

Overview

Working with Kaiser Permanente (KP) and Eli Lilly and Company (Lilly), a Water Risk Analysis Framework for Suppliers (WRAFS) was developed and applied to Lilly's first tier supply chain for the manufacturing and packaging of insulin for the U.S. market.

Significance

Climate change, population growth, and increasing living standards are contributing to the rising pressure on scarce water resources¹. While most companies are prepared to manage water-related risk in their direct operations, few have tried to understand and quantify their indirect water risk exposure in the supply chain². Evaluating water-related risk within a global supply chain is a difficult task due to a large number of suppliers across a wide range of industrial sectors, and limited access to each supplier's facility water use data.



Objectives

1. Develop a framework for assessing the water-related risks within a supply chain.
2. Apply this framework to Lilly's first tier supply chain for the manufacturing and packing of insulin (specifically Humalog and Humulin) for the U.S. market.

Methods

Currently, there is no single prevailing tool or methodology to assess water-related risk. In order to satisfy our objectives with limited financial resources and available data, the following criteria was used to select the most appropriate water-related risk tool:

Water Risk Tool Selection Criteria	
Accessibility	Is the tool free and publicly available?
Source Data	Is the source data granular to the watershed level?
Water Use Data Inputs	Does the tool not require facility water use data?
Output	Does the output quantify water-related risk?

What is Water Risk?

When it comes to business, water risk refers to the ways in which water-related issues such as water quantity, water quality, water regulations, and reputational damages can potentially undermine a company's operations.

Water Risk Analysis Framework for Suppliers WRAFS

Step 1

1st Tier Supply Chain Analysis



Apply randomized weighting scheme in Aqueduct

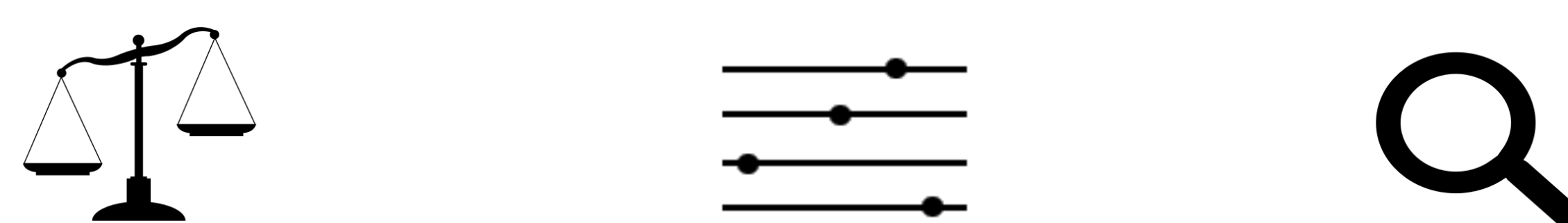
Identify suppliers exposed to "high" or "extremely high" location based water risk

Prioritize suppliers by frequency of exposure

Determine cutoff for number of suppliers to perform market concentration analysis

Step 2

Market Concentration Analysis



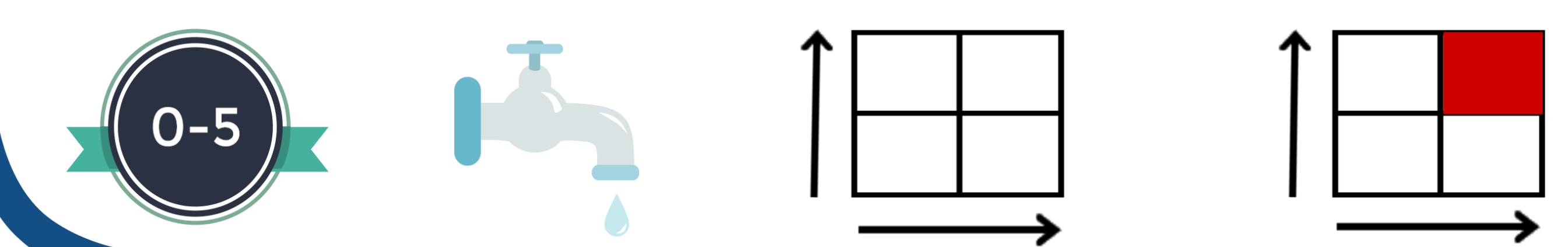
Compare all current and alternative suppliers by frequency of exposure to "high" or "extremely high" risk

Apply same randomized weighting scheme in Aqueduct to alternative suppliers

Identify alternative suppliers for commodities produced by suppliers above cutoff

Step 3

Materiality Analysis



Use water risk score from Aqueduct

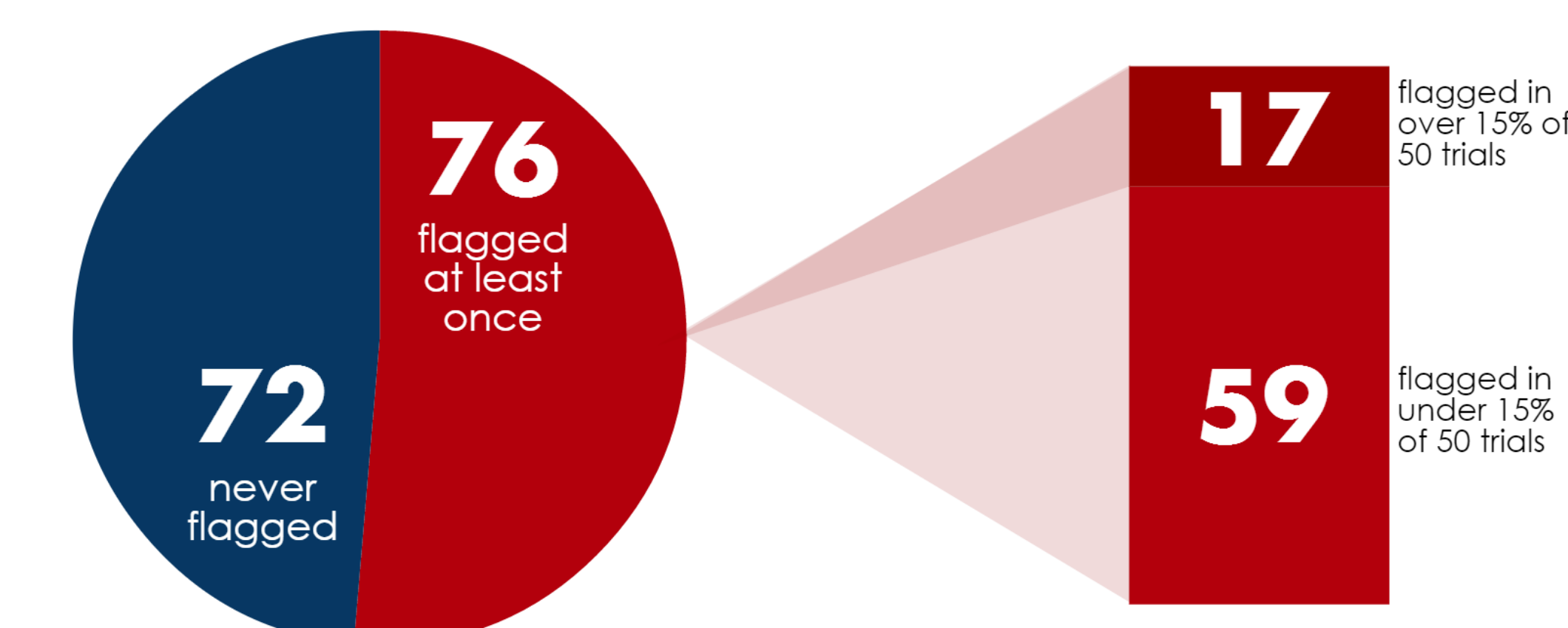
Determine estimate or acquire water use data and proportion sourced for commodities of interest by supplier

Plot water risk score and water use data on 2 x 2 matrix

Determine commodity-suppliers with high water risk and high water use

Application of WRAFS to Lilly's Insulin Supply Chain

Step 1: 1st Tier Supply Chain Analysis

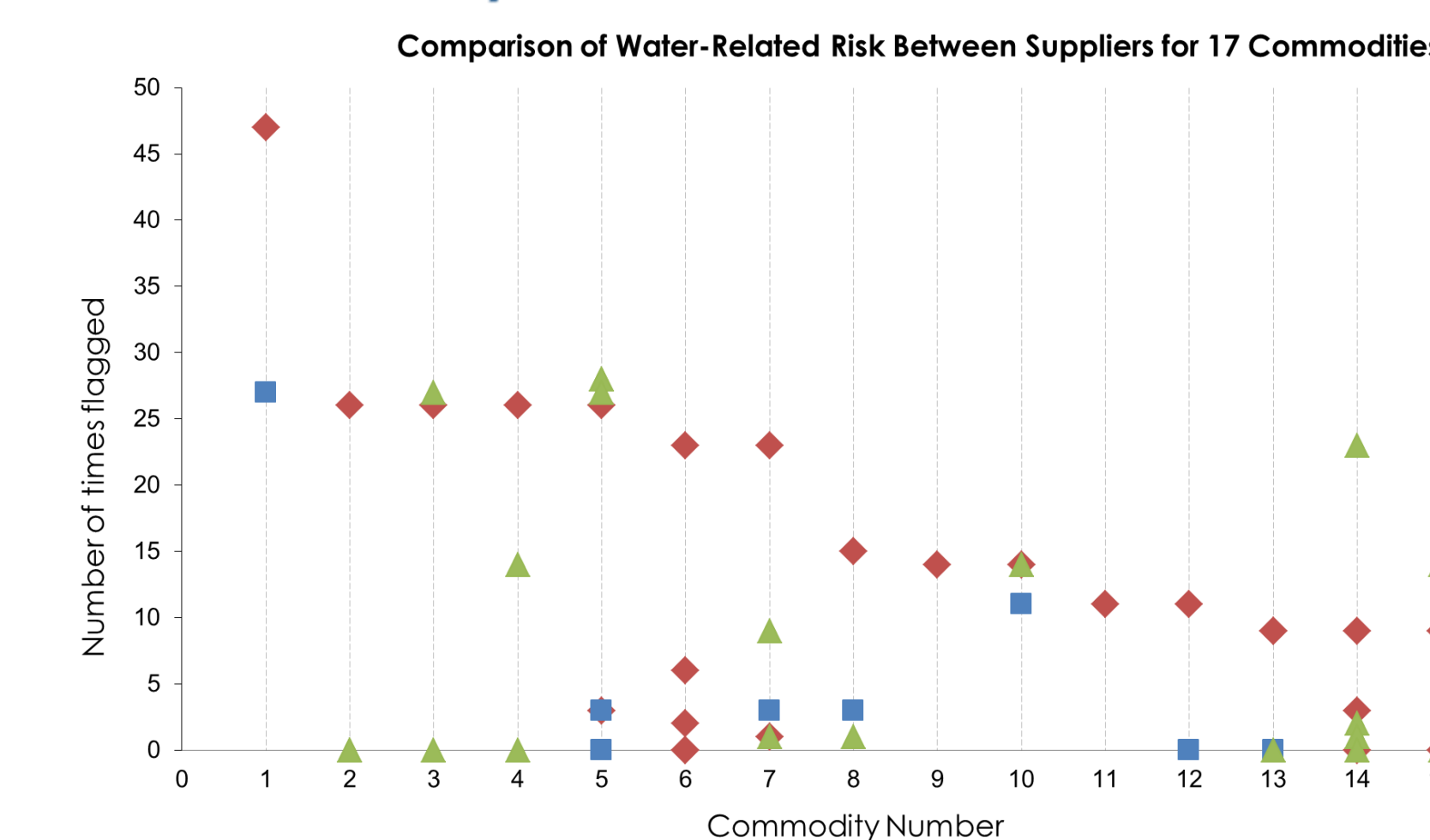


Flagged: Supplier's locational water risk score was greater than 3

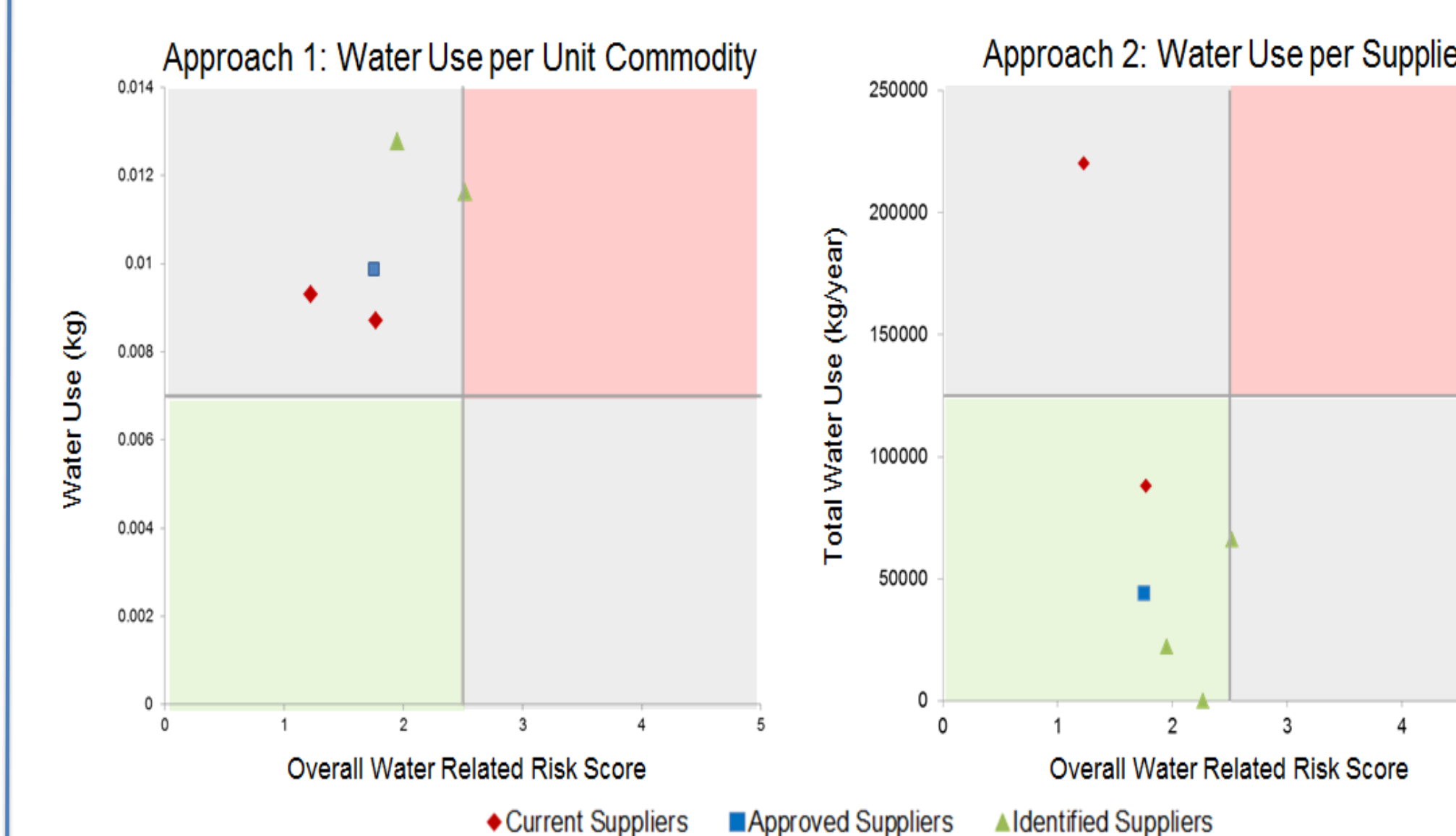
Seventy-six (51%) of Lilly's 148 tier suppliers were flagged as having "high" or "extremely high" water-related risk for at least one of the 50 weighting profiles. Seventeen of these 76 suppliers were flagged as having "high" or "extremely high" water-related risk in eight or more of the 50 weighting profiles

Step 2: Market Concentration Analysis

This analysis was performed on current and alternative (approved and identified) suppliers for the commodities provided by the 17 suppliers identified in step 1, in addition to 1 commodity of interest provided by Lilly. Except for commodities 6, 9 and 11, every commodity had at least one approved or identified supplier located in areas of lower water risk than the current supplier with the highest water-related risk.



Step 3: Materiality Analysis



This matrix can help Lilly focus their water-related risk mitigation efforts on suppliers located in the upper right quadrant, which have a combination of high water risk score and high water use. Perception of risk for suppliers with comparable water use per unit commodity may change depending on the proportion of commodity sourced from them, as illustrated by the current suppliers in the graphs.

Water use was estimated using two approaches and hypothetical sourcing proportions for suppliers of a commodity. These values may not be reflective of true water use.

Takeaways

- Supplier facility-specific information such as water use is often not disclosed. However, despite these data limitations, WRAFS can be performed in-house by any entity with a desire to better understand water-related risks in their supply chain.
- By applying this framework to Lilly's insulin supply chain, the company gains knowledge and insight into their indirect water-related risk exposure and has the potential to inform future decision-making and corporate water disclosure.

References and Acknowledgement

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[1] Barton, Brooke, Berkley Adrio, David Hampton, and Will Lynn. 2011. The Ceres Aqua Gauge: A Framework For 21st Century Water Risk Management. <http://bit.ly/1GT42RN> [2] Barton, Brooke. 2010. Murky Waters? Corporate Reporting on Water Risk. A Benchmarking Study of 100 Companies. Ceres. <http://bit.ly/1LgCRbw> [3] Swiatek, Jeff. 2013. "Eli Lilly Spending \$700M on Insulin Production to Meet Growing Global Threat of Diabetes." *IndyStar*, November 14. <http://indy.st/19p5cH7> [4] Abelson, Reed. 2013. "Kaiser Permanente Is Seen as Face of Future Health Care." *The New York Times*, March 20. <http://nyti.ms/1baT0du>.