

Global Environmental Liability Research Project

An Open Letter

Introduction

In 2013, ENFOS, Inc. began The Global Environmental Liability Research Project in an effort to quantify the financial impact of total global environmental liabilities associated with soil and groundwater assessment, remediation, and monitoring. This effort is funded entirely by ENFOS and is seen as an ongoing endeavor. We are approaching the issue from multiple perspectives and pledge transparency in terms of our approach and methodology. We welcome comment, scrutiny, and contribution from the environmental and financial communities at large. We seek to begin a dialogue around the scope and economic ramifications of global environmental liabilities as defined here.

Why Are We Doing This?

We have undertaken this project because total global environmental liability defines the problem that ENFOS was created to address; this is the market we serve. To our knowledge, this data does not exist in an aggregated form anywhere else. We firmly believe that you can't manage what you can't measure and environmental liabilities are big worldwide issues that deserve to be measured and managed. Entities should be celebrated for transparency in their reporting of environmental liabilities. Entities should be celebrated for remediating with strong management and sound science.

Definitions

We define total environmental liability in two categories: 1) environmental remediation liability and 2) asset retirement obligations (ARO). Environmental remediation liability represents the future cost to clean up contaminated real property including contaminated groundwater and soil. Asset Retirement Obligations are the future costs to retire certain long-lived assets and include activities such as oil and gas well abandonment and reclamation, mining reclamation, and asset decommissioning. Human contribution to these two categories comes from: gas stations, landfills, manufacturing facilities, military bases, chemical plants, farms, chemical plants, mines, oil and gas production, the neighborhood garage, school bus maintenance facilities, and on and on.

Applicable Accounting Standards

The liabilities we are attempting to account for are defined by certain financial accounting standards as public corporations are required to reserve/provision for and disclose to stakeholders the potential future cost of these liabilities.

Please refer to the following Applicable Accounting Guidance standards for recognition, measurement and disclosure of environmental liabilities for publicly held companies:

Financial Accounting Standards Board (FASB - www.fasb.org) Accounting Standards Codification (ASC): Environmental Remediation Liability ASC 410-30, Asset Retirement Obligations ASC 410-20

International Financial Reporting Standards (IFRS - www.ifrs.org) and International Accounting Standards Board (IASB): Provisions, Contingent Liability and Contingent Assets IAS37

What's Not Included

There have been a number of attempts over the years to determine humankind's impact on the planet. In recent years this dialogue has mostly revolved around global warming, greenhouse gasses and climate change. In this project we are focused on the topic of soil and groundwater contamination, and the remediation/decommissioning and monitoring costs associated with it.

We are not including the financial effects of: greenhouse gas emissions, solid waste management, municipal and industrial waste management, and water supply in our analysis.

Entities That Do Not Disclose

In order to establish a more comprehensive look at total environmental liability it is necessary to develop a methodology to estimate potential liability for entities that, for whatever reason, do not disclose. Most corporations outside of the United States and Europe are unburdened by financial accounting and disclosure standards being mandated and enforced.

Disclosure requirements are currently limited to such a degree that there is clearly a large gap in available real data. Most government agencies outside of the U.S. do not disclose any environmental liability. Within the U.S., most state/provincial and local governments do not disclose environmental liability. Nonpublic and small businesses have environmental liability that may never be disclosed unless property changes hands.

This lack of transparency, corporate governance, and complete financial disclosure dictates that any effort to understand global environmental liability must adopt a means to approximate values.

For many of these companies/governments who most surely have environmental liability but fail to disclose, we will adopt a means of estimation to determine a valuation. We are by no means representing that these estimates reflect the true environmental liability amounts of an entity, but rather are a calculated estimate used to represent what a comparable entity of this size and nature may have.

Approach

It is currently impossible to assign a dollar value to total global environmental liability with certainty. In the absence of certainty we will offer transparency. It is our intent that our estimates will improve over time through contributions from those of you who are taking the time to read this letter. The only segments of the global economy currently required to disclose these numbers are public corporations in the United States, public corporations in the European Union, and United States Government Agencies.

Top Down

The top down approach seeks to determine total global environmental liability by country. Our approach uses the United States as a baseline and extrapolates liability using Gross Domestic Product (GDP) factored by population and estimated total percentage of remediation work completed, with the European Union as a second check base line. It is a simple approach that is easy to understand and valid as a rough estimate for a number of reasons as explained below.

Global environmental liabilities have been estimated to a rough order of magnitude using the following simple logic:

1. Using the United States as our reference case (as they currently have the most supportable documentation, along with the EU), we calculated the remaining environmental liability cost (Estimate to Complete - ETC), the cost of already-completed work to cleanup sites (Actual Costs - AC), and the Estimate at Completion (EAC). This includes both private and public sectors through 2012.
2. Based on the AC and the EAC, we calculated the percent of work completed (%C) in the United States to estimate the how far along the US is in their total remediation lifecycle.
3. We documented the GDP (2012) and Population (Most recently available as of 2013 World Population Data Sheet) for each industrialized country as per the World Bank and Population Reference Bureau figures.
4. For each country we then adjust for Population (considering that each human creates waste simply by eating, using plastic, using heat, etc.). The Population factor adjustment modifies environmental liability totals for each country as compared to the U.S. to either increase or decrease the initial ETC estimates.
5. For each country, we assigned a "Percent Complete" of total remediation lifecycle based on governmental regulations and the overall state of the remediation efforts in that individual country.
6. We adjusted the estimated environmental liability of each country by their Percent Complete to account for the work already completed (Estimate to Complete by country).
7. These factored values are then again cross-checked between known values in the United States and the European Union and presented on the infographic.

Summary:

We utilized the country with the most mature remediation industry (United States) as the baseline country for environmental liabilities (both completed and remaining liabilities/ARO) to develop a rough order of magnitude estimate of remaining environmental liability cost for each industrialized country with GDP, population, and estimates of remediation maturity and total work completed as the variables.

International Advisory Board

With help from the global community and our professional contacts we will put together a Global Environmental Liability Research Project International Advisory Board consisting of a cross function team of experts from around the world including the U.S., Japan, China, India, Europe, the Middle East and Africa. The team will include expertise in environmental business management, environmental economics, environmental accounting, environmental law and

remediation technology. Through the dialogue and advice garnered through these experts from around the world we will seek to continuously improve our methods and estimations.

More to Come

We are continuing to build up sound research on various data points that we intend to pull other meaningful insights from and display in ways other than a By Country view of environmental liability. Please get in contact with us through our website if you have any ideas on how we can improve or where we should be looking next.

Best regards,

ENFOS, Inc.



Craig Modesitt

President / CEO