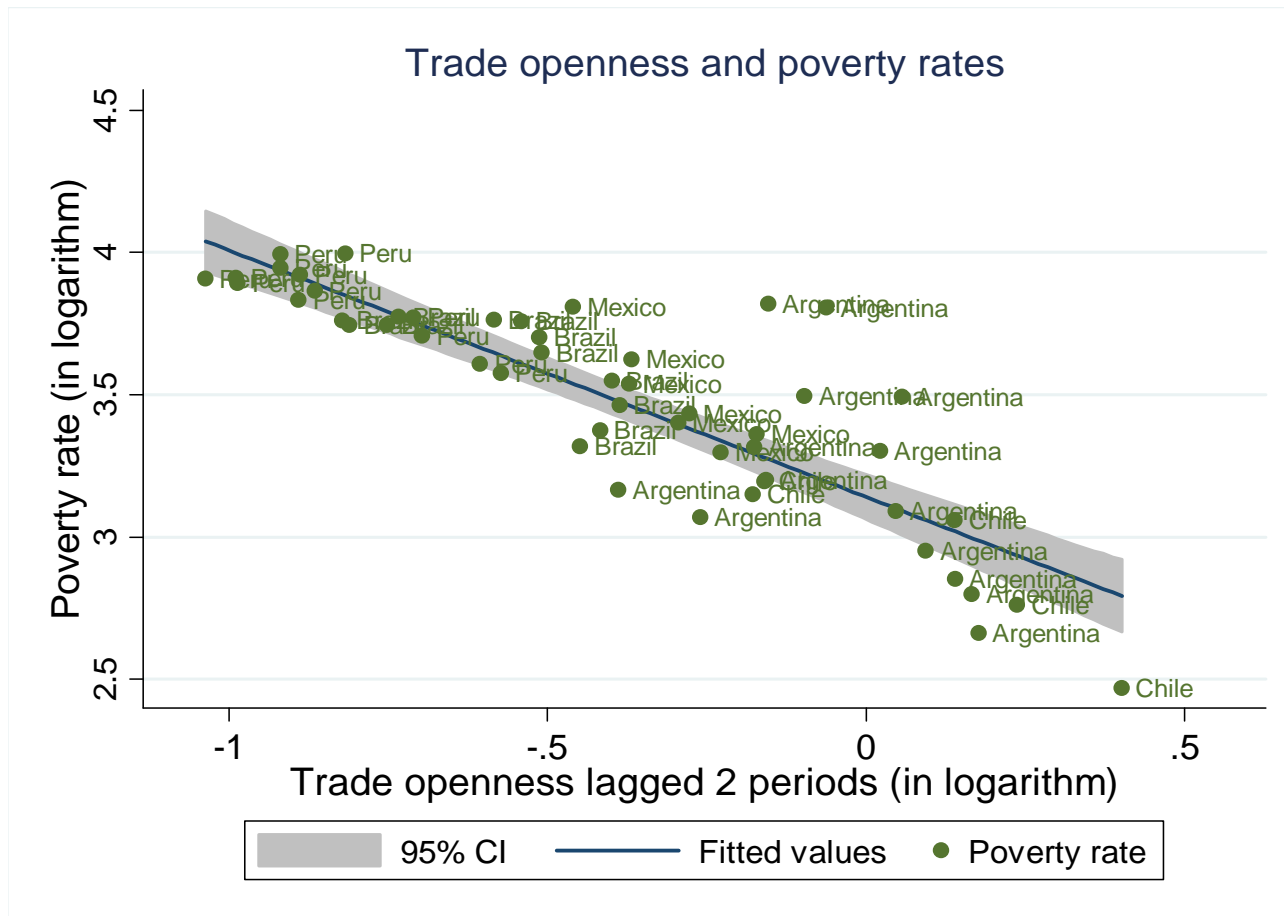


Key issues regarding food water and the role of LA in global food and water security

- Food-water accounts for 95% of the total consumptive uses of water in LA and it is a key resource to achieve global food and water security.
- The increase in price commodities has favored the growth of agriculture and exports in LA. In the last two decades virtual water exports have doubled and it is very likely that this trend will continue. This poses important challenges.
- Agricultural productivity in LA has grown significantly, which is progressively allowing to decouple agricultural growth from land use (deforestation)

Links between poverty alleviation and trade

Trade and poverty rates in five LAC countries (1996 - 2010).



Source: Own elaboration base on World Bank and WTO data

Food security progress in LA

Percentage of people undernourished

Change

| | 1990-92 | 2007-09 | 2010-12 | Between 1990-92 and 2007-2009 | Between 2007-09 and 2010-2012 |
|----------------------|---------|---------|---------|-------------------------------|-------------------------------|
| LAC | 14,6 | 8,7 | 8,3 | -5,9 | -0,4 |
| Caribbean | 28,5 | 18,6 | 17,8 | -9,9 | -0,8 |
| Cuba | 11,5 | <5 | <5 | | |
| Dominican Republic | 30,4 | 15,9 | 15,4 | -14,5 | -0,5 |
| Haiti | 63,5 | 46,8 | 44,5 | -16,7 | -2,3 |
| Latin America | 13,6 | 8,1 | 7,7 | -5,5 | -0,4 |
| Argentina | <5 | <5 | <5 | | |
| Bolivia | 34,6 | 27,5 | 24,1 | -7,1 | -3,4 |
| Brasil | 14,6 | 7,8 | 6,9 | -6,8 | -0,9 |
| Chile | 8,1 | <5 | <5 | | |
| Colombia | 19,1 | 12,5 | 12,6 | -6,6 | 0,1 |
| Costa Rica | <5 | 5,0 | 6,5 | | 1,5 |
| Ecuador | 24,5 | 19,6 | 18,3 | -4,9 | -1,3 |
| El Salvador | 15,6 | 11,3 | 12,3 | -4,3 | 1,0 |
| Guatemala | 16,2 | 30,2 | 30,4 | 14,0 | 0,2 |
| Honduras | 21,4 | 11,6 | 9,6 | -9,8 | -2,0 |
| Mexico | <5 | <5 | <5 | | |
| Nicaragua | 55,1 | 23,9 | 20,1 | -31,2 | -3,8 |
| Panama | 22,8 | 13,1 | 10,2 | -9,7 | -2,9 |
| Paraguay | 19,7 | 16,8 | 25,5 | -2,9 | 8,7 |
| Peru | 32,6 | 15,9 | 11,2 | -16,7 | -4,7 |
| Uruguay | 7,3 | <5 | <5 | | |
| Venezuela | 13,5 | <5 | <5 | | |

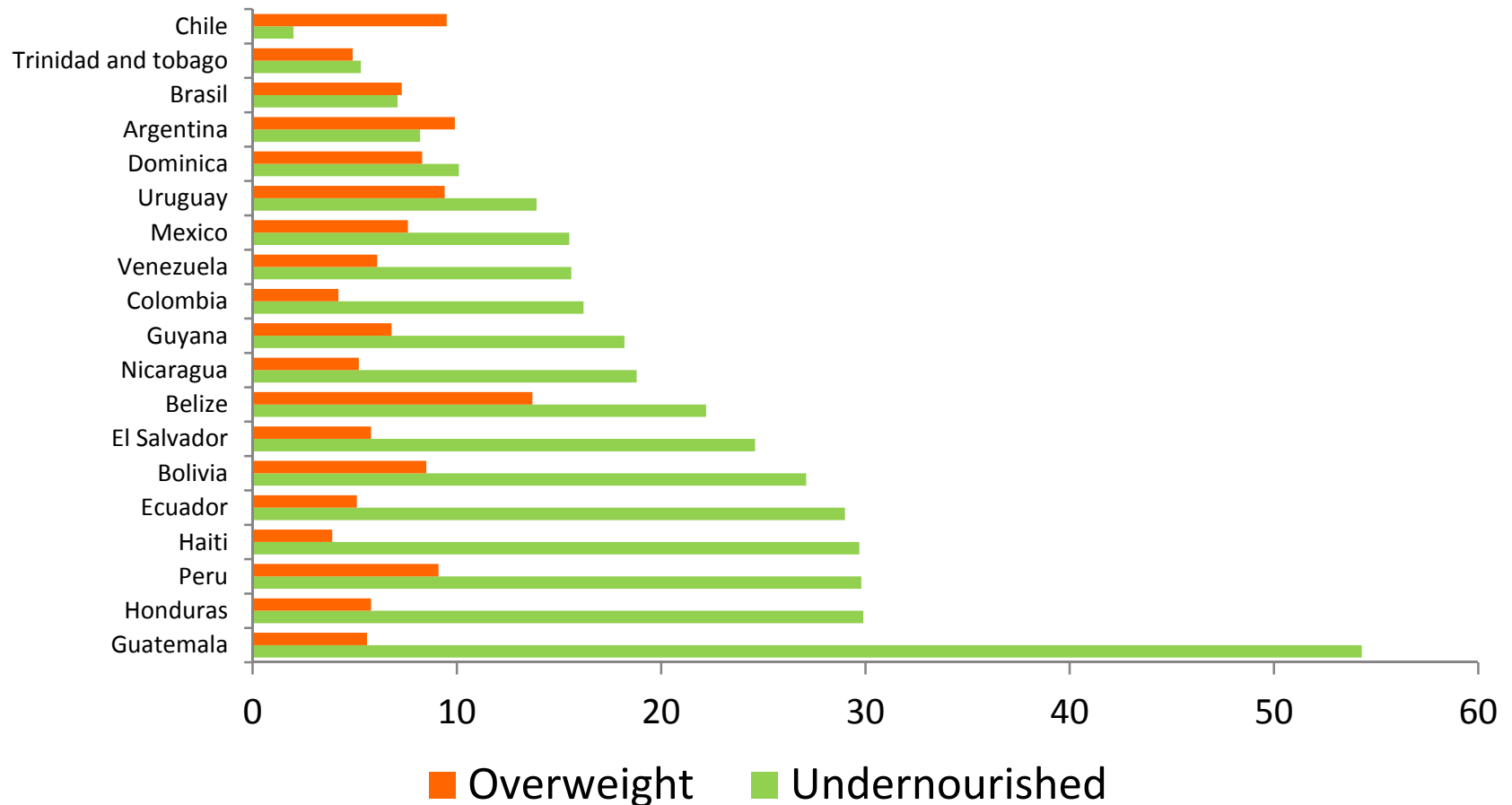
Source: FAO (2012)

| | |
|--|--|
| | Improved |
| | Deterioration and a growth below the average |
| | No change |

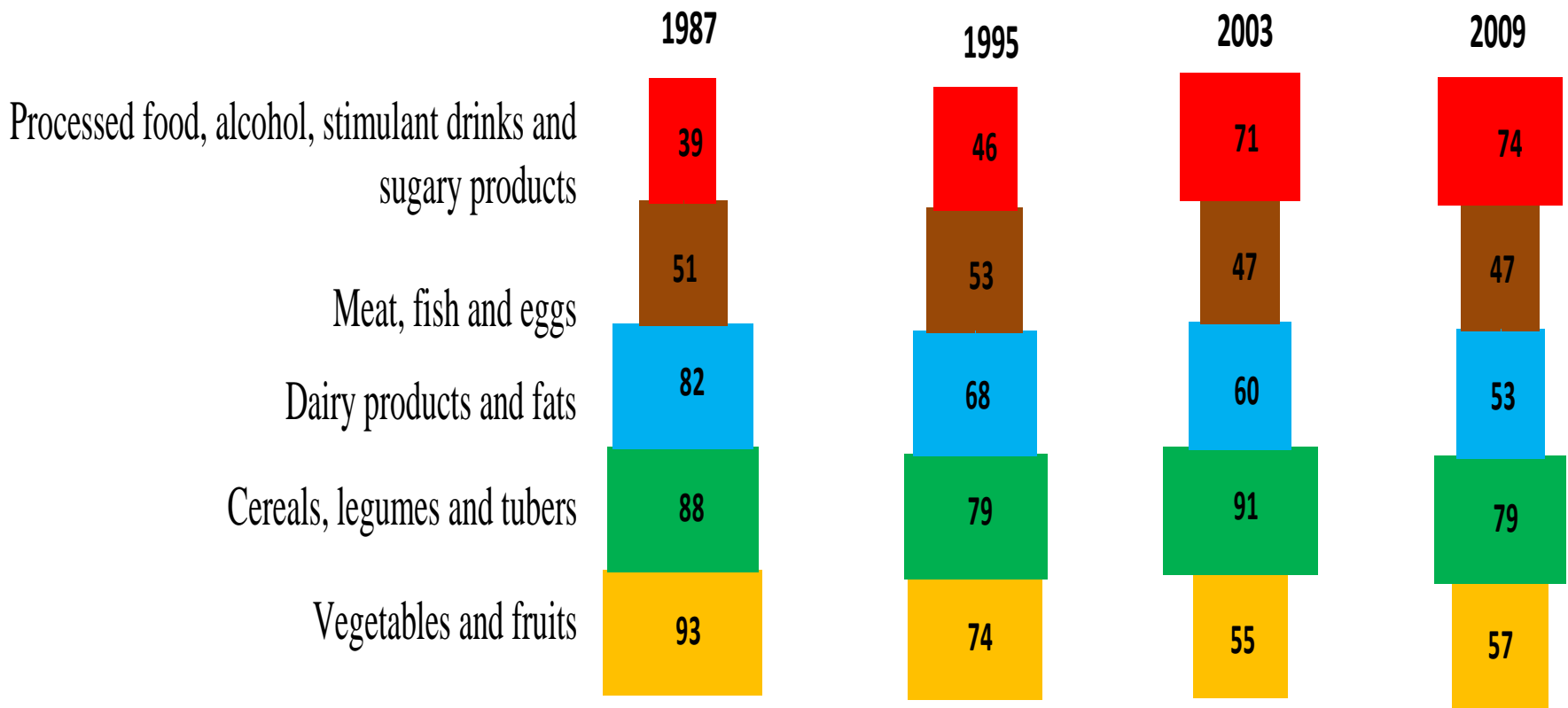
Source: Own elaboration base on FAO data

Mal-nutrition a growing problem in LA

Undernourished and overweight in children under five years old (2000-2009).

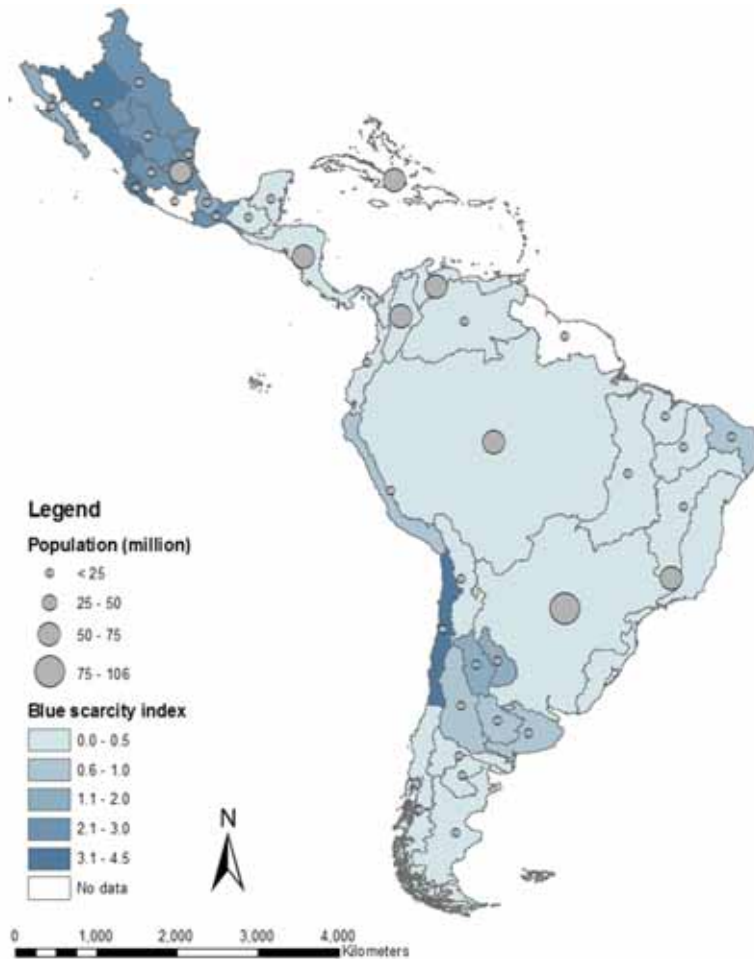


Nutritional transition is reversing the composition of the food pyramid



Changes in the food pyramid of Brazilians (kg/capita/year)

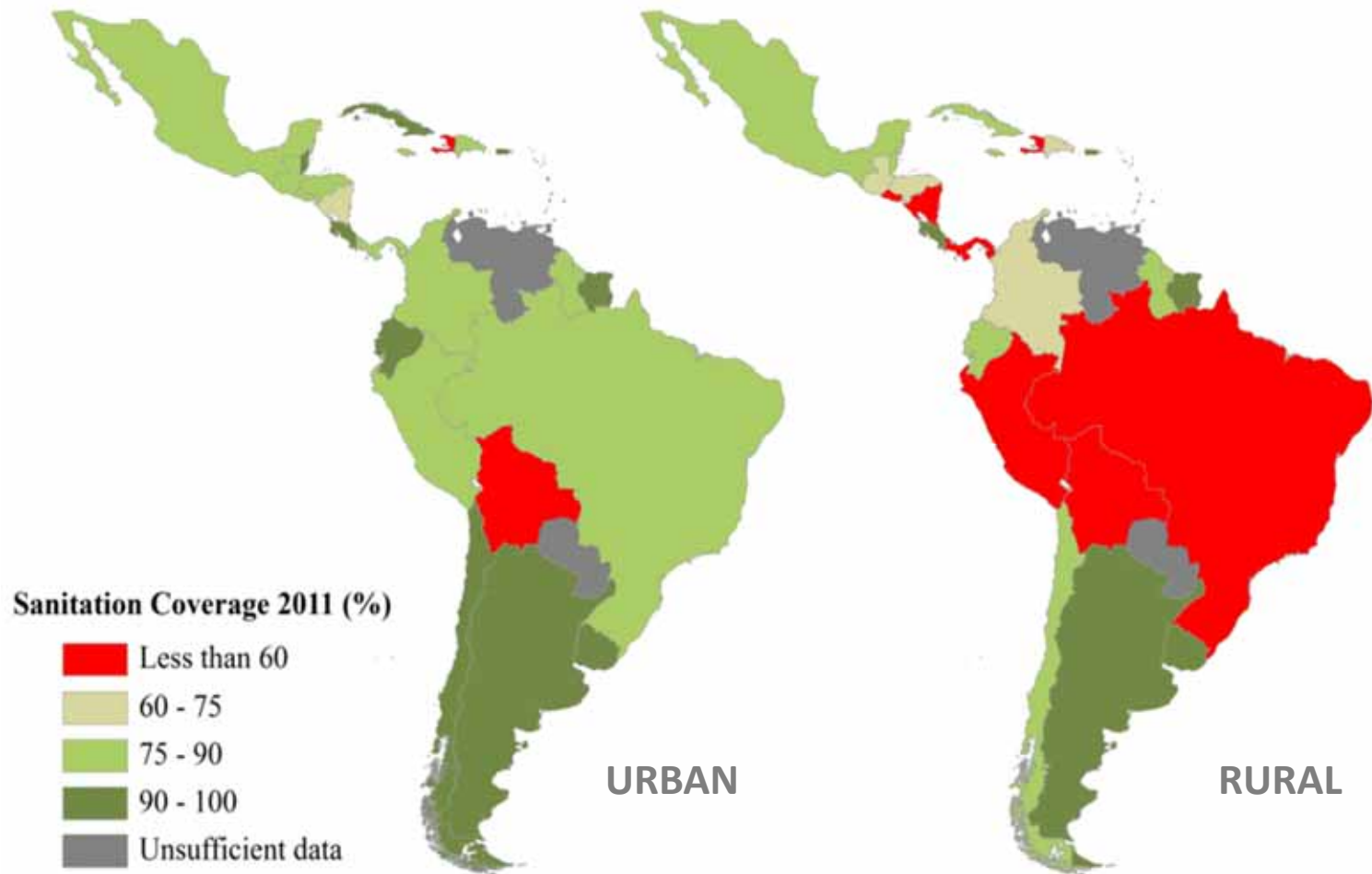
Competing uses in are generating physical water scarcity



Yet, 125 million persons in LAC (21% of the total population) live in physical water scarce basins.

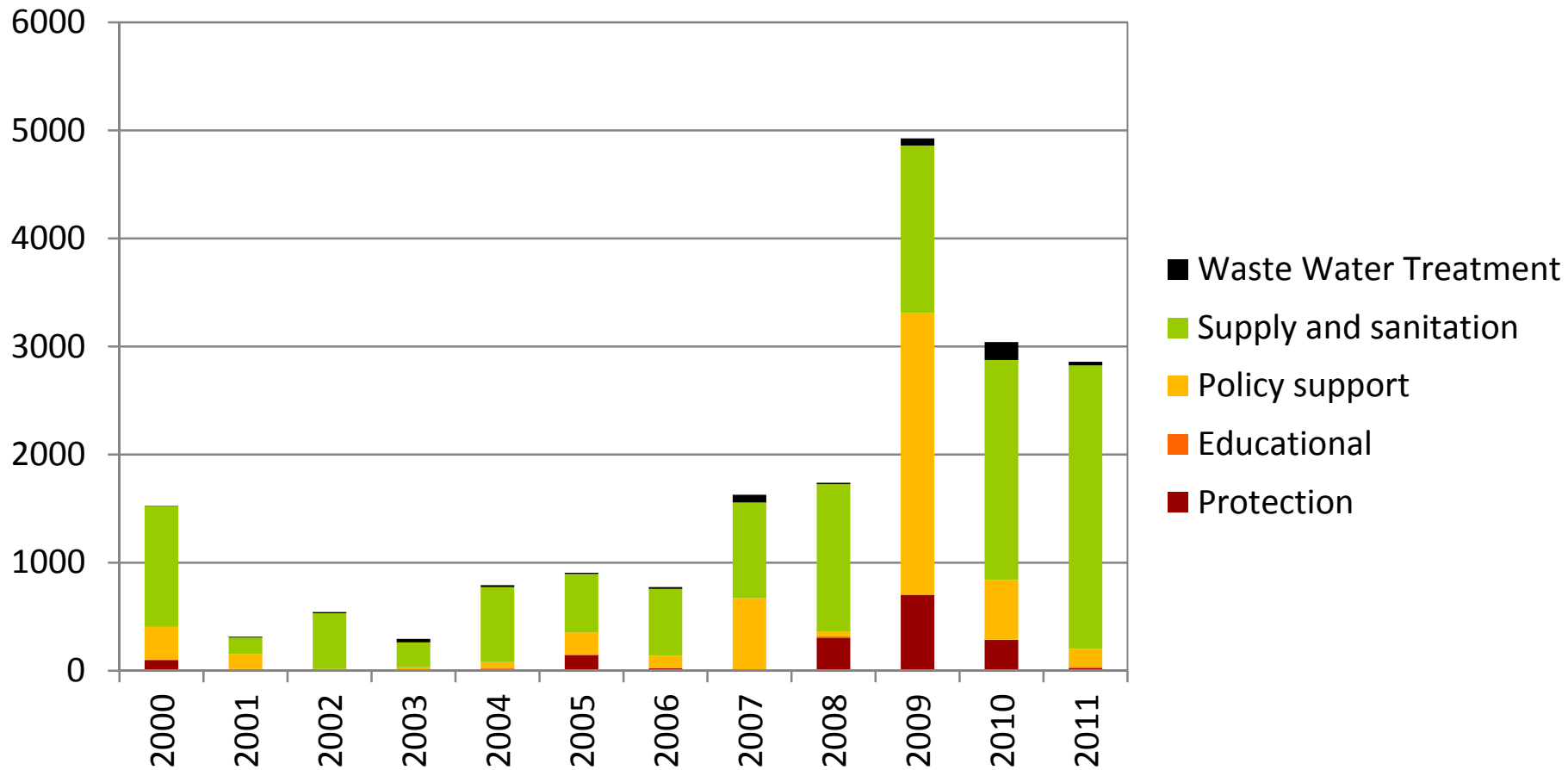
Economic water scarcity : Sanitation the unfinished subject

100 million people still do not have full access to sanitation



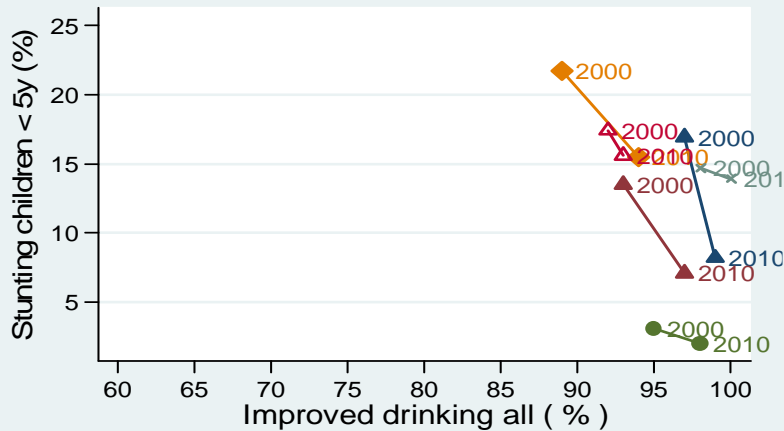
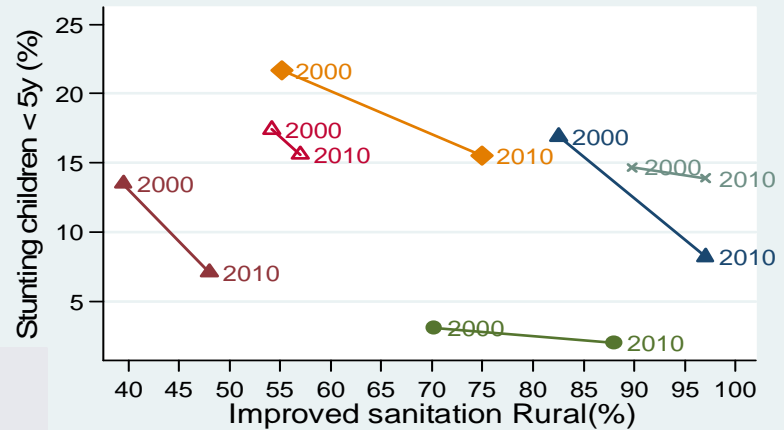
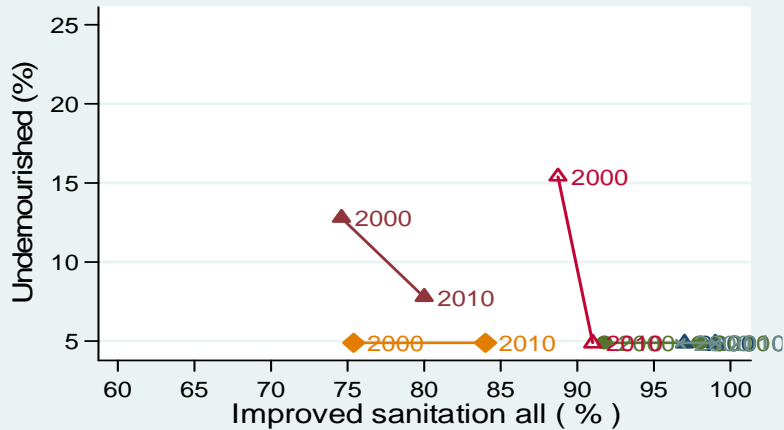
Economic water scarcity : growing pollution and yet lack of investments

Lack of investment in waste water treatment



Source: Own elaboration based on data from OECD

Nexus water and food security

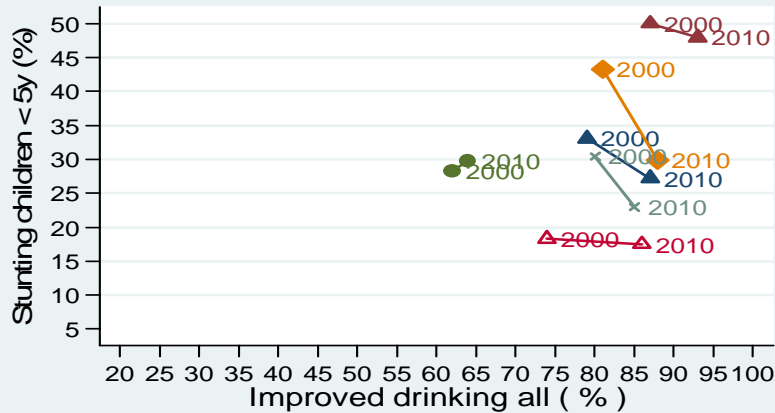
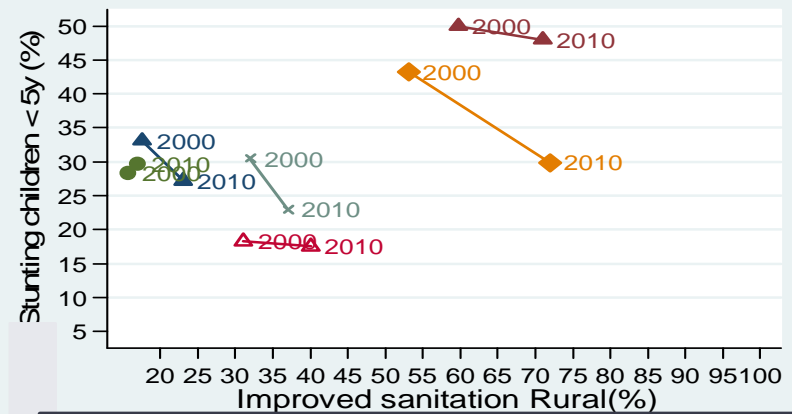
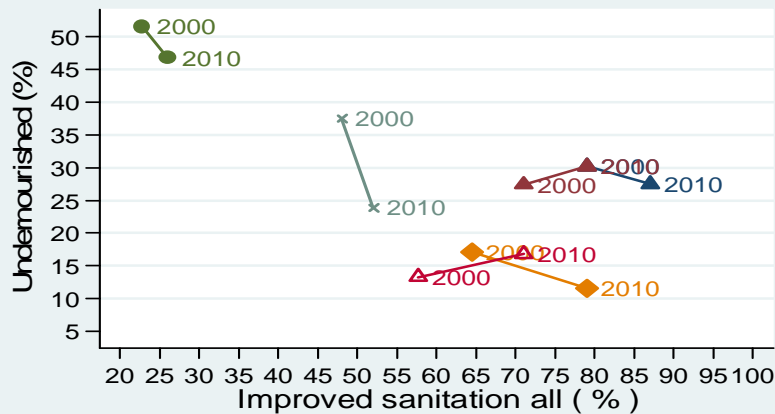


Countries in the 1 th quartile of GDP per capita

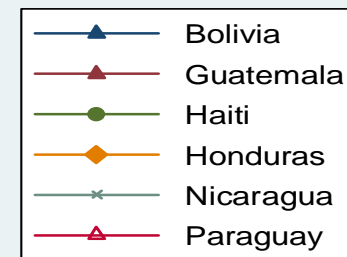
- ▲— Argentina
- ▲— Brasil
- Chile
- ◆— Mexico
- ×— Uruguay
- ▲— Venezuela

Source: FAO and WHO statistics

Nexus water and food security



Countries in the 4th quartile of GDP per capita



Water governane for improving water security

| | Prior to 1981 | 1981 | ... | 1984 | 1985 | ... | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|-----------------------|---------------|------|-----|------|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Argentina | 1973* | | | | | | | | | | | | * | | | | | | | | | | | | * |
| Bolivia | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brasil | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chile | | | | | | | | | | | | | | | | | | | | | | | | | |
| Colombia | 1974 | | | | | | | | | | | | | | | | | | | | | | | | |
| Cuba | 1906 | | | | | | | | | | | | | | | | | | | | | | | | |
| Dominican Rep. | 1962 | | | | | | | | | | | | | | | | | | | | | | | | |
| Ecuador | 1972 | | | | | | | | | | | | | | | | | | | | | | | | |
| El Salvador | 1961 | | | | | | | | | | | | | | | | | | | | | | | | |
| Guatemala | | | | | | | | | | | | | | | | | | | | | | | | | |
| Honduras | 1927 | | | | | | | | | | | | | | | | | | | | | | | | |
| Jamaica | 1993 | | | | | | | | | | | | | | | | | | | | | | | | |
| Mexico | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nicaragua | | | | | | | | | | | | | | | | | | | | | | | | | |
| Panama | 1966 | | | | | | | | | | | | | | | | | | | | | | | | |
| Paraguay | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peru | 1969 | | | | | | | | | | | | | | | | | | | | | | | | |
| Uruguay | 1978 | | | | | | | | | | | | | | | | | | | | | | | | |
| Venezuela | 1965 | | | | | | | | | | | | | | | | | | | | | | | | |

Water Act
 Groundwater Law
 Urban Supply Law
 Amended Water Act

Key messages and challenges

- Socio-economic development and poverty alleviation have contributed to improve basic food & water security goals LA, particularly among middle and richer countries.
- But further efforts are required to accomplish old goals among all countries (e.g. undernourishment or access to safe drinking water), and face the new challenges (e.g. mal-nutrition, decouple growth from natural resource use).
- Significant institutional reforms have been undertaken to accomplish fundamental water and food security goals. But civil society in LA is demanding more ambitious reforms to improve regional water security