

**Submission: Implications of the Heat of Fusion ref Issues Paper 3 –  
Climate Change: What is the science telling us?**

**The review does not show sufficient regard to the significance of the heat of fusion:**

The **heat of fusion** is the **heat** in calories required to convert 1 g of a material from the solid to the liquid state at the melting temperature. The heat of fusion for water is 80cal per gm.

**The amount of heat required to thaw 1 kg of ice at 0 degrees C is equal to the amount of heat required to raise the temperature of water by 80 degrees C.**

The continual annual reduction in the global mass of ice and snow indicates the total amount of energy being absorbed globally in the melting of snow and ice without any effect on the increase in global temperature. The heating effect of the the increasing amount of CO<sub>2</sub> in the atmosphere is being very significantly mitigated whilst any snow and ice remains. The implication of this is that as the total mass of ice and snow reduces there will be an increasing rate of warming around the globe and that if all snow and ice were to be lost there would be a massive rise in global temperatures. The property of the heat of fusion is providing a window of opportunity to reduce the rate of temperature change whilst we modify human activities. It is essential that we immediately begin the reversal of the addition of CO<sub>2</sub>e into the atmosphere by every available means.