

**NOURRIR LE FUTUR  
GROWING TOMORROW'S FOOD**

**Greenhouse Gas Accounting  
Report - Year 2019**

Accounting completed on December 31, 2019  
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Report by Élise Girard-Gagnon




This report presents a summary of our efforts to compile greenhouse gas (GHG) emissions resulting from the Company's exploration work during the **year 2019**. The report also provides a summary of the offset measures implemented to date.

## Accounting


GHG emissions were accounted by members of our staff (Guylaine Blackburn and Gabrielle Côté with the assistance of Élise Girard-Gagnon) and not by a third party. The accounting was limited to whatever invoices were available and whatever information that could be reliably confirmed (estimated consumption of certain vehicles for example).

2019 GHG emissions are divided by activity, to see which one produces the highest amount of emissions. These activities are:




**Administration and field transportation**

- Field transportation (direct emissions) : 3.6 Tonnes eq. CO<sub>2</sub>
- Representation (indirect emissions) : 29.6 Tonnes eq. CO<sub>2</sub>



**Logging (outsourced)**

- Transport and equipment (indirect emissions) : 2.3 Tonnes eq. CO<sub>2</sub>



**Excavation (outsourced)**

- Equipement (indirect emissions) : 2.3 Tonnes eq. CO<sub>2</sub>

Arianne Resources activities are responsible for the emission of **37.8 tonnes of CO<sub>2</sub> equivalent for the year 2019** (Table 1). Air travel for representations is the main source of GHG.

**Table 1 : Greenhouse gas emissions associated with each activity during the year 2019 (in metric tonnes)**

	Total	Administration and field transportation	Logging	Drilling	Excavation	Other
<i>1st quarter</i>	<b>4.0</b>	4.0	0	0	0	0
<i>2<sup>nd</sup> quarter</i>	<b>16.5</b>	16.5	0	0	0	0
<i>3rd quarter</i>	<b>8.7</b>	6.4	2.3	0	0	0
<i>4th quarter</i>	<b>8.6</b>	6.3	0	0	2.3	0
<b>Total</b>	<b>37.8</b>	<b>33.2</b>	<b>2.3</b>	<b>0</b>	<b>2.3</b>	<b>0</b>
<b>Percentage</b>	100%	<b>88%</b>	<b>6%</b>	<b>0%</b>	<b>6%</b>	<b>0%</b>

Since its establishment, Arianne Phosphate activities are responsible for the emission of **4,578 tonnes of CO<sub>2</sub> equivalent (Table 2)**. The activity that produce highest emissions, logging (mostly loss of carbon sinks), is responsible for around **two thirds of the total GHG emissions**.

**Table 2: GHG emissions associated with each of the Company's activities, since 1999 (tonnes of CO<sub>2</sub> eq.)**

	Total	Administration and field transportation	Logging	Drilling	Excavation	Other
1999-2010	867.21	52.86	388.70	308.69	44.59	72.37
2011	222.29	61.27	0.00	79.36	40.10	41.56
2012	962.43	147.91	659.64	57.34	51.37	46.17
2013	99.60	84.80	0.00	0.00	6.20	8.60
2014	2,070.41	195.86	1,779.00	67.00	6.05	22.50
2015	36.70	36.70	0.00	0.00	0.00	0.00
2016	207.20	45.00	148.80	8.30	5.10	0.00
2017	45.20	45.00	0.00	0.00	0.00	0.20
2018	29.40	29.40	0.00	0.00	0.00	0.00
2019	37.80	33.20	2.30	0.00	2.30	0.00
<b>Total</b>	<b>4,540.44</b>	<b>732.00</b>	<b>2,978.44</b>	<b>520.69</b>	<b>155.71</b>	<b>191.20</b>
<b>Percentage</b>	<b>100%</b>	<b>17%</b>	<b>65%</b>	<b>11%</b>	<b>3%</b>	<b>4%</b>

## Offsetting

### Amounts to be offset

Arianne Phosphate has been committed to having a carbon-neutral exploration phase. This exploration phase was completed after obtaining the ministerial decree 1139-2015 issued by the Government of Quebec in December 2015. The Company will continue quantifying and publishing its greenhouse gas emissions without committing itself to offset future emissions.

### Assessment of offsets and emissions

**The Company's GHG emissions for exploration phase in tonnes of CO<sub>2</sub> equivalent amount to a total of 4,259 tonnes.** In order to establish financial equivalents, Arianne Phosphate use the final price from the Quebec-California joint auction of greenhouse gas emission units of November 26<sup>th</sup>, 2019. The auction clearing price is **\$22.46/tonne GHG**. This represents an amount of \$95,657.14 to be invested in offset measures. To date, Arianne Phosphate has **invested a total of \$40,948 in research projects. Arianne still has \$54,709.14 to invest.**



**References:**

<http://www.environnement.gouv.qc.ca/changements/carbone/ventes-encheres/2019-09-20/resultats20190920.pdf>

<http://www.arianne-inc.com/>