

Environmental Accounts of Costa Rica: first results

BANCO CENTRAL DE COSTA RICA

WORLD BANK GROUP

WAVES

Content

Conceptual framework

Use for public policy

Water Account results

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Energy Accounts results

The wealth of a country

=

total capital

Physical

Intangible

Natural

Total wealth

Physical capital

- Machinery, equipment, infrastructure
- Urban land

Intangible capital

- Social and human

Net external assets

- Total assets
- Total liabilities

Natural capital

- **36%** **Low** income countries
- **21%** **Middle** income countries
- **3%** **High** income countries

Source: WAVES; The World Bank Databases

Development
of the environmental accounts

1 Support of the World Bank Accounts:

Steering Committee

2 INEC COSTA RICA · mideplan · minae · Ministerio de Hacienda · BANCO CENTRAL DE COSTA RICA

3 Environmental statistic unit

4 Accounting natural asset contribution

Timeline
for accounts

Start
2014

Supply and use in monetary terms.
Period: 2011-2013

Physical assets: Land, forest, timber and carbon.
Period: 2008, 2011, 2013

Land cover change matrix.

Start
2014

Supply and use in monetary terms.
Period: 2012

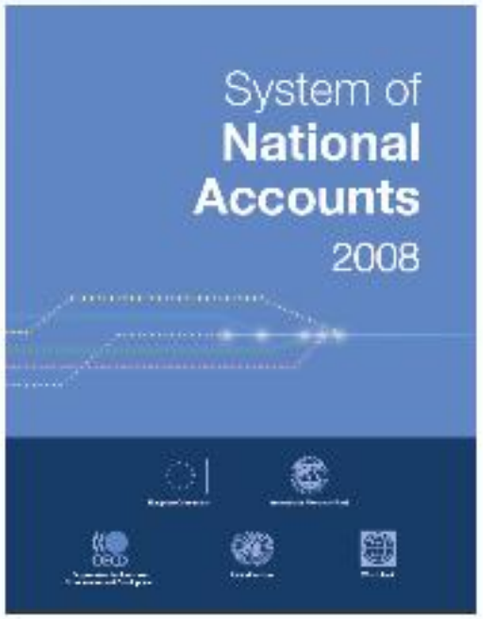
Physical Assets.
Period: 2012

Start
2015

Physical use of energy by type of source and economic activity.
Period: 2011-2013

Carbon dioxide emissions.
Period: 2011-2013

Manuals
for accounting



SNA

Includes produced assets with market value.

Modular Approach

SEEA-CF

Includes natural assets in physical and monetary terms, with market value.

Energy

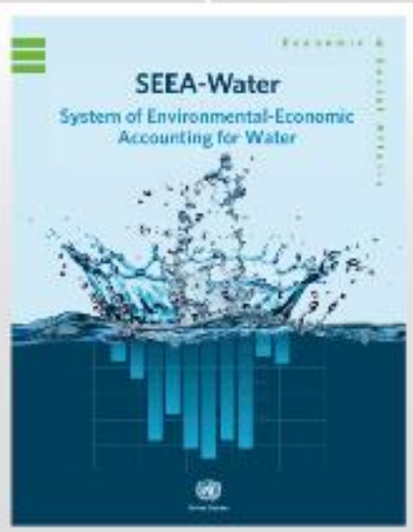
Soil

Aquatic resources

Land and ecosystems

Water

Timber



SEEA-Water

SEEA-EEA

Aims to account for and value assets with no market value, as an experimental approach.

Support for public policy

Good measurement for good management

Valuable assets
for public policies

Statistical framework
with consistent methodology

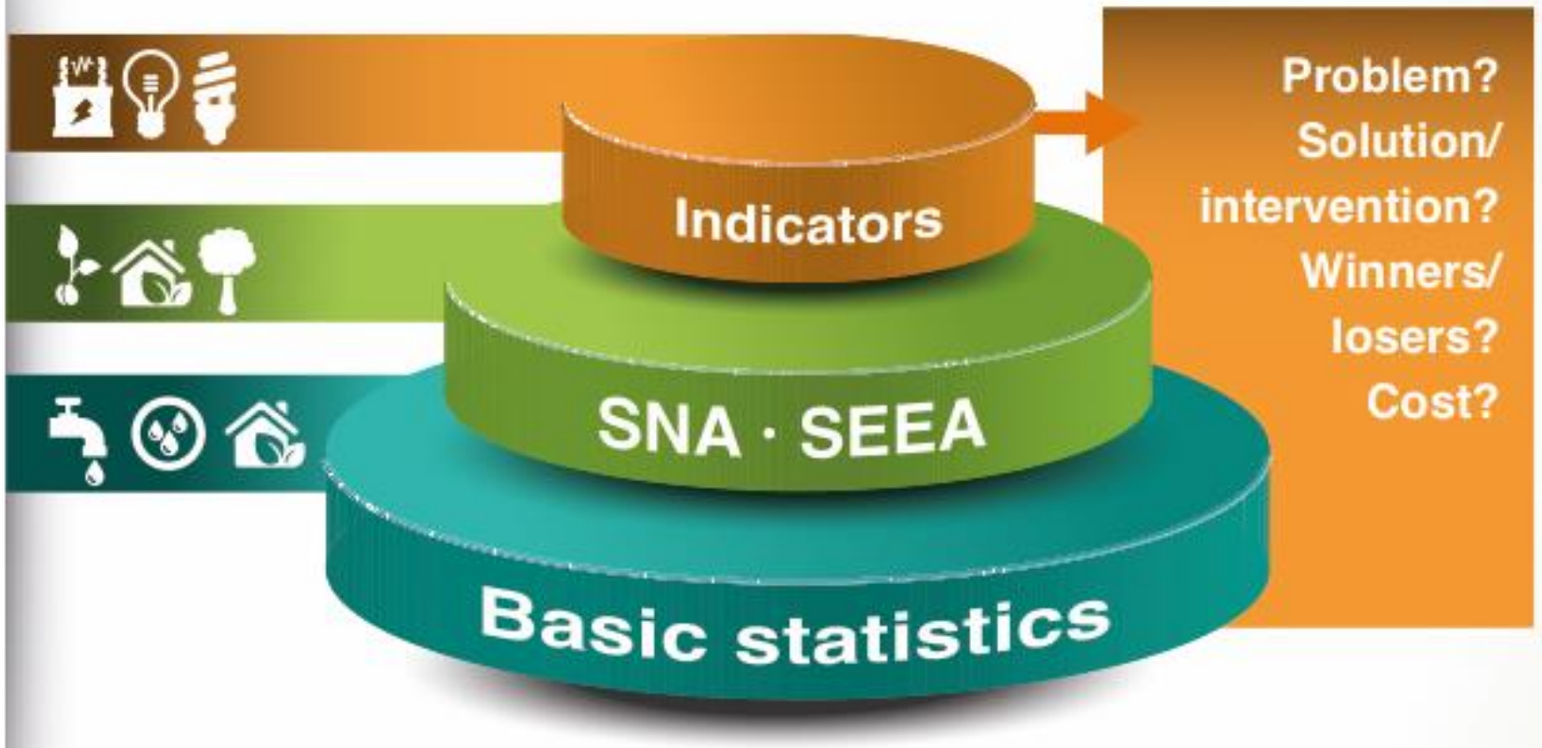
Integrated indicators system

Indicators
for decision makers

Institution A Polices Information Data

Institution B Polices Information Data

Institution X Polices Information Data



Example of results

environmental accounts indicators

Importance of the **forest in the economy** (2011-2013)

2% GDP

Forest cover increase (2011-2013)

96 thousand Ha

Physical water losses from operators (2012)

57%

Total electricity generation from hydropower (2012)

71%

Energy intensity: **transportation** (GJ/millions of colones, 2013)

257

Co-benefits
from environmental accounting

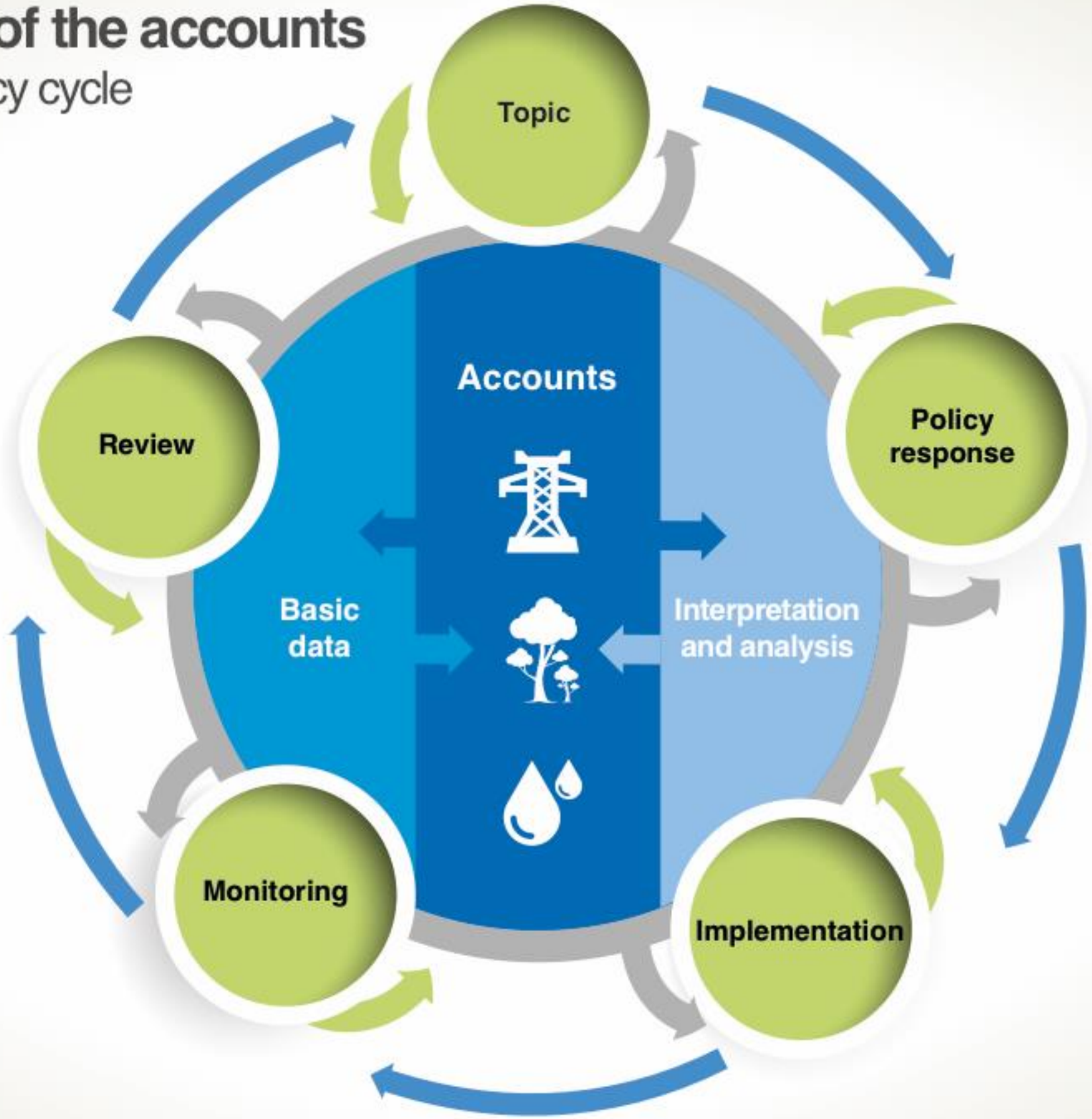
State of the National Environmental Statistics System

Integration with other systems

Better approach for policy questions

Interaction of the accounts

with public policy cycle

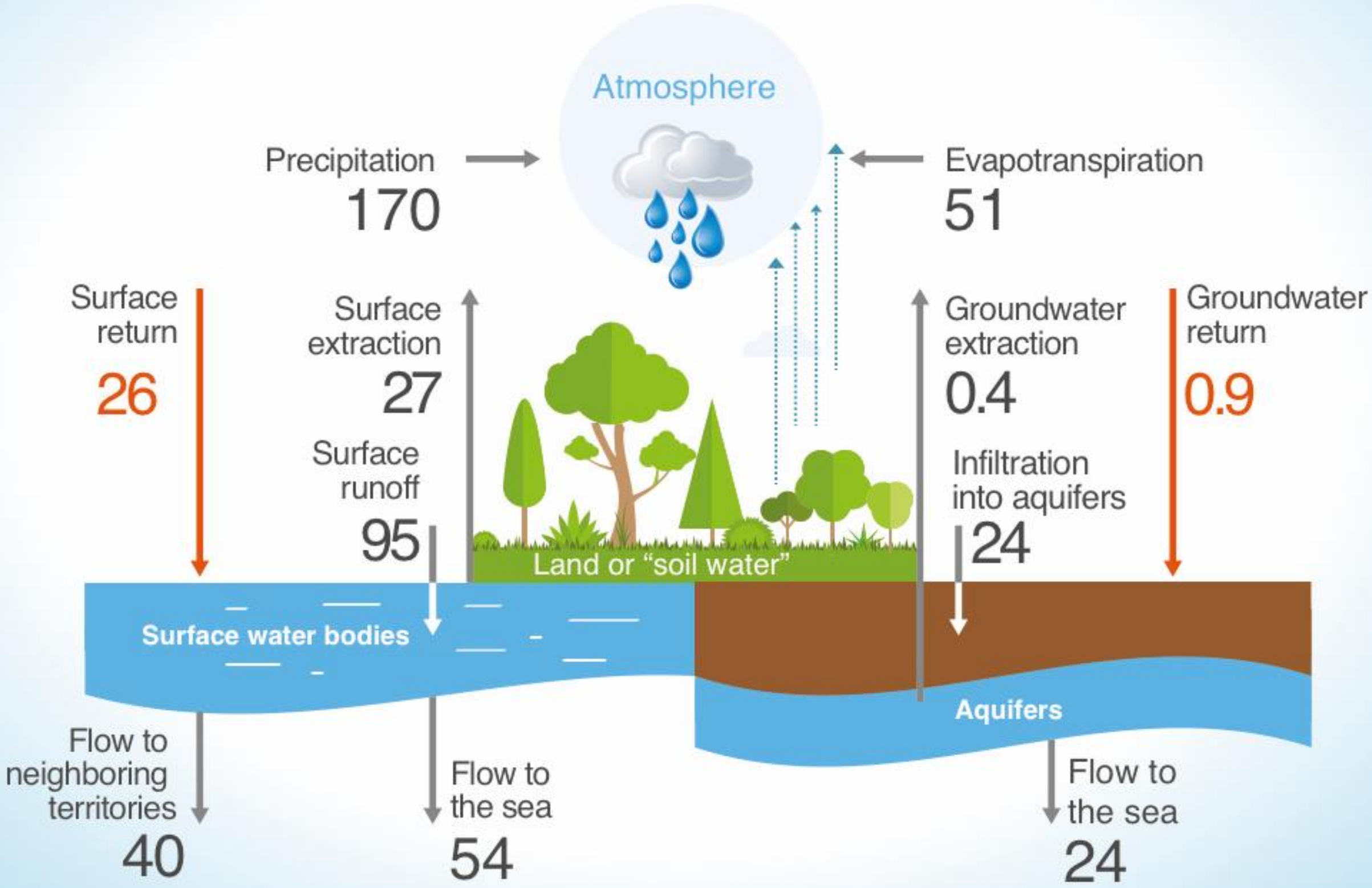


Source: Adapted from Vardon et al. (2016)

Water accounts

Water balance

of Costa Rica 2012 (km³/year)



Water in the Economy

of Costa Rica 2012 (km³/year)

26 ↓ 26 ↑ Hydroelectric power

1 ↓ 0.6 ↑ Irrigation districts

0.8 ↓ 0.3 ↑ 0.3 ↑ Agriculture

0.4 →

0.06 ↓ 0.09 ↑ Mining, manufacturing and services

← 0.04

0.0 ↓

0.5 ↓ 0.3 ↑ Water pipelines

0.2 ↓ 0.09 ↑ Households

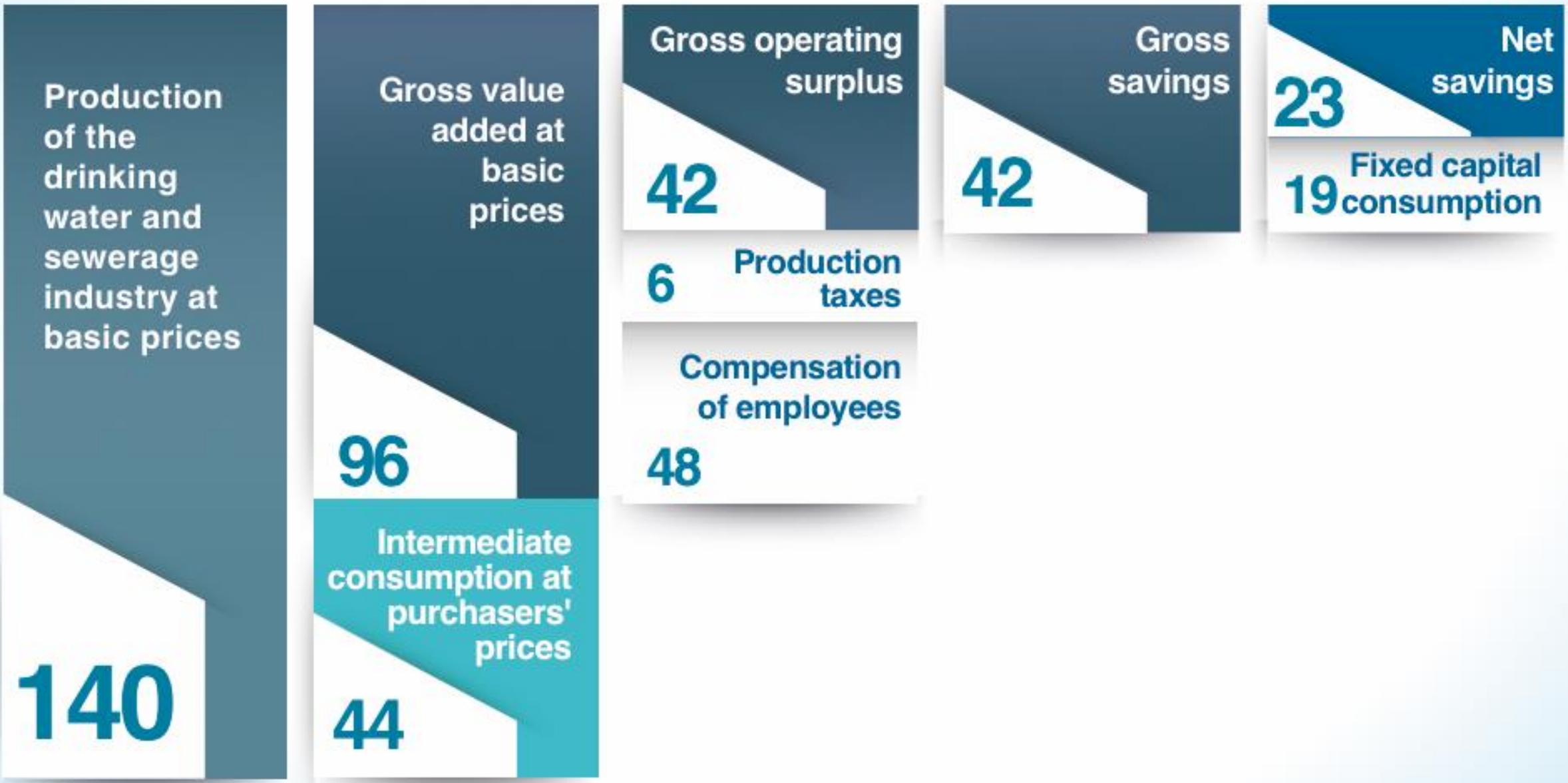
0.01 ↓ 0.01 ↑ Sewerage

↓ Extraction
↑ Returns
↑ Loss
↓ Supply
↓ Wastewater

Sequence of economic accounts 2012

(in billions of colones)

AyA, ESPH, Asadas, Municipalities



2012 Indicators

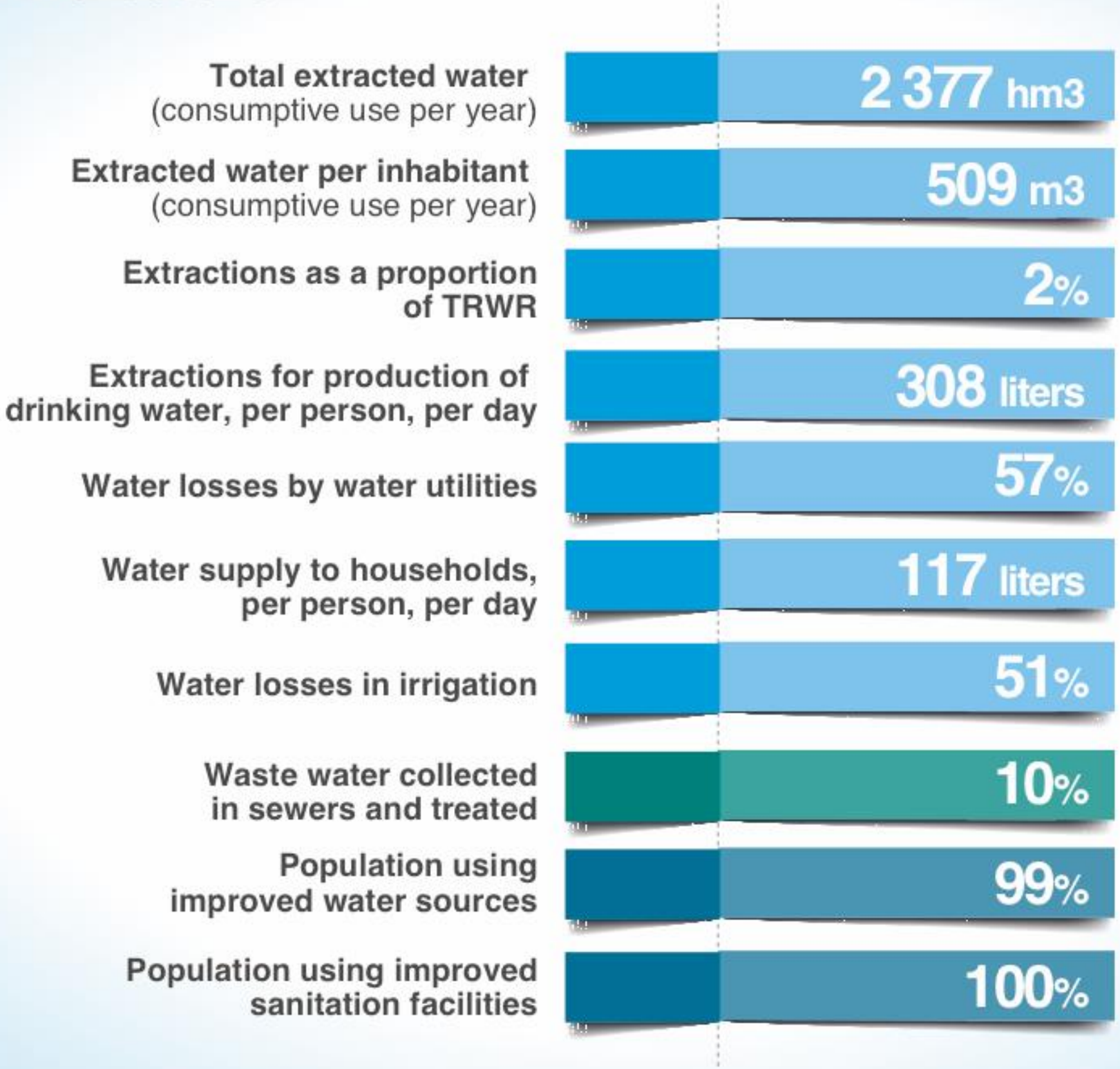
Combined information from water supply operators

Water billed per inhabitant (liters/day)	Average tariff (colones /m3)	Proportion billed to households	Unbilled water	Gross added value/ production	Intermediate consumption in electricity production	Clients attended
155	¢576	82%	54%	68%	24%	100%

2012 Indicators

Hydroelectricity as a proportion of total electricity production	71%
Electricity generation per person	1 550 kwh
Internal renewable water resources	118 000 hm3
Total renewable water resources (TRWR)	118 000 hm3
Total renewable water resources per person	25 400 m3
Dependency ratio	0 %

2012 Indicators



FOREST accounts

Forest transition
to and/or from other land uses

1992-1997 **1997-2008** **2008-2013**

Forest to urban

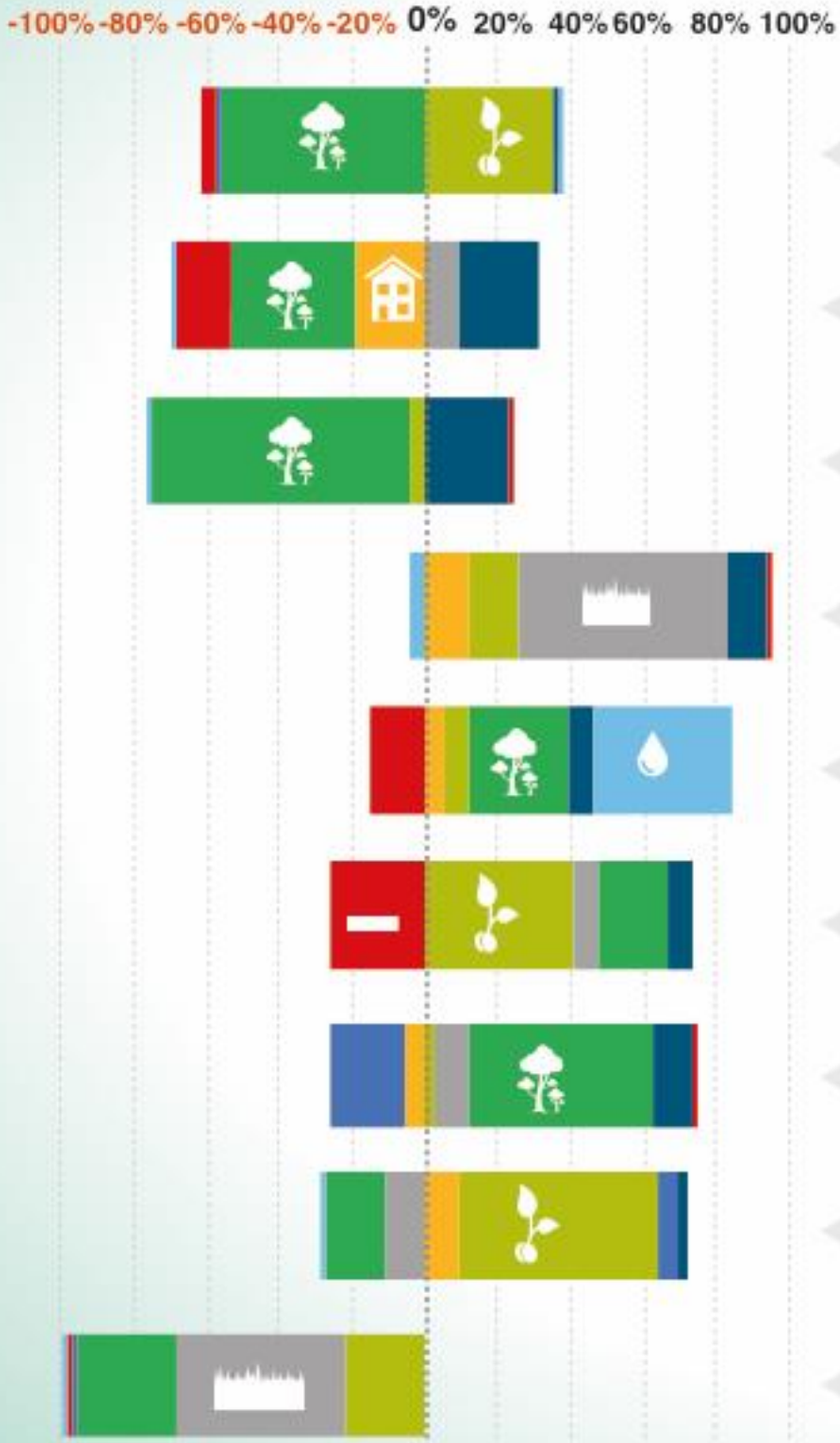
Crops to forest

Grassland to forest

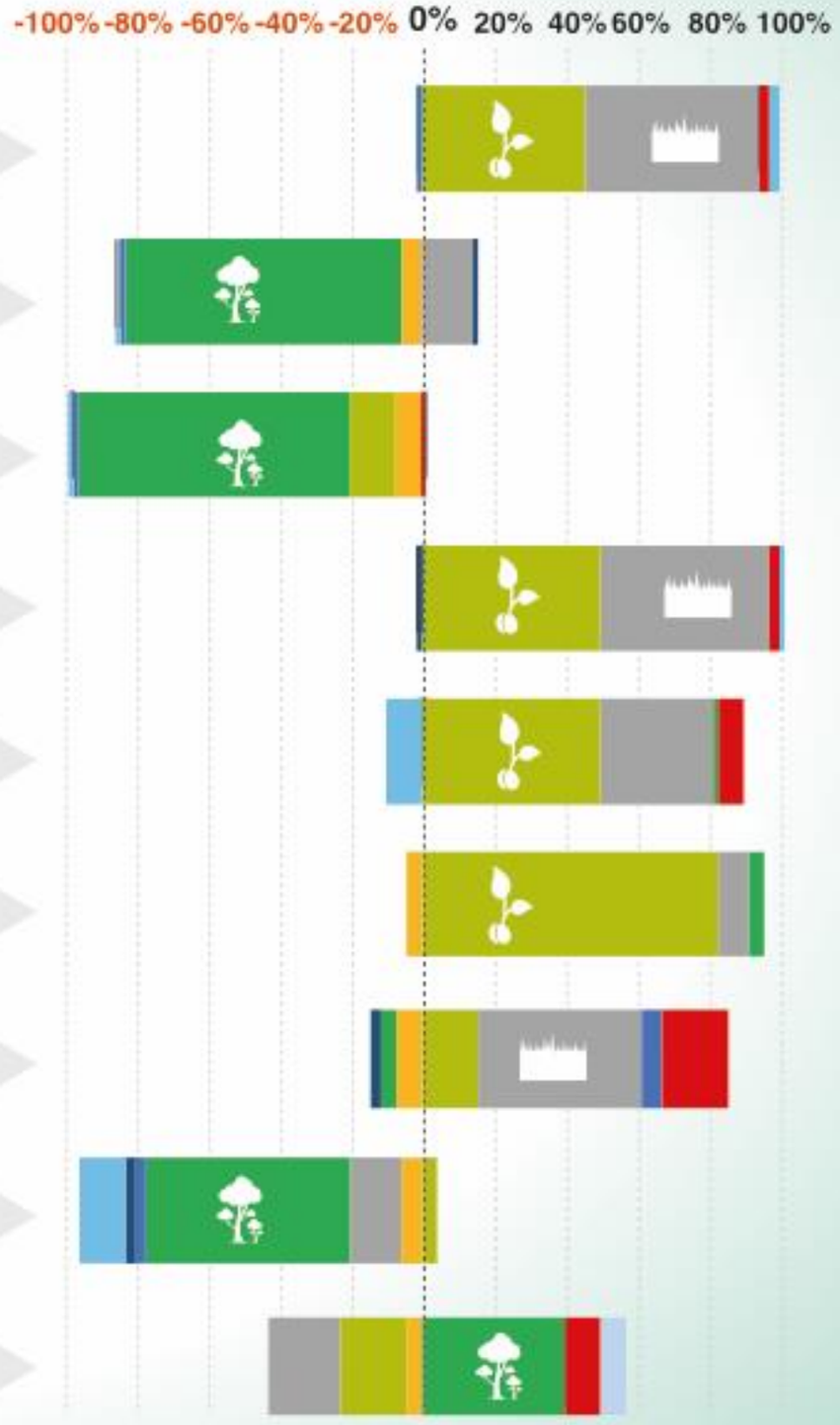
Other changes or no data
Forest to forest
Forest plantation to forest
Urban to forest
Grassland to forest
Water to forest
Crops to forest
Forest to forest plantation
Forest to urban
Forest to grassland
Forest to water
Forest to crops

Land cover changes

2008-2011



2011-2013



Urban

Crops

Grassland

Forest

Mangrove

Shrubs

Water

Barren land

Others

Change in land cover stock

(thousands of hectares)

	Water	Forest	Crops	Mangrove	Shrubs	Grassland	Barren land	Urban
Opening Jan. 1st **2008**	24	2 953	720	47	10	1 238	32	83
Closure Dec. 31st **2013**	26	3 065	674	49	10	1 171	29	91
	10%	4%	-7%	4%	0%	-5.4%	-8.5%	9%

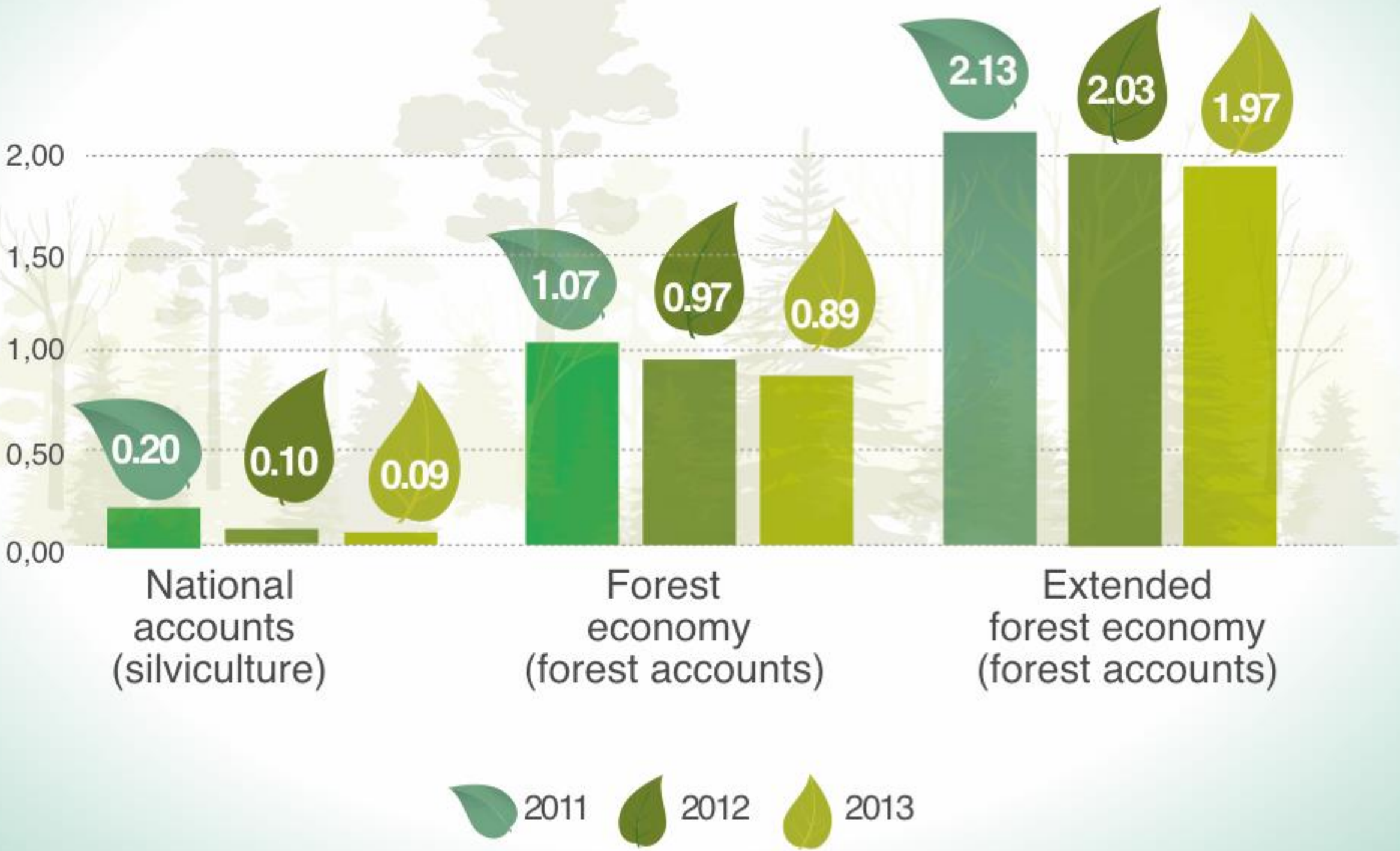
Forest physical assets 2011- 2013

(thousands of hectares)

Opening Jan. 1st, 2011	Stocks decreases (-)		Stock increases (+)	Closure Dec. 31st. 2013
2 691	**34** Natural regression	**Natural forest**	**105** Natural growth	**2 762**
146	**13** Deforestation	**Planted timber**	**33** Afforestation	**166**
131	**2** Deforestation	**Palm forests**	**7** Afforestation	**136**
48	**1** Natural regression	**Mangroves**	**2** Natural growth	**49**

Forests contribution to GDP

(percentage)



ENERGY accounts

Energy and emissions intensity

(in GJ and tonnes of CO2, per million colones)

	2011	2012	2013
Support activities to agriculture and livestock	11	26	25
	0.8	1.8	1.8
Manufacturing of sugar	156	148	144
	16.2	15.7	15.2
Supply of electricity, gas, steam and air conditioning	19	10	22
	1.8	1.1	2.3
Terrestrial transport, except taxis	30	27	26
	2.2	2.0	1.9
Taxi transportation	17	27	26
	1.2	2.0	1.9
Marine, air and terrestrial freight transportation	30	22	22
	2.2	1.6	1.5

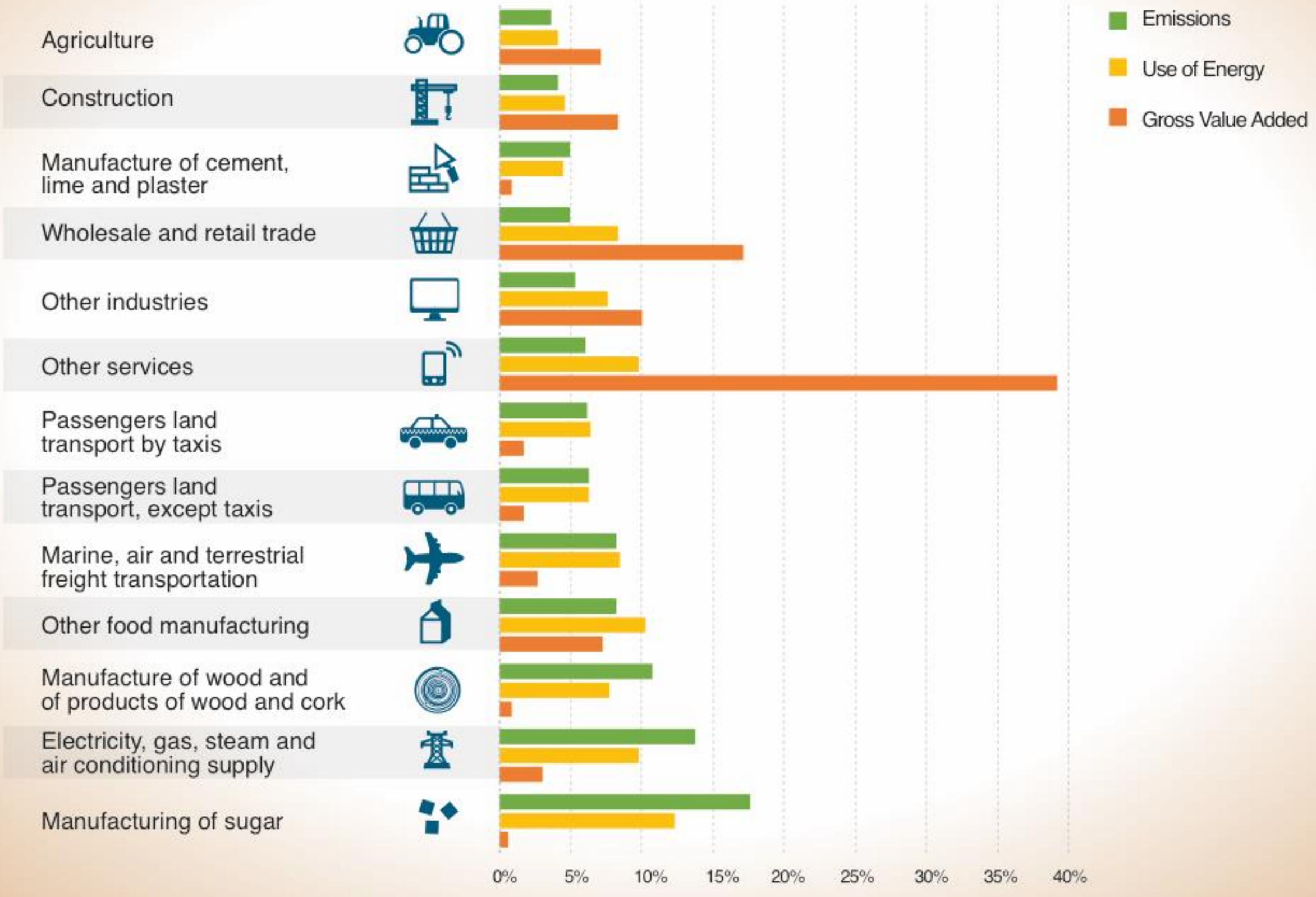
Energy intensity

Emissions intensity

Share in total energy consumption
(percentage)

	Manufacturing industries	Transportation	Exports of goods	Exports of services	Households
2011	24.3	10.4	5.8	0.7	35.9
2012	23.4	10.9	5.7	0.9	30.6
2013	23.5	10.4	5.8	1.0	29.1

Share of gross value added, use of energy and emissions
by economic activity for 2013



Implications

Importance of forest conservation for development opportunities creation

- **Forest industry and employment**
- **Scope of new policies for the "forest" (PNDF, REDD+, Biodiversity)**

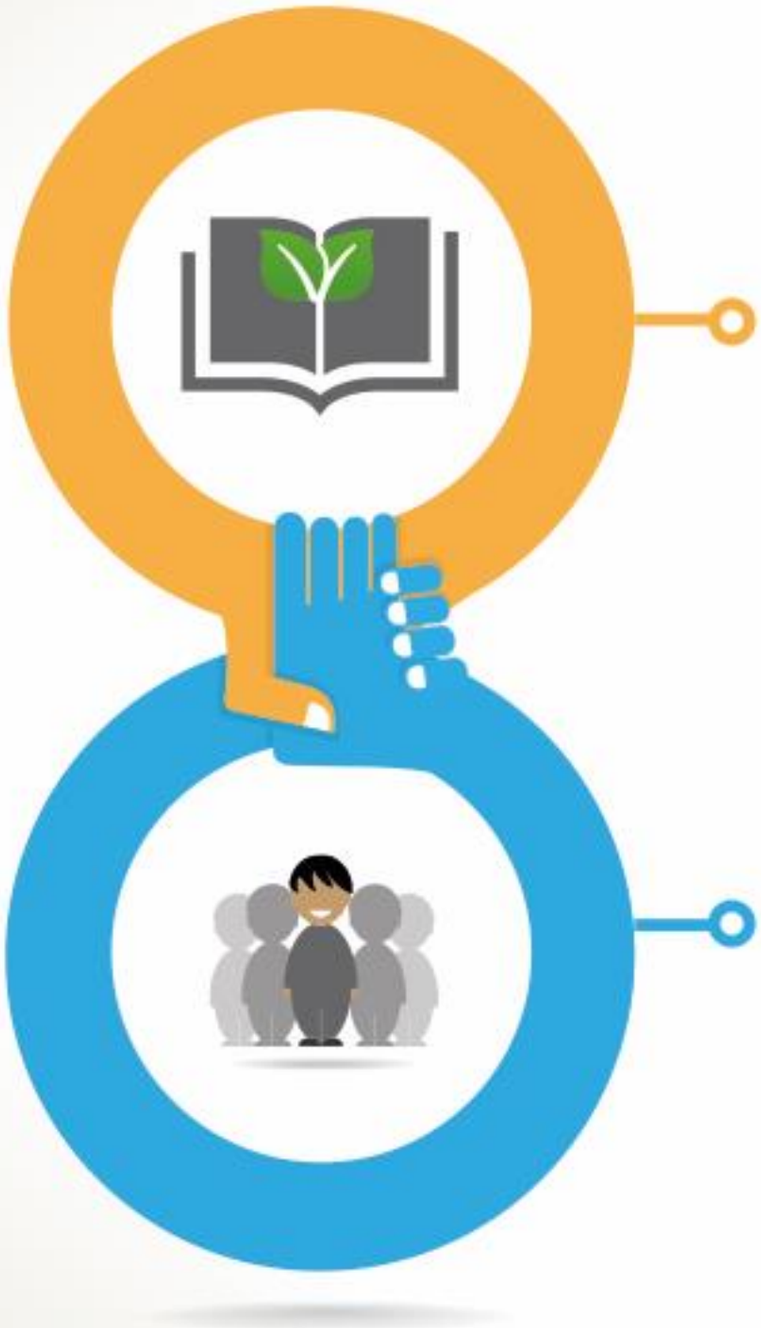
Relevance of water management for productivity and economic growth

- **Water use and added value**
- **Sustainability of water sources**

Interactions between energy and the economy

- **Productive activities and energy dependence**
- **Sustainability (VII National Energy Plan)**

What we have achieved so far



First publication of the accounts
(June 2016)

Consolidation of the Environmental Statistics Area within the BCCR

Next steps

Update of the environmental accounts
(June of each year)

Development of additional environmental accounts based on SEEA 2012 and SEEA-EEA 2012

Improvement of the accounts
(time series, methodologies, quality of information)

Development of indicators from the environmental accounts



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