

9. FOREST FUTURES: A GUIDE FOR SCANNERS

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Abstract.—A clear and concise guide for volunteer scanners is essential for creating a rigorous, consistent, and sustainable horizon scanning system. The scanner guide written for the Forest Futures Horizon Scanning system is presented in its entirety. The guide includes an overview of the USDA Forest Service; an explanation of horizon scanning and its goals, uses, and stakeholders; a “how to” guide for installing and using the Web-based system for collecting scanning hits; a description of the domain map used in tagging scanning hits; and a quick guide to getting started in scanning.

INTRODUCTION

A “scanner guide” is a prerequisite for establishing an ongoing and internally consistent horizon scanning system. The goal is to provide guidance to support rigor and ensure consistency in the horizon scanning process. For the Forest Futures Horizon Scanning project, an important benefit of the scanner guide is to assist in building the volunteer scanning team: Horizon scanning is not part of anyone’s official job description at the USDA Forest Service (hereafter, Forest Service) and the project therefore depends on volunteers. Volunteer scanners are drawn primarily from current and former Forest Service employees, and during the start-up period also include University of Houston Foresight program (hereafter, Houston Foresight) student interns. With volunteer

scanners, a clear and concise scanner guide is needed for scanner training and engagement, and is essential to the success of an ongoing horizon scanning system.

A challenge in developing the guide was to make it relevant to the diversity of scanners: Forest Service scanners have more in-depth subject and technical knowledge, while the Houston Foresight students are already familiar with horizon scanning. For scanners associated with the Forest Service, the agency information in the scanner guide serves only as a general reminder, and the information about what scanning is and how to effectively scan is the focus. For Houston Foresight students, the main focus is on learning more about the Forest Service and forestry, while the scanning material is a refresher.

The scanner guide that follows is a living document that is updated as new insights into improving horizon scanning effectiveness are gained and horizon scanning processes are clarified. The project is already on version 9 of the guide, although many of the updates were minor. Contact the authors for the most current version. The guide includes a brief introduction; an overview of the Forest Service; an explanation of horizon scanning and its goals, uses, and stakeholders; a “how to” guide for installing and using the Web-based system for collecting scanning hits; a description of the domain map used in tagging scanning hits; and a quick guide to getting started in scanning.

Forest Futures

A Guide for Scanners

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INTRODUCTION

Welcome to the USDA Forest Service Forest Futures Horizon Scanning project!

This project is a partnership between the USDA Forest Service (“Forest Service”), Northern Research Station’s Strategic Foresight Group (http://www.nrs.fs.fed.us/units/foresight_response/) and the University of Houston’s Strategic Foresight Department (<http://houstonfutures.org/>). It is an effort to uncover emerging trends and issues, as well as to identify and analyze early indicators of potential change that may have important implications for forests, forestry, the Forest Service, and all forest stakeholders in the future.

We assume that you have some familiarity with the Forest Service, its mission, and its responsibility for America’s national forests and grasslands. But if you would like more information, refer to The U.S. Forest Service—An Overview (https://www.fs.fed.us/documents/USFS_An_Overview_0106MJS.pdf) or visit the Forest Service’s public Web site (<https://www.fs.fed.us>).

This document provides you with all the materials necessary to begin operating as a “scanner” to contribute to this exciting project, including:

- A brief introduction to the Forest Service
- A brief introduction to horizon scanning and how it supports other foresight work
- Stakeholders for this scanning project
- A “how to” guide for using Diigo (an online system for archiving scanning hits)
- A forestry domain map with categories for “tagging” your scanning hits
- Some pointers and tips from other Forest Service and University of Houston scanners

Let’s get started!

INTRODUCTION TO THE USDA FOREST SERVICE

(Based on: <http://www.fs.fed.us/about-agency/meet-forest-service>)

What is the Forest Service?

- We are a Federal agency under the U.S. Department of Agriculture that manages and protects 154 national forests and 20 grasslands in 44 states and Puerto Rico. The national forests cover 193 million acres of land, roughly the size of Texas.
- In addition to managing the Nation’s national forests and grasslands, we provide technical and financial assistance to State and private forestry agencies and make up the largest forestry research organization in the world.

When and why was the Forest Service established?

- Congress established the Forest Service in 1905 to provide high-quality water and timber for the Nation's benefit.
- Congress later directed the Forest Service to broaden its management scope for additional multiple uses and benefits and for the sustained yield of renewable resources such as water, forage, wildlife, wood, and recreation.

What is the Forest Service mission?

- The mission of the Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations.
- We help people share and enjoy the forest, while conserving the environment for generations to come.

What is the Forest Service motto?

The Forest Service motto, "Caring for the Land and Serving People," captures the spirit of our mission, which we accomplish through five main activities:

- Protection and management of natural resources on lands we manage
- Research on all aspects of forestry, rangeland management, and forest resource utilization
- Community assistance and cooperation with State and local governments, forest industries, and private landowners to help protect and manage non-Federal forest and associated range and watershed lands to improve conditions in rural areas
- Achievement and support of an effective workforce that reflects the diversity of the American people
- International assistance to formulate policy and coordinate U.S. support for the protection and sound management of the world's forest resources

What is the Forest Service Horizon Scanning project?

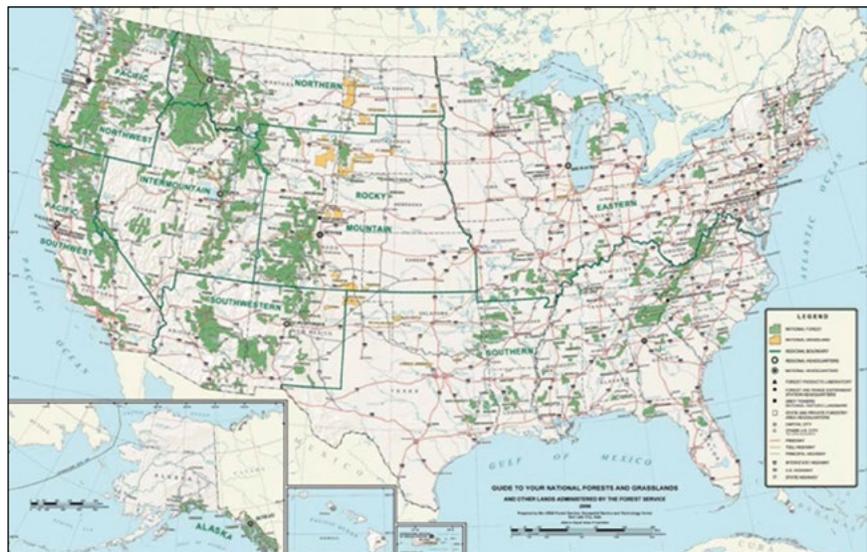
- The Forest Service's Northern Research Station organized a small strategic foresight research unit in 2014 to bring futures research into forestry and natural resource management.
- The Horizon Scanning project was developed to identify and analyze early indicators of potential change that could impact natural resource management in the future.
- The goal of the Horizon Scanning project is to support Forest Service and natural resource decisionmaking, communicate with stakeholders, and form the foundation for additional futures research.

More information about the Forest Service:

- Agency organization: <http://www.fs.fed.us/about-agency/organization>
- Mission, vision, guiding principles: <http://www.fs.fed.us/about-agency/what-we-believe>
- History: <http://www.fs.fed.us/learn/our-history>
- Strategic plan: <http://www.fs.fed.us/strategicplan>
- By the numbers: <http://www.fs.fed.us/about-agency/newsroom/by-the-numbers>

USDA Forest Service national forests and grasslands:

http://data.fs.usda.gov/geodata/other_fs/docs/guide_to_national_forests_20060117.pdf



HORIZON SCANNING

Horizon scanning is the process of searching various sources for emerging issues in the internal and external environment of an organization or field. Distinctive characteristics of horizon scanning include an emphasis on “weak signals” (early indicators of potential change), scanning broadly (rather than focusing only on changes internal to the forest sector), and the inclusion of possible wild cards (low-probability, high-impact events or developments). The overall goal is to find emerging indications of important future developments that no one else has noticed yet, so that planners, managers, and policymakers can plan accordingly and take timely action well before those impending changes can become problems.

Scanning sources could include blogs, specialized Web sites, trade magazines, scientific journals, online videos, and many more. Since scanning is typically focused on new and emerging issues, scanners tend to focus on more alternative, atypical, non-mainstream sources

of information, although mainstream information sources (such as a newspaper or a leading scientific journal) may report on important emerging issues as well.

Your goal as a scanner is to contribute to a database of new, exciting, disruptive, or even strange ideas that could at some point have important impacts or become drivers of change in forestry. In your role as scanners, your primary task will be to seek out these emerging ideas and issues and to post them to Diigo, an online collection database which this project uses to aggregate and share the interesting “hits” that its scanners have found. Detailed information about installing and using Diigo is provided in a later section of this document.

One of the main uses for scanning results is to help shape and improve the crafting of alternative future scenarios. The Forest Service and the University of Houston have already created sets of possible forestry-related scenarios as part of an examination of where current conditions and trends might take us. The horizon scanning project can help significantly in this work. Each scenario typically identifies key drivers (values, events, trends, and issues) which would need to occur for the scenario to develop and continue to be plausible. Horizon scanning looks for the weak signals which can tell us how these drivers may be playing out. The hits that you find can be used by the foresight experts to support or confirm an existing forecast scenario. Or the hits may disconfirm a scenario, making it less plausible to occur. Best of all is when scanning hits provide a basis for creating a new scenario—in effect, signaling a possible future we hadn’t considered before.

For additional information on horizon scanning, see:

Google Docs under “Framing and Scanning Basics” link:

<https://docs.google.com/presentation/u/0/>

Bengston, D.N. 2013. **Horizon scanning for environmental foresight: a review of issues and approaches**. Gen. Tech. Rep. NRS-121. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 20 p. <https://doi.org/10.2737/NRS-GTR-121>.

STAKEHOLDERS FOR THE HORIZON SCANNING PROJECT

People and groups who may benefit from the results of horizon scanning are the stakeholders. They may use the scanning database to aid in their own foresight work or they may be the consumer of other teams’ completed foresight products which used this scanning collection. The stakeholders for this horizon scanning system include both internal (Forest Service) and external users and partners:

- **Internal stakeholders** range from Forest Service Washington Office leadership to planners and managers on individual national forests.

- **External stakeholders** include a wide range of Forest Service partners and organizations involved with forestry and natural resource issues, such as wood industry associations, urban forestry groups, professional societies in forestry and natural resources, international forestry organizations, environmental nongovernmental organizations, State foresters, forest academics, and scientists.

DIIGO “HOW TO”

Diigo is a Web-based system that we will use to collect horizon scanning hits. It’s very easy to use—just follow these steps:

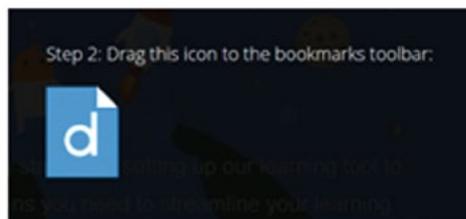
1. Go to <https://www.diigo.com>
2. Press the “Get started” button
3. Choose the “Free” plan
4. Create an account (username and password)
5. They will send you an email to confirm your account—in the email, click “activate your account”
6. This takes you to the “install extension” screen:



or you can use [diigolet](#)

We recommend you select “diigolet,” which is the simpler form of the Diigo user interface.

7. Then you literally drag the icon onto your bookmarks toolbar:



It will look like this (the other two icons are not related to Diigo):



That’s all to get it installed! When you find an article or Webpage you want to capture as a scanning hit, you click on the diigolet icon. (You may be asked the first time to sign-in to Diigo with your ID and password, but it will remember you from then on.) Here’s what pops up:

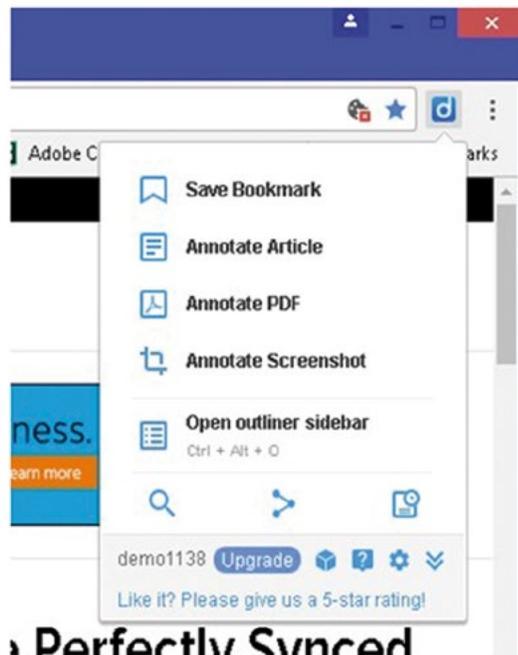


Click on “Bookmark” and a screen will appear similar to the one here where you can enter the information about your article—a brief description and tagging terms. You then select the option to “share to a group,” which will be the “Forest Service” group. If you don’t see that in the list, you should contact the project administrator (on either the Forest Service or University of Houston side) and request access to the “Forest Service” group. You can still save the bookmark to your “My Library” and then share with the group later.



If you find the “diigolet” app doesn’t work in your browser, you can also choose to install a browser extension that provides the same ability for you to tag, save, and share interesting scanning hit articles. Diigo even has Apple and Android cell phone apps!

The following image is of a Google Chrome browser with the Diigo browser extension installed. Note the blue Diigo icon in the address bar, and the drop-down menu (with “Save Bookmark” as the first choice) displayed when the icon is clicked.



THE FOREST FUTURES HORIZON SCANNING DOMAIN

Domain Map

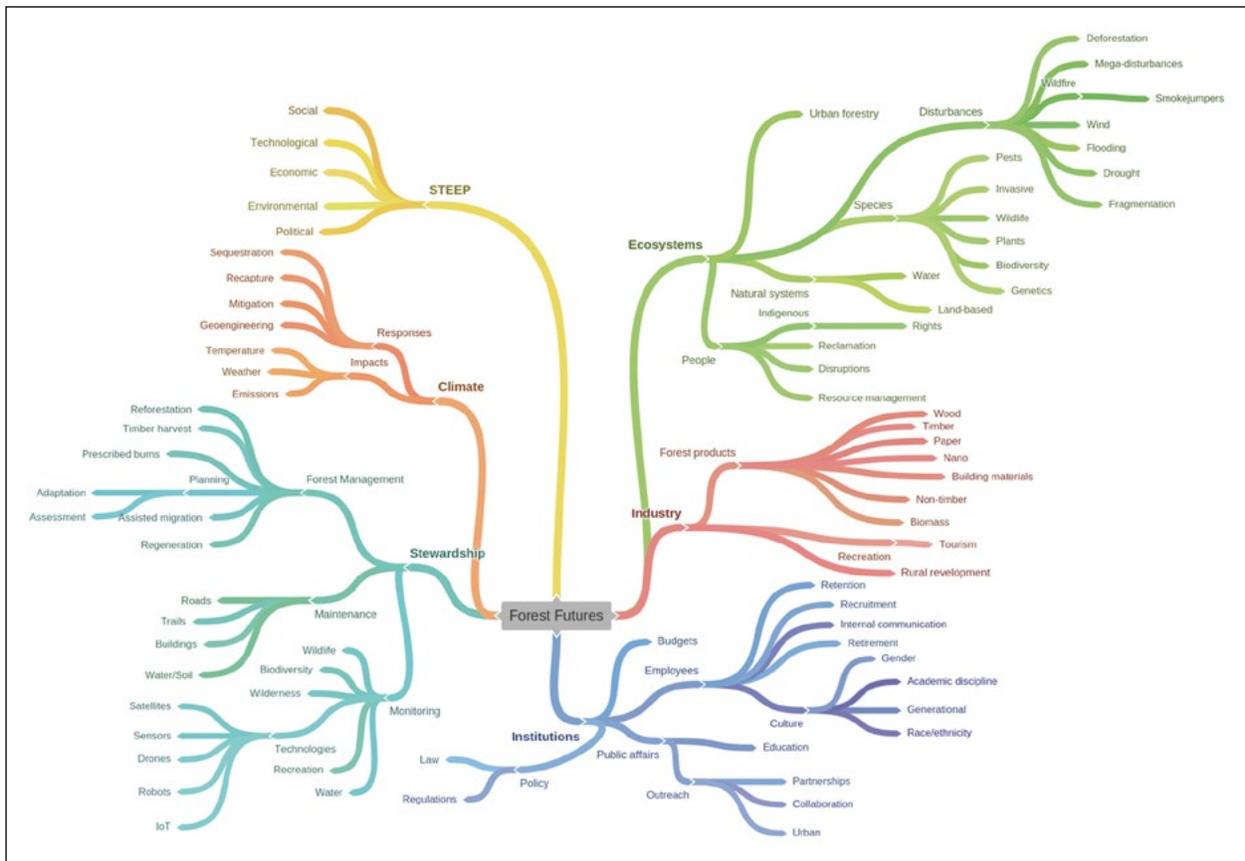
A domain map provides some loose boundaries of what is “in” and what is “out” in terms of the subject and content of a horizon scan, as well as categories used for “tagging” scanning hits.

As a scanner, you should tag your scanning posts based on the domain map hierarchy shown below. This will help keep scanning organized and easily searchable.

For example, if you find an innovative new use for paper,¹ then you would tag it with “Industry”, “Forest Products”, “Paper”, and “Technology”. This is not an exact science, but the more precise we are with our tags, the more efficiently the entire team will be able to search for relevant topics. If you think an article is relevant but does not logically fit into this domain, please do your best and create new tags where necessary.

The forest futures domain map is shown below. The full domain map is also available on Coggle at [Forestry domain map](#).

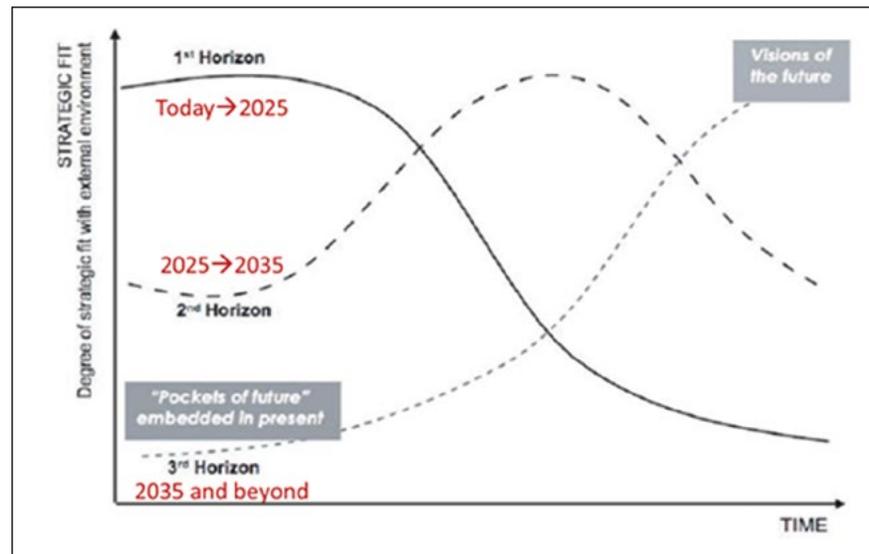
¹ For example, fuel cells made of paper (<http://www.ozy.com/rising-stars/are-tomorrows-fuel-cells-made-of-paper-this-engineer-thinks-so/83354>).



Major categories in the domain include **Ecosystems, Industry, Institutions, Stewardship, Climate, and STEEP** (an acronym for the broad external change categories: Social, Technological, Economic, Environmental, and Political). The STEEP categories represent dimensions of the broad context for forestry and forest institutions that could have significant implications for the field and the Forest Service in the future. For example, an article about a breakthrough in wood nanomaterials could be tagged “Technological” and “Economic”, as well as “Industry”, “Forest Products”, and “Nano/Chemicals”.

We also tag each post according to which of three time horizons it indicates. If the piece suggests a change happening around 2030, for example, we add the H2 tag for Horizon 2.

Another way to interpret the “horizons” is to think of Horizon 1 as “now” (the post is about something with an effect that is either current or imminent); Horizon 2 as “next” (the thing could be related to events happening today, but won’t really start impacting things for some years); and Horizon 3 as “new” (ideas so fresh and different—but relevant—it would probably be decades before we experience the change they could cause).



READY TO START SCANNING?

Some search strategies to try:

1. Use general search engines (e.g., Google, DuckDuckGo, or Bing): Pick a domain map topic and combine it with one or more of the following terms: “of the future”, “of tomorrow”, “implications”, “emerging”, “long term”, “trend”, “by the year”, “vision”, “scenario”, “wildcard”, “wild card”, “sea change”, “the next * years”, “2020”, “2030”, “crossroads”, “dilemma”, or “disruption”.

2. Set up a daily or weekly Google Alert to automatically send you notices of relevant articles. See: <https://support.google.com/alerts/answer/4815696>. You may need to tune the alert if it doesn’t deliver useful scanning hits.

3. STEEP and general sources: There are many specialized Web sites that report on new developments in the STEEP categories or emerging developments in general. For example:

STEER categories	Examples of Web sites
Social (includes demographic, cultural, etc.)	Population Reference Bureau (prb.org), UN Population Information Network (un.org/popin), US Census (census.gov), Arts & Letters Daily (aldaily.com), Variety (variety.com), Brain Pickings (brainpickings.org)
Technology	TechCrunch (techcrunch.com), Digg (digg.com), Wired (wired.com), Slashdot (slashdot.org), Science and Technology Daily (scitechdaily.com), Fresh Patents (freshpatents.com), KurzweilAI.net (kurzweilai.net), Singularity Hub (singularityhub.com), EurekAlert (eurekaalert.org)
Economic	OECD Statistics Portal (stats.oecd.org), Innovation Daily (http://www.innovationamerica.us/in-the-news/innovation-daily-99998), The Economist (economist.com), IMF World Economic Yearbook (https://www.imf.org/en/publications/weo), UN Statistics Division (unstats.un.org), FastCoLabs (fastcompany.com), Venture Beat (venturebeat.com), Real-World Economics Review Blog (rwer.wordpress.com)
Environmental	Greenbiz (greenbiz.com), Resilience.org, Natural Resource Defense Council (nrdc.org), WorldWatch (worldwatch.org), Green Car Reports (greencarreports.com), The Watchers (watchers.news), Treehugger.com, NextCity.org, World Resources Institute (wri.org)
Political	CIA World Factbook (https://www.cia.gov/library/publications/resources/the-world-factbook/), Center for Responsive Politics, OpenSecrets.org, US Government News (https://www.opensecrets.org/orgs/news.php?id=D000022300&cycle=2018), Change.org, Project Censored (projectcensored.org), Technocracy (technocracy.news)
General	Reddit (reddit.com), FutureSeek (futureseek.wordpress.com), Shaping Tomorrow (shapingtomorrow.com), Trendwatching.com, FUTUREdition (futuredition.org), Futurity (futurity.org), World Future Society (wfs.site-ym.com), FutureAgenda (futureagenda.org), Flipboard (flipboard.com), Tumblr (tumblr.com), Futurists’ Blogs (vernewheelwright.com/id14.html), Google Trends (trends.google.com), TED Talks (ted.com)

Over time, the Forest Service and University of Houston team found the sites on this example list to be consistently useful. However, sources on the Internet come and go. Be sure to also scan less well-known publications and sites. Review topics and discussions on social media, too, for trends, ideas, what-ifs, and other interesting possibilities.

4. Next level: As you start to get the hang of it and want to move to the next level, check out this [Scanning Sources Overview](#).

Some Tips from the Team on Horizon Scanning

1. Recent developments: Focus on recent developments—within the past year or so—rather than things that happened years ago (which may be interesting, but scanning hits should focus on new developments that signal potential future change).

2. Commentary: After the description of your scanning hit, please add an additional comment explaining its possible implications or relevance to forestry and the Forest Service. For example, a possible implication for forests and forest management of self-driving cars is that their adoption could encourage more sprawling development patterns (as long commutes are no longer wasted time) and increased fragmentation of forests.

3. Outside-in: Focus mostly (but not entirely) on “outside” issues and change, that is, things that are originating outside of the field of forestry and natural resources but could impact the field in the future, such as drones adapted for monitoring forests or fighting fires. Many leaders and policymakers within the field are already aware of emerging issues and change originating within the sector.

4. Wide-angle vision: To scan more effectively, read broadly and generally, and do not expect to discover a good scanning hit in every article from every source.

5. Check the library: Please check recent additions to the Forest Service Diigo library before posting, in case someone has beat you to that really great article you found. You can do this by searching for the article’s headline. Always keep in mind that helping to scan isn’t a contest or a race. Even if someone else found it first, go ahead and add a comment to that post, if you’ve noticed some implication or connection that the other person didn’t.

Quick Strategies for Getting Beyond “Horizon 1”:

One of the issues we found in the early phases of the project was a tendency to focus on change and scanning hits that were close to the present and near-term future, that is, Horizon 1. That’s a natural approach to take, but indicators of more-distant change are more useful in horizon scanning. The following additional tips are provided to help you stretch beyond Horizon 1 into Horizons 2 and 3.

1. Don't start with articles listed at the top of page 1 of a Google Search. Try going straight to page 2, or 5, or 10, and see what comes up. These are more outlier posts: less relevant, but also more likely to be "outside the box" ideas on your search topic, or a related topic.
2. Try different (but related) words. Instead of "future of trees" try "future of plant life" or "future of vegetation".
3. Try including multiple words or terms that don't at first appear to have any relation, such as: "artificial intelligence forest management", "wood products and climate change", or "tourism and virtual reality".
4. Finally, most articles contain highlighted, underlined links to other sources that are referenced in the article. Clicking on these links can often lead to richer source materials which your original article only hints at.

QUESTIONS?

Please contact the authors for any questions you have about scanning and contributing to this project. And thanks very much for your participation!