

SPECIAL RELEASE

Physical Flow Accounts for Water Resources, CAR: 2008-2018

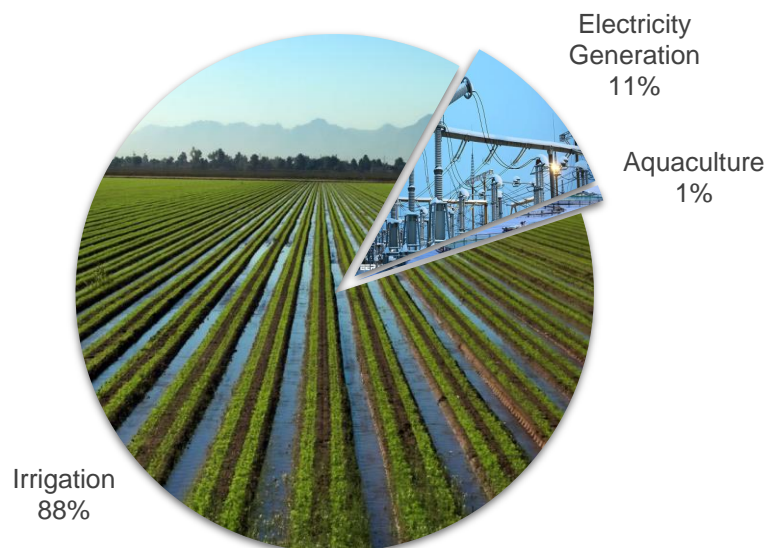
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Flows from the Environment to the Economy

- According to the use of abstracted water, flows from the environment to the economy are divided into five major sectors/industries/districts: agriculture, forestry, and fishing (subdivided into irrigation, fishing, and livestock), mining and quarrying, electricity generation, others (subdivided into commercial, industrial, municipal, and recreation), and water supply.
- As seen in Figure 1, irrigation had the greatest average surface water abstraction at 88%. This was followed by electricity production with 11%, and Aquaculture with 1%. Minimal abstraction was present in the remaining industries.

Figure 1. Average Percent Distribution of Abstractions from Surface Water, CAR: 2008 – 2018



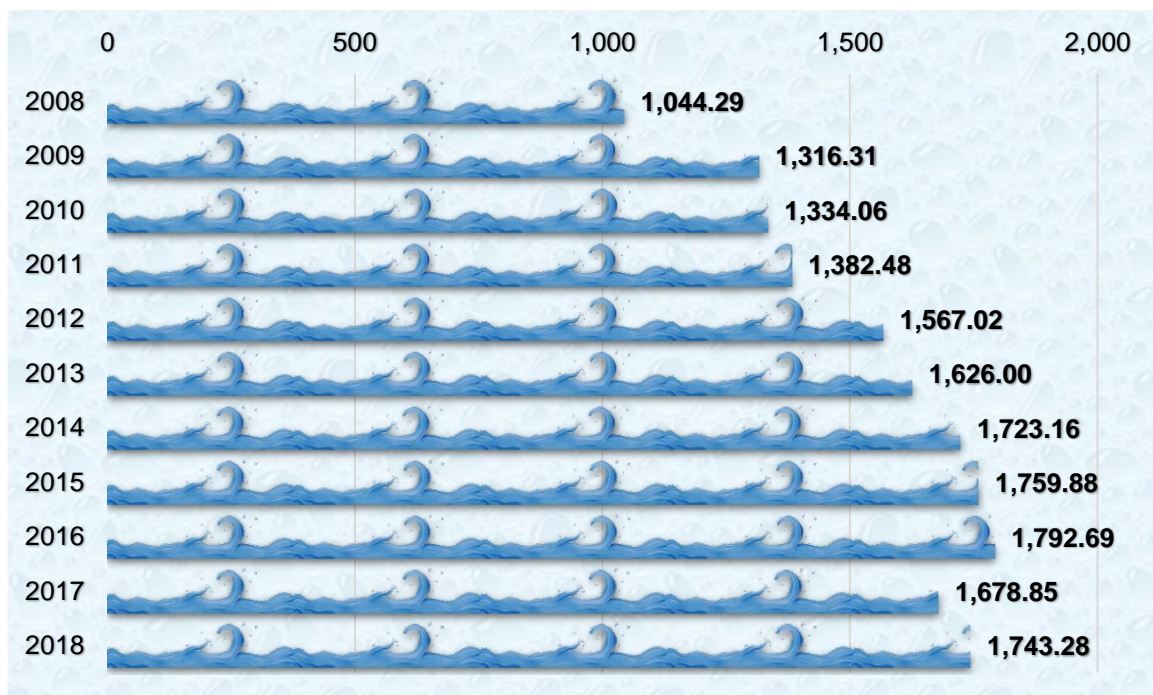
Source: Philippine Statistics Authority



Flows from the Environment to the Economy: Irrigation

- The abstraction of irrigation increased during the accounting period, rising from 1,044.29 MCM to 1,743.28 MCM. This represented an addition of 1,542.55 MCM, or 5.56%, on an annual average basis. The average abstraction for irrigation was 1,542.55 MCM.
- Figure 2 depicts the only year in which the abstraction decreased, from 1,792.69 MCM in 2016 to 1,678.85 MCM in 2017.

**Figure 2. Flows from the Environment to the Economy for Irrigation, CAR:
2008 – 2018
(In Million Cubic Meter (MCM))**

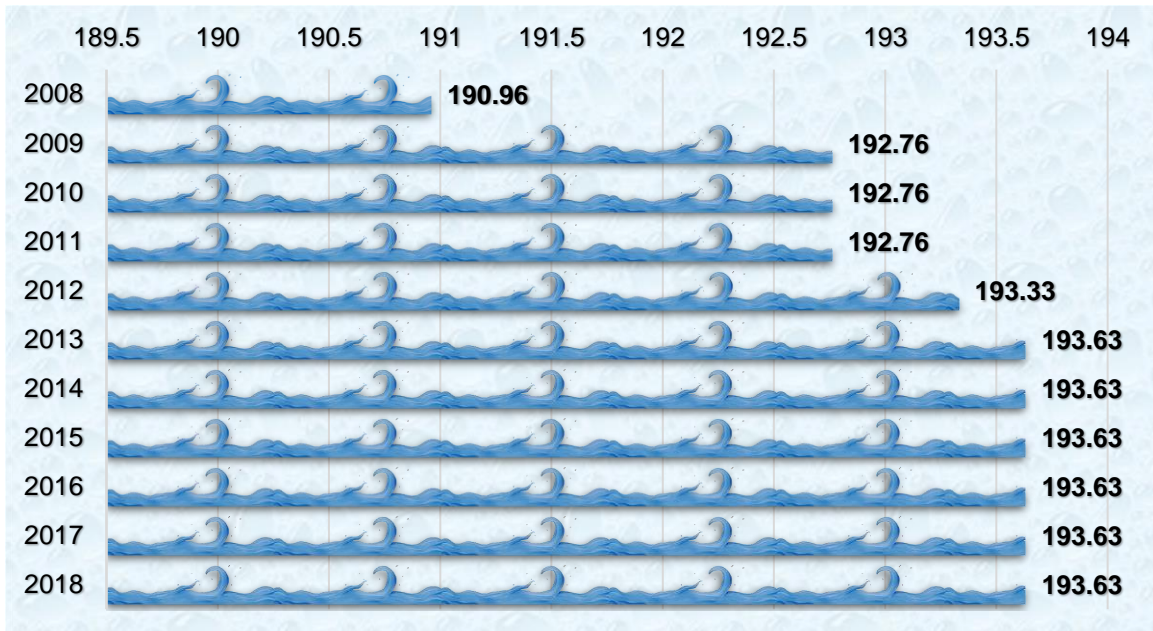


Source of basic data: National Water Regulatory Board – Cordillera Administrative Region

Flows from the Environment to the Economy: Electricity Generation

- Only three examples of the abstraction for electricity generation increase can be found. Instances of this behavior were noted in 2009, 2012, and 2013. It increased by 1.80 MCM from 190.96 MCM in 2008 to 192.76 MCM in 2009. Additionally, there was a rise of 0.87 MCM overall, from 192.76 MCM in 2011 to 193.33 MCM in 2012 to 193.63 MCM.
- Figure 3 shows that from 2013 to 2018, abstractions were stable at 193.63 MCM.

Figure 3. Flows from the Environment to the Economy for Electricity Generation, CAR: 2008 – 2018 (In MCM)

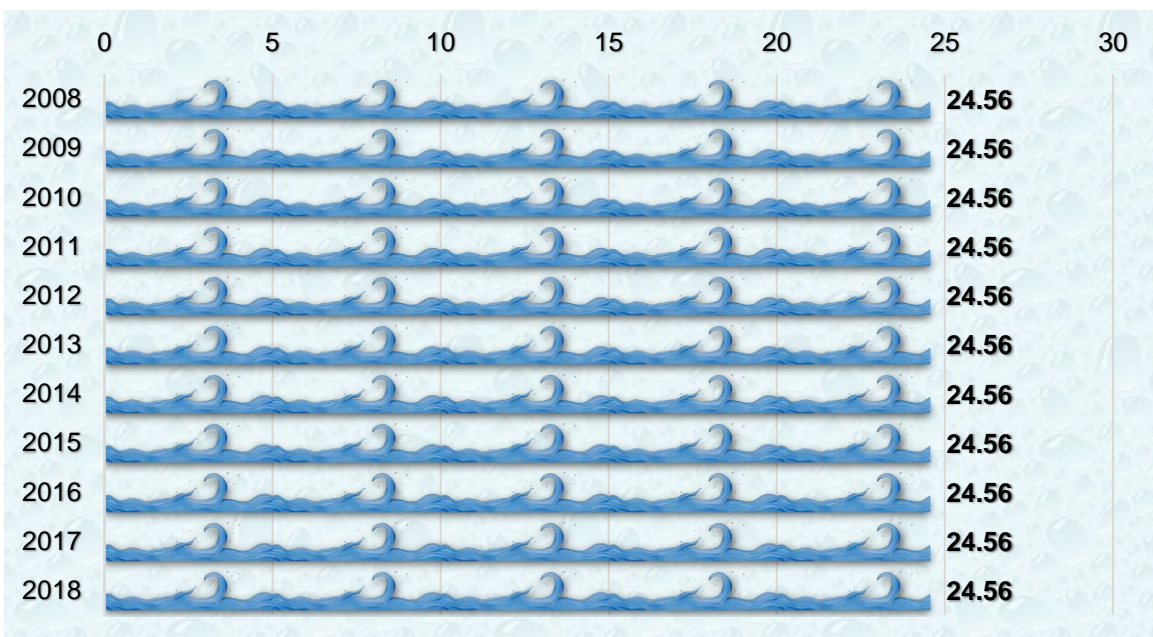


Source of basic data: National Water Regulatory Board – Cordillera Administrative Region

Flows from the Environment to the Economy: Aquaculture

- Aquaculture's abstraction stayed at 24.56 MCM for the whole accounting period.

Figure 4. Flows from the Environment to the Economy for Aquaculture, CAR: 2008 – 2018 (In MCM)

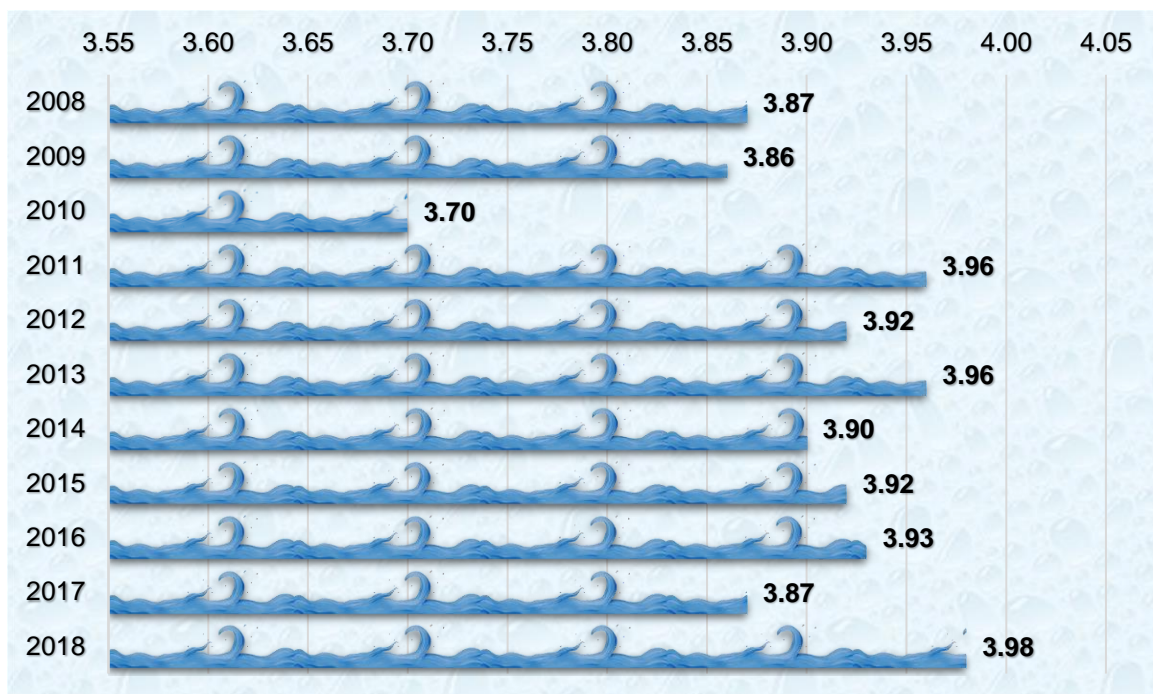


Source of basic data: Bureau of Fisheries and Aquatic Resources Regional Field Office - Cordillera Administrative Region

Flows from the Environment to the Economy: Livestock and Poultry

- The lowest abstraction for livestock and poultry from the beginning until the end of the accounting was recorded in 2010 at 3.70 MCM, followed by 2009 at 3.86 MCM.
- In contrast, the highest abstraction ever measured was in 2018 at 3.98 MCM. According to figure 5, the average abstraction for livestock and poultry was 3.90 MCM.
- Abstractions for livestock and poultry showed a general upward trend, rising from 3.87 MCM in 2008 to 3.98 MCM in 2018. This is an average growth of 0.01 MCM each year, or 0.32%.

Figure 5. Flows from the Environment to the Economy for Livestock and Poultry, CAR: 2008 – 2018 (In MCM)



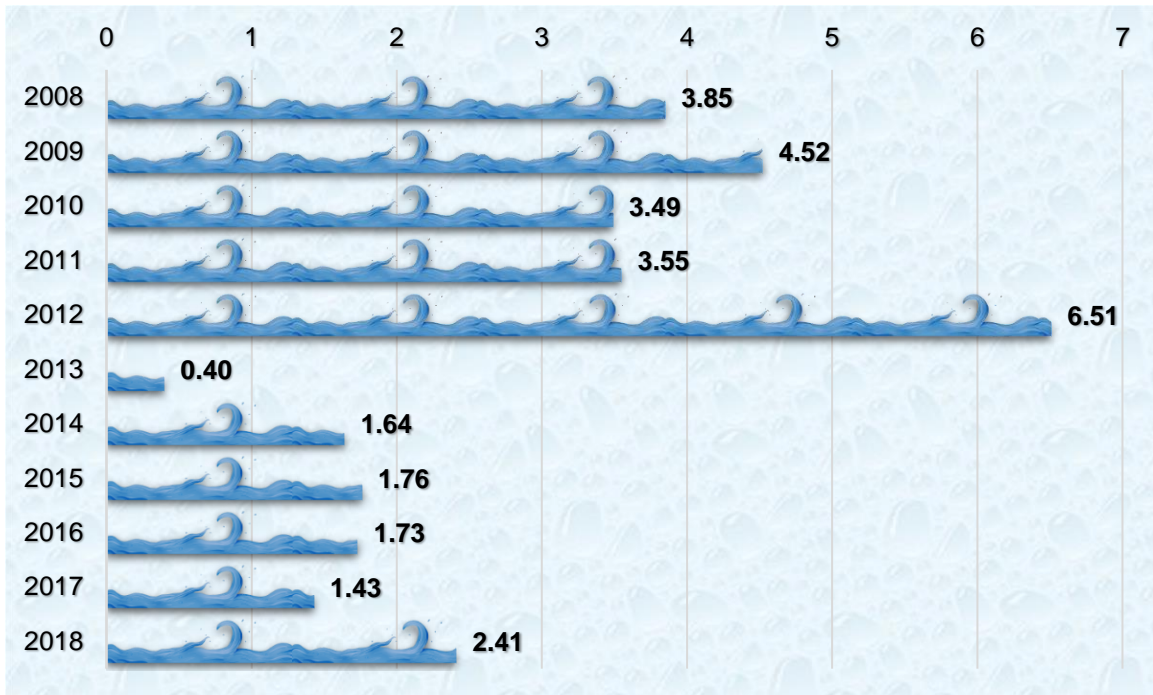
Source of basic data: Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development

Flows from the Environment to the Economy: Mining and Quarrying

- Abstractions for mining and quarrying generally showed a declining tendency. It declined from 3.85 MCM at the beginning to 2.41 MCM at the end of the accounting period, a loss of an average of 35.16 MCM per year or 2.85%.
- The lowest abstraction was 0.40 MCM in 2013 while the largest was 6.51 MCM in 2012. (Figure 6).

- It is important to note that production and abstraction directly relate to the mining and quarrying industries. Water abstraction rises in tandem with rising production and vice versa.

Figure 6. Flows from the Environment to the Economy for Mining and Quarrying, CAR: 2008 – 2018 (In MCM)

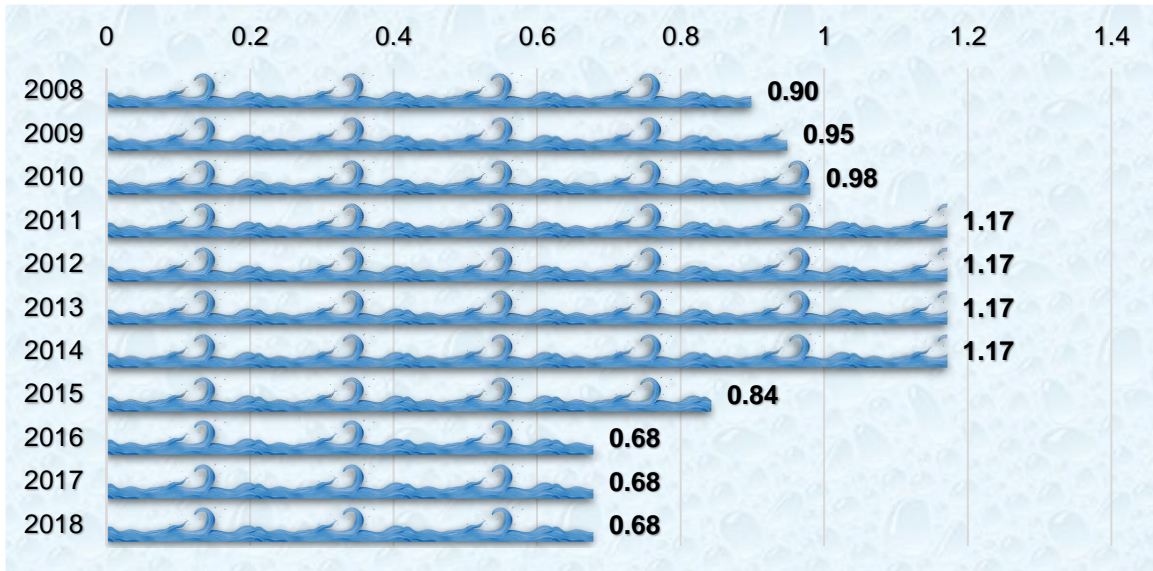


Source: Mines and Geosciences Bureau – Cordillera Administrative Region

Flows from the Environment to the Economy: Industrial

- The greatest abstractions over the accounting period from 2011 to 2014 were shown in Figure 7 and were posted at 1.17 MCM. On the other hand, abstracts from 2016 to 2018 had the lowest average of 0.68 from MCM.
- The abstraction dropped from 0.90 MCM in 2008 to 0.68 MCM in 2018. This represented a decline of 1.92% annually or an average decrease of 0.02 MCM annually.

Figure 7. Flows from the Environment to the Economy for Industrial, CAR: 2008 – 2018 (In MCM)

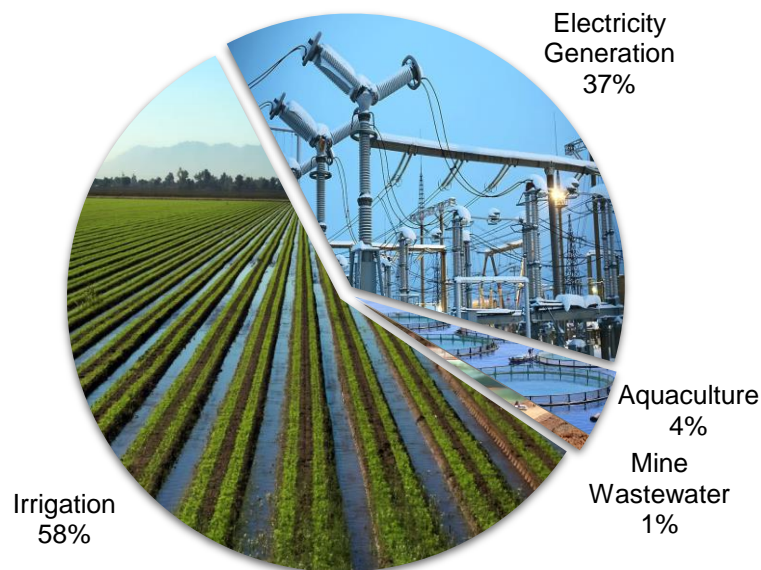


Source of basic data: National Water Regulatory Board – Cordillera Administrative Region

From the Economy back to the Environment

- The biggest yield was from irrigation, which accounted for 58% of all returns and totaled 308.51 MCM. Electricity generation returns came in second, with a 37% average return of 193.12 MCM. The following two industries were aquaculture and mine wastewater, with average returns of 25.56 MCM and 2.85 MCM, respectively, contributing 4% and 1% to overall returns.

Figure 8. Average Percent Distribution of Returns to Surface Water, CAR: 2008 – 2018

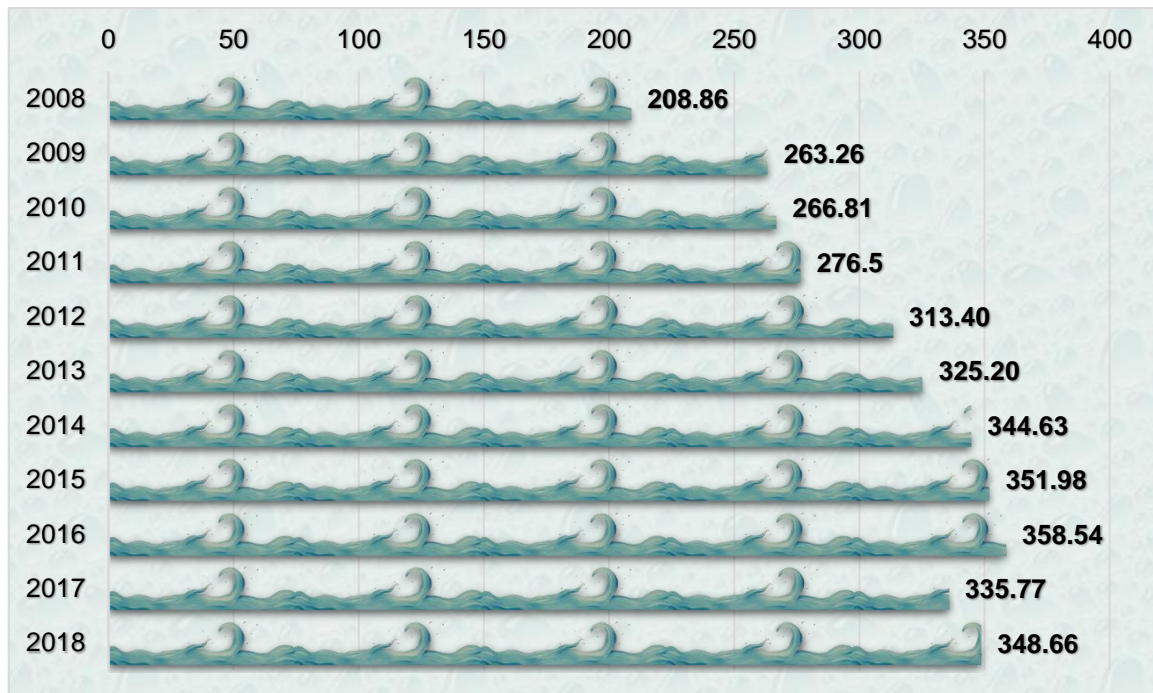


Source: Philippine Statistics Authority

From the Economy back to the Environment: Returns from Irrigation

- Returns from irrigation showed the same trend—an upward trend—as abstractions for irrigation. From 208.86 MCM in 2008 to 348.66 MCM in 2018, there was a 13.98 MCM (or 5.56% yearly growth) rise between those two years.
- The lowest irrigation return was reported in 2008 with 208.86 MCM, while the greatest was in 2016 with 358.54 MCM.

**Figure 9. Returns from Irrigation, CAR: 2008-2018
(In MCM)**

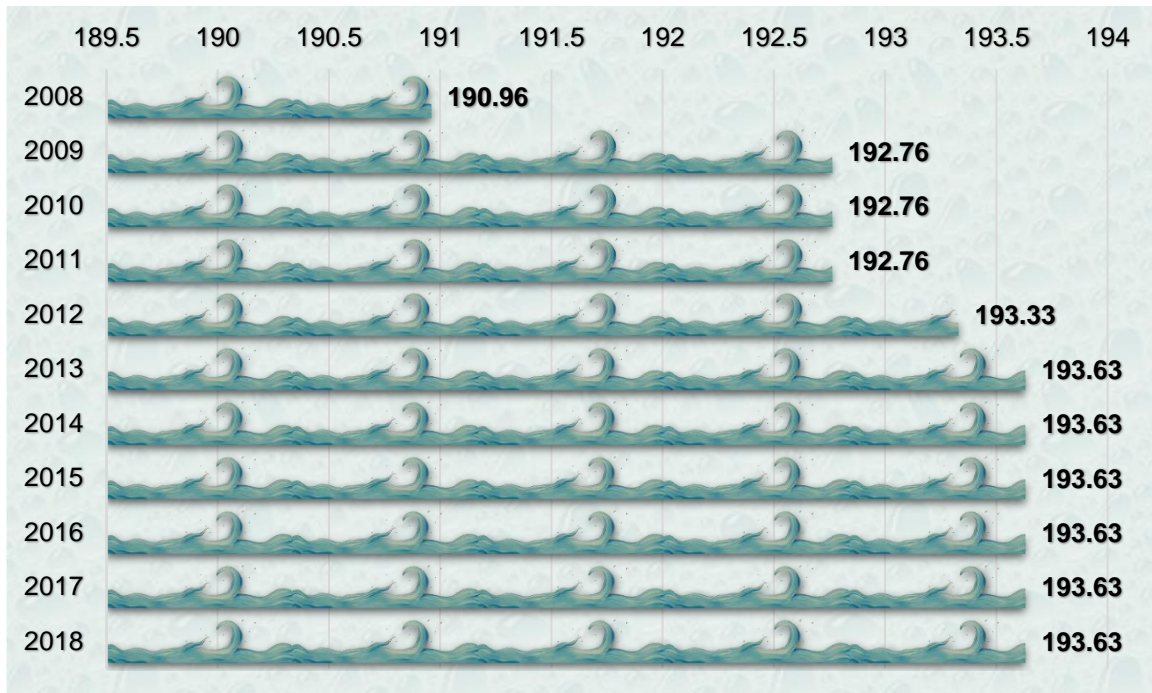


Source of basic data: Philippine Statistics Authority – Regional Statistical Services Office Cordillera Administrative Region

From the Economy back to the Environment: Returns from Electricity Generation

- From 190.96 MCM return in 2008 to 192.76 MCM in 2009, there was an increase of 1.80 MCM. Returns from electricity generation were constant from 2009 to 2011. An increase of 0.57 MCM and 0.30 MCM was seen in 2012 and 2013, respectively. From 2013 to 2018, returns stayed at 193.63 MCM.

**Figure 10. Returns from Electricity Generation, CAR: 2008-2018
(In MCM)**

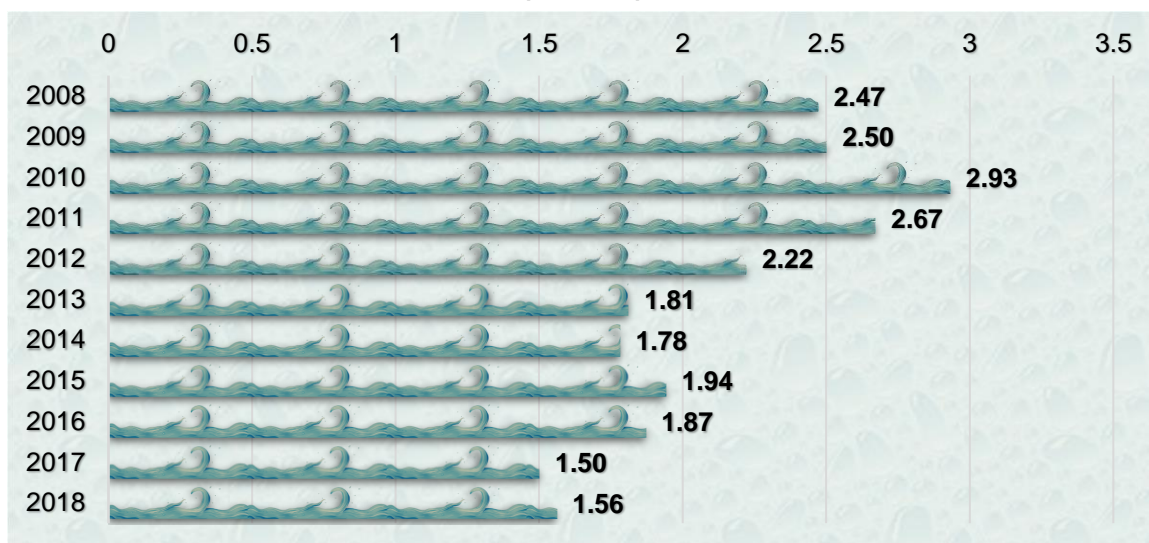


Source of basic data: National Water Regulatory Board – Cordillera Administrative Region

Returns from Household

- Returns from households are directly correlated with households of homes having sewage connections to the city. This implies that returns rise along with the number of homes. As a result, the trend should show an increasing trend, but in this case, the opposite happened. The smaller home was linked to the city's sewage infrastructure, CEPMO subsequently stated. Septic tanks were constructed by more homes as a fundamental water treatment.
- From a household return of 2.47 MCM at the beginning of the accounting, it decreased to 1.56 MCM at the end of the accounting. With an average decline of 0.09 MCM each year, or 3.78% annually, a declining trend can be seen.
- The greatest household return was 2.93 MCM in 2010, the lowest was 1.50 MCM in 2017, and the best return was reported in 2010.

**Figure 11. Returns from Household, CAR: 2008-2018
(In MCM)**

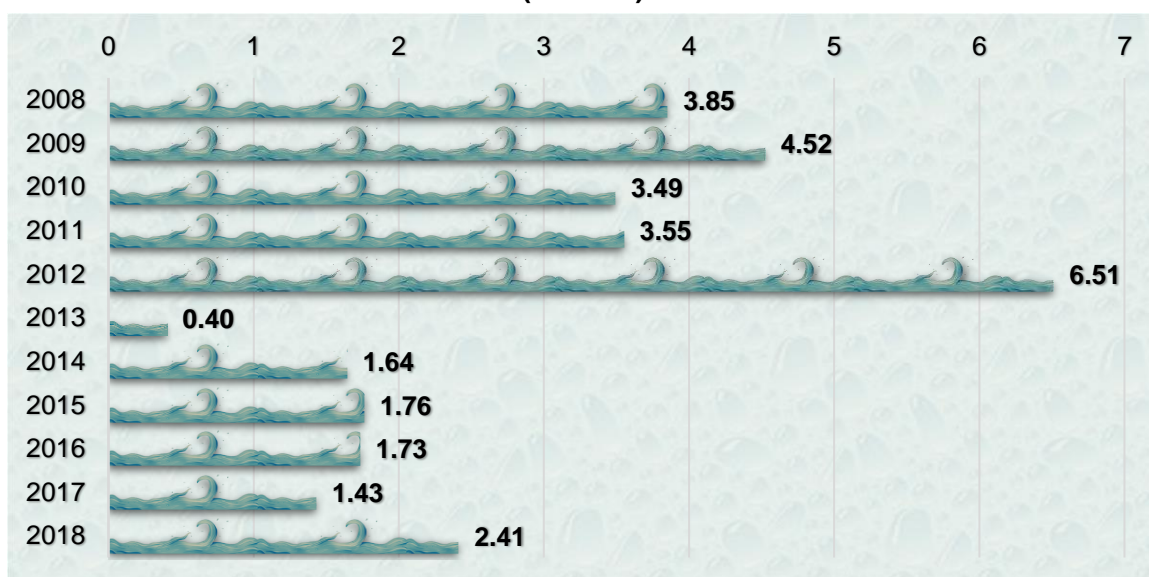


Source of basic data: City Environment and Parks Management Office – Baguio City

From the Economy back to the Environment: Returns from Mining and Quarrying

- Since the volume of water used for returns is equal to the volume used for abstractions, returns from mining and quarrying showed the same pattern as those industries' water abstractions fall. It decreased from 3.85 MCM in 2008 to 2.41 MCM in 2018, averaging a fall of 0.14 MCM per year or 35.17%.
- The biggest return, 6.51 MCM, was reported in 2012, and the lowest, 0.40 MCM, was recorded in 2013.

**Figure 12. Returns from Mining and Quarrying, CAR: 2008-2018
(In MCM)**

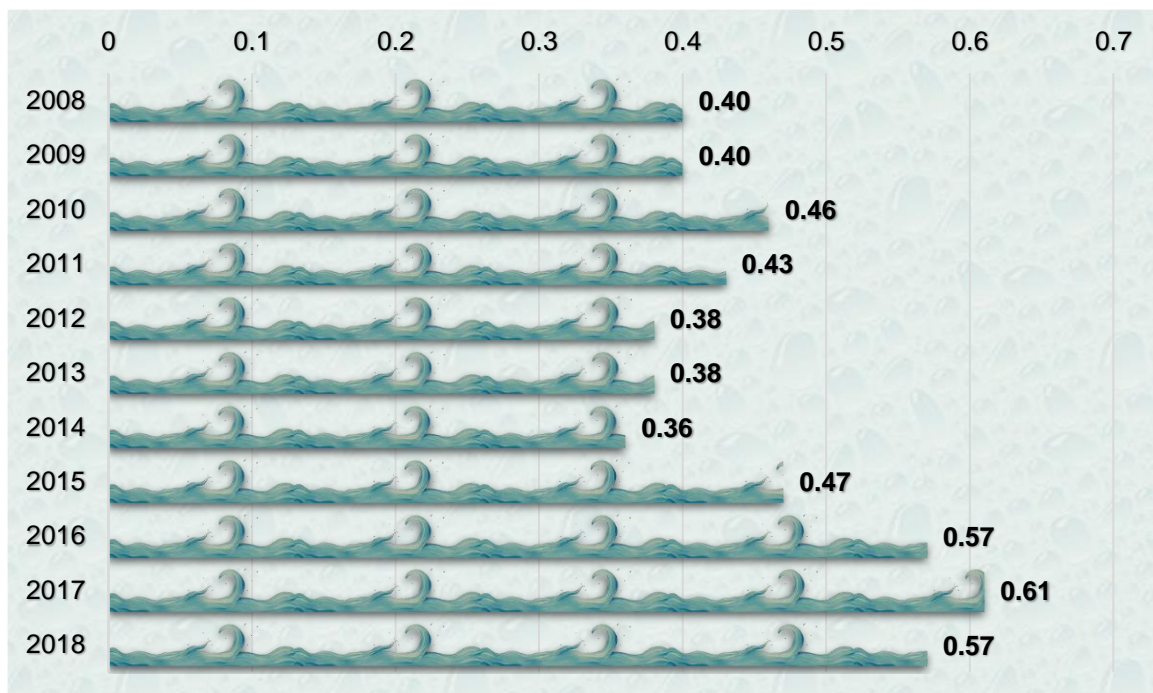


Source of basic data: Mines and Geosciences Bureau – Cordillera Administrative Region

From the Economy back to the Environment: Returns from Industries

- The lowest amount of water that was released back into the environment was 0.36 MCM in 2014, while the biggest release was 0.61 MCM in 2017.
- From 0.40 MCM at the beginning of the accounting period to 0.57 MCM, or an average rise of 0.02 MCM per year or an annual average increase of 4.50%, returns from industries demonstrated a general growing tendency.

**Figure 13. Returns from Industries, CAR: 2008-2018
(In MCM)**



Source: Philippine Economic Zone Authority Baguio Ecozone

VILLAFE P. ALIBUYOG
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Technical Notes

Abstraction of water from the environment – this is defined similarly to the abstraction as reductions to stock in the asset accounts and is disaggregated by source and by industry.

Flows of wastewater and reuse water – wastewater (discarded and no longer required by the owner or user) can be discharged directly to the environment (or return flow), supplied to a sewerage facility, or supplied to another economic unit for further use (reused water).

Mining and Quarrying – Water for mining and quarrying is the summation of all abstractions from registered mining companies. Return is equivalent to abstraction.

where:

Water for M&Q_y = Volume of water for Mining and Quarrying in Year y

Abs per Year = Volume of Abstraction of Company i

Return - A permanent move back to point of origin.
