Impact Assessment and Community-based Monitoring: The potential of crowdsourced data

Diavik Diamond Mine, Northwest Territories, Canada

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Why is community-based monitoring important?

- Over the next 10 years there are 600 major resource projects in Canada alone, representing $650 billion in new planned investments (Natural Resources Canada 2012).

- Globally the scale of resource development is substantially greater.

- Projects proponents promise:
    - High economic returns
    - Social benefits
    - Limited environmental impacts

De Beers Victor Mine, Ontario's first diamond mine.

But how will we know?

- **The Monitoring Agenda**
  - Identify economic, social, environmental, health, HR impacts
  - Compile data on operating projects
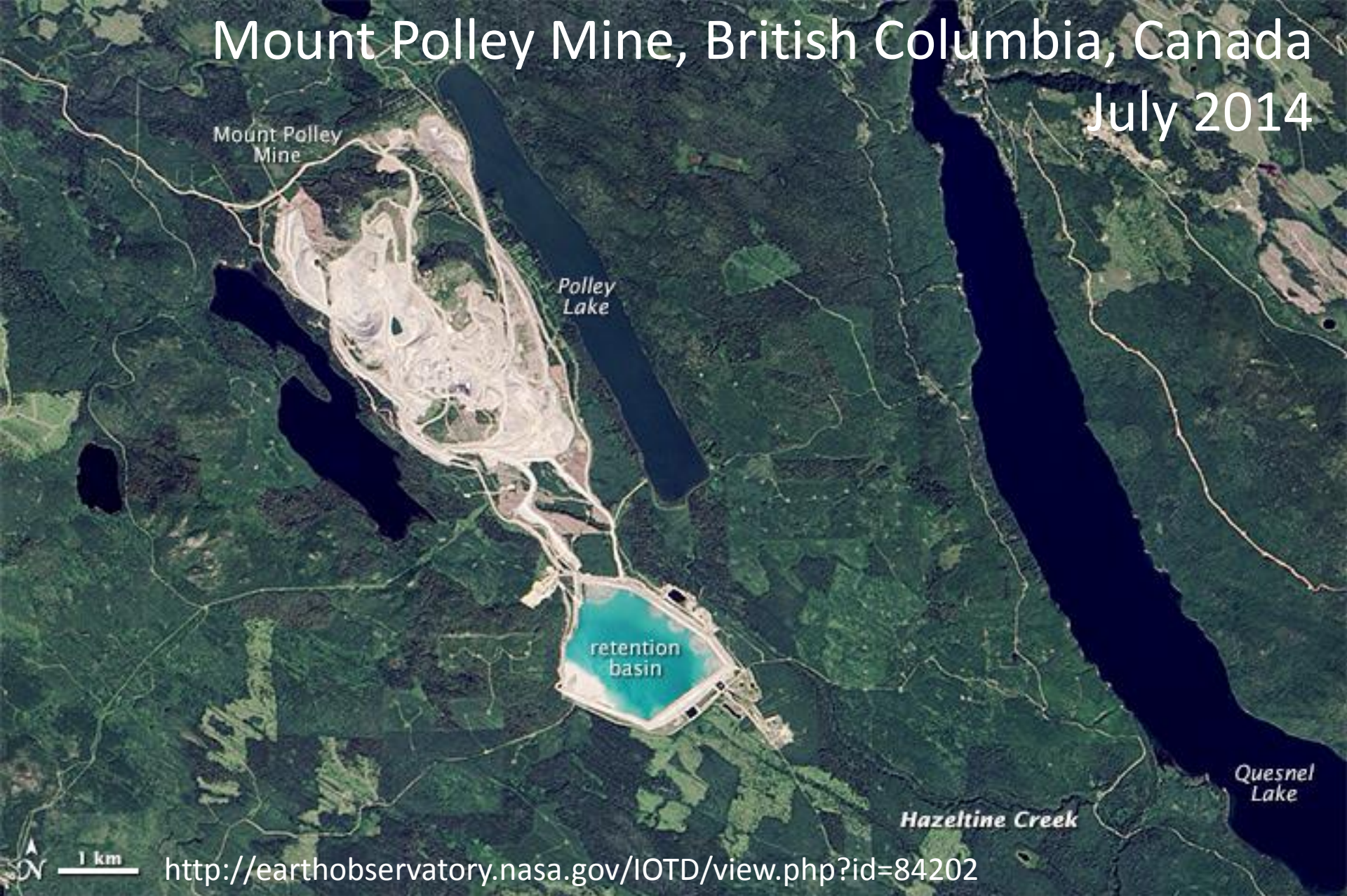 - Make these data available to concerned publics

Suncor, Alberta Oil Sands

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Mount Polley Mine, British Columbia, Canada
July 2014

Mount Polley Mine

Polley Lake

retention basin

Hazeltine Creek

Quesnel Lake

1 km

http://earthobservatory.nasa.gov/IOTD/view.php?id=84202

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- **Research Challenges**
  - **Data are not easily available.**
  - **Data may have to be collected over many years.**
  - **Project proponents are not required to share these data.**
  - **Data are not collected on many of the relevant indicators by public agencies.**
  - **The collection of such data through academic research is expensive especially for rural and remote areas.**
  - **Most of this sort of research will not be funded by research donors.**

Mount Polley Tailing Dam Breach, August 4 2014

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The Crowdsourcing Option using Social Media

- Create social media hubs for community knowledge collection on project impacts

- Create a community-sourced data base for each project.

- Use a community action research methodology

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Public Engagement = Citizen Science

- **Data collection by citizens has expanded dramatically in biology for:**
  - amphibians, ants, bats, birds, bees, biodiversity, box turtles, butterflies, dragonflies, damselflies, earthworms, eels, fungi, horseshoe crabs, insects of many kinds, invasive plants, jellyfish, moths, nests, plants, reptiles, seals, snakes, sponges, squirrels, and turtles.
- **Citizens have also been recruited to monitor:**
  - ice, light pollution, meteors, water quality, and weather (rain, hail, snow).

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Citizen Science

- **There is now public engagement in online data analysis for:**
    - alternative folding of proteins;
    - arranging DNA and RNA sequences;
    - examining lake bottoms containing microbialites;
    - generating synthetic RNA designs;
    - tagging satellite images for archeological features;
    - transcribing papyri from Greco-Roman Egypt;
    - classifying tissue samples to analyze cancer data;
    - classifying historic satellite images of tropical storms;
    - analyzing images from the Hubble Space Telescope to assessing the shape and spin of galaxies;
    - investigating infrared images from the Spritzer Space Telescope to find bubbles in space where stars might be forming;
    - classifying images from NASA's Lunar Reconnaissance Orbiter to study the moon's surface;

Citizen Science

- transcribing old weather observations from World War I to contribute to climate model projections;
- studying wind patterns on the surface of Mars;
- examining brightness measurements of more than 150,000 stars taken every thirty minutes to identify dips that might indicate a planet transit and thus identifying new planets;
- creating a library of seafloor life along the north-eastern United States;
- investigating how solar storms affect conditions in space and on Earth;
- listening to whale songs to identify communication patterns (Landgraf 2013).

Citizen Science

These projects are generating millions of data points and categorizations that are feeding directly into new scientific knowledge.

– Landgraf, Greg. 2013. *Citizen Science Guide for Families. Taking Part in Real Science.* Huron Street Press.

• Citizen science initiatives demonstrate that some fields of science have moved into a quite new terrain of scientific public participation.

• **Why not for impact assessment follow-up and monitoring?**

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Tools

The Ushahidi platform

Ushahidi

http://ushahidi.com/products/

We built the Ushahidi platform as a tool to easily crowdsource information using multiple channels, including SMS, email, Twitter and the web.
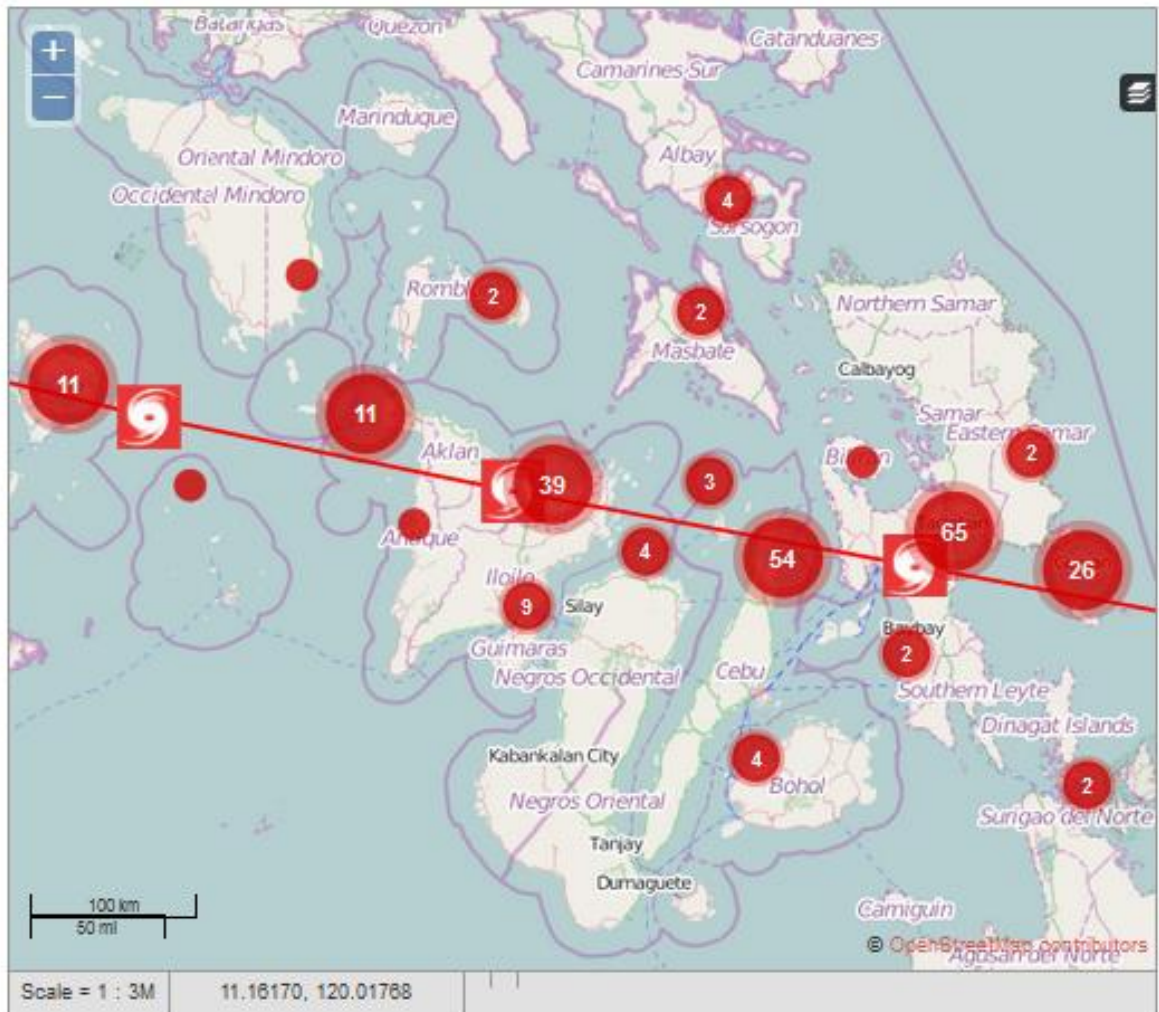
CROWDMAP

Crowdmap is for anyone wanting to tell a story with a map – not only through location but sharing photos, videos, and stories tied to a specific locations or entire regions.

CLASSIC CROWDMAP

When you need to get the Ushahidi platform up in 2 minutes to crowdsource information, Crowdmap will do it for you. It's our hosted version of the Ushahidi platform.

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Typhoon Haiyan – November 2013

FIX YOUR STREET

➕ Submit a Report

Welcome to fixyourstreet.ie beta!

fixyourstreet.ie now covers all of Ireland. We're in beta, which means that while functional, the service continues to be worked on and improved. If you should come across something that doesn't work as expected, then don't hesitate to get in touch through the email reports@fixyourstreet.ie Would you like to find out more? You can read more about this new service on the 'About Us' page.

fixyourstreet.ie is a moderated service. This means when you report an issue through the site it may take just a little while for it to become visible on the public listings.

Category Filter [Hide]

- 🔴 All Categories
- 🟣 Graffiti
- 🔵 Road or path defects
- 🟤 Street Lighting
- 🟠 Leaks and Drainage
- ⚫ Litter and Illegal Dumping
- 🟢 Tree and Grass Maintenance

How To Report

1. By sending an email to reports@fixyourstreet.ie
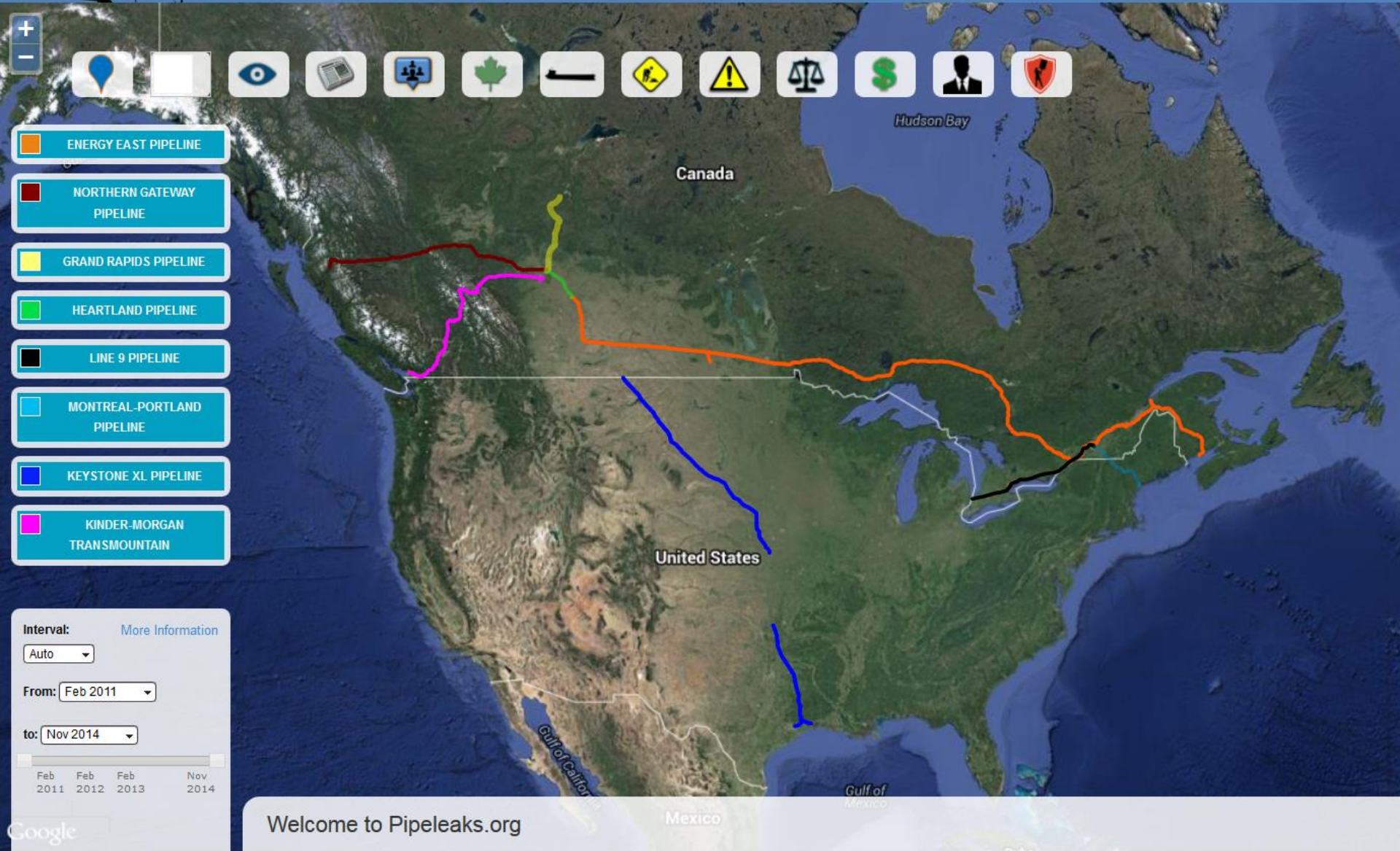2. By sending a tweet with the hashtag/s #fysie
3. By filling this form
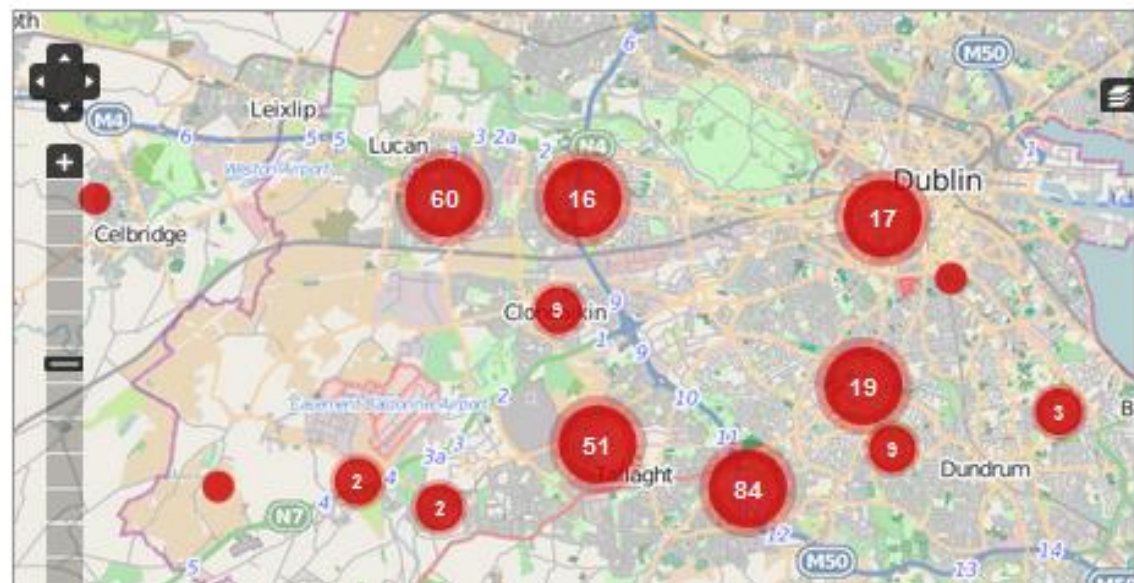
Incidents (from the map, listed in chronological order)

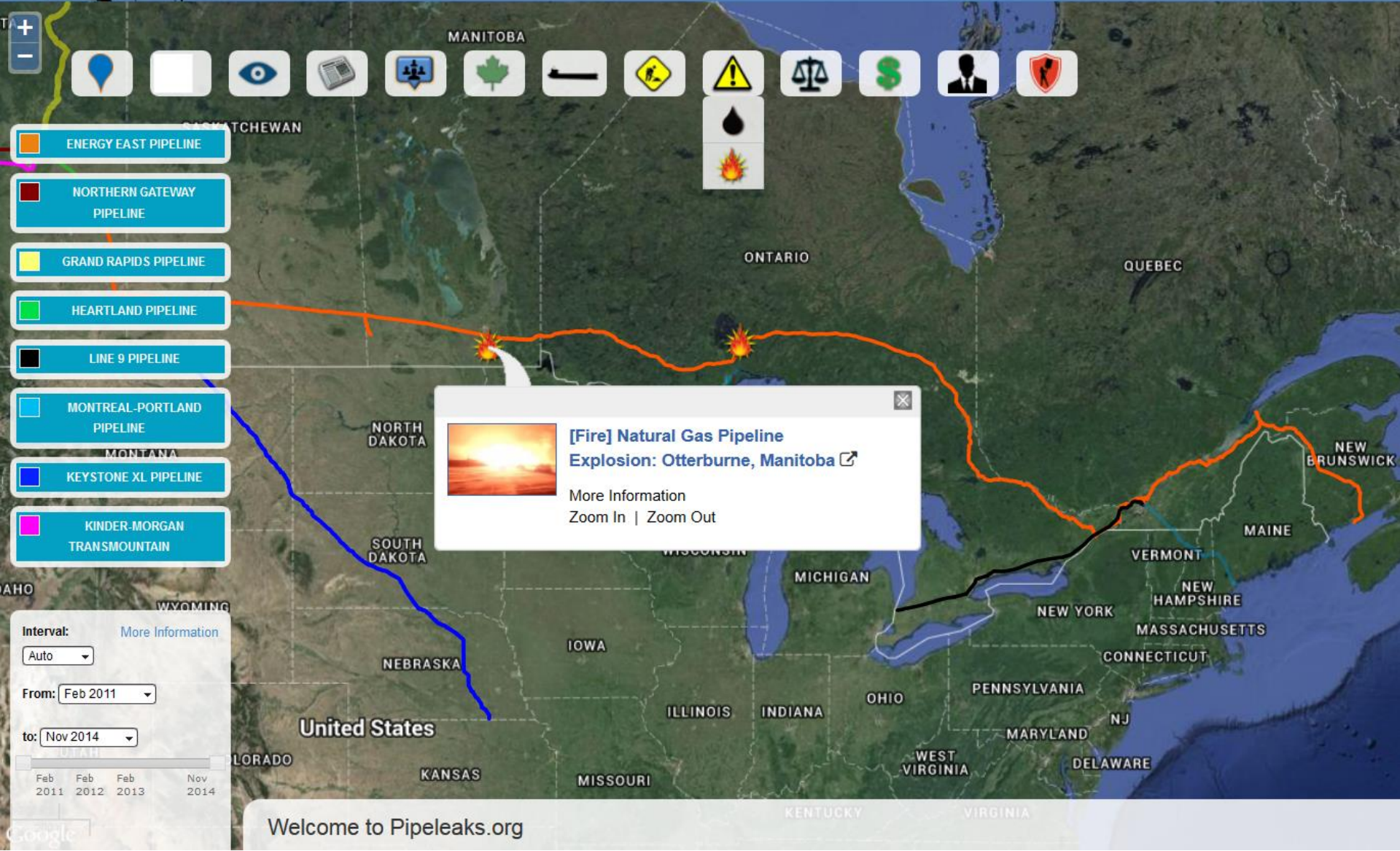| TITLE	LOCATION	DATE
3 Ton Limit Road Sign	R136 / Adamstown Link Road Roundabout	May 2 2014
Bins Not emptied	Junction of Wainsfort Road and Wainsfort Manor	May 2 2014
dumping	foxborough park, lucan,co dublin	May 2 2014
Non-working street light	52.708477911365,-8.6106911553308	May 2 2014
Western Way, D7. Reported from DublinLitterBlog.com...	Western Way, D7.jpg-large	May 2 2014
St. Mary's Place north, D7. Reported from...	St. Mary's Place north, D7.jpg	May 2 2014
Norton's Ave, D7. Reported from DublinLitterBlog.com...	Norton's Ave, D7.jpg-large	May 2 2014
damage left after traffic light install	Junction of R336 and ballymoneen rd	May 2 2014

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PIPE LEAKS

ENERGY EAST PIPELINE

NORTHERN GATEWAY PIPELINE

GRAND RAPIDS PIPELINE

HEARTLAND PIPELINE

LINE 9 PIPELINE

MONTREAL-PORTLAND PIPELINE

KEYSTONE XL PIPELINE

KINDER-MORGAN TRANSMOUNTAIN

[Fire] Natural Gas Pipeline Explosion: Otterburne, Manitoba

More Information
Zoom In | Zoom Out

Interval: More Information
Auto

From: Feb 2011

to: Nov 2014

Feb 2011   Feb 2012   Feb 2013   Nov 2014

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Some Challenges with Ushahida

- Ushahidi requires knowledge processing
  - Emails and SMS must be converted into data entries by someone = staff
  - There is no existing platform that facilitates ease of access directly by community data providers. Some skills are required.
  - Ushahidi does not promote cumulative analysis over extended periods = 5 – 15 years
- Research based on the data will require significant triangulation to sort out
  - False reports, misinformation
- Research ethics constraints on the use of data

Looking Forward

- Assess crowdsourcing platforms and combinations of platforms that can work for effective crowdsourced monitoring

- Make some suitable platform set available to the public

- Promote the use of the platform for specific projects
  – Assess the quality of the data collected
  – Make improvements in platform functionality
  – Release and promote widely.

- And see what happens.

Ekati Diamond Mine, Northwest Territories

Thanks!