Environmental Protection Agency

Usability Audit Review

Climate Change

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January 2017

Agenda

- **Overview of Usability Audit Review**
- Top Usability Issues
- Bottom Line

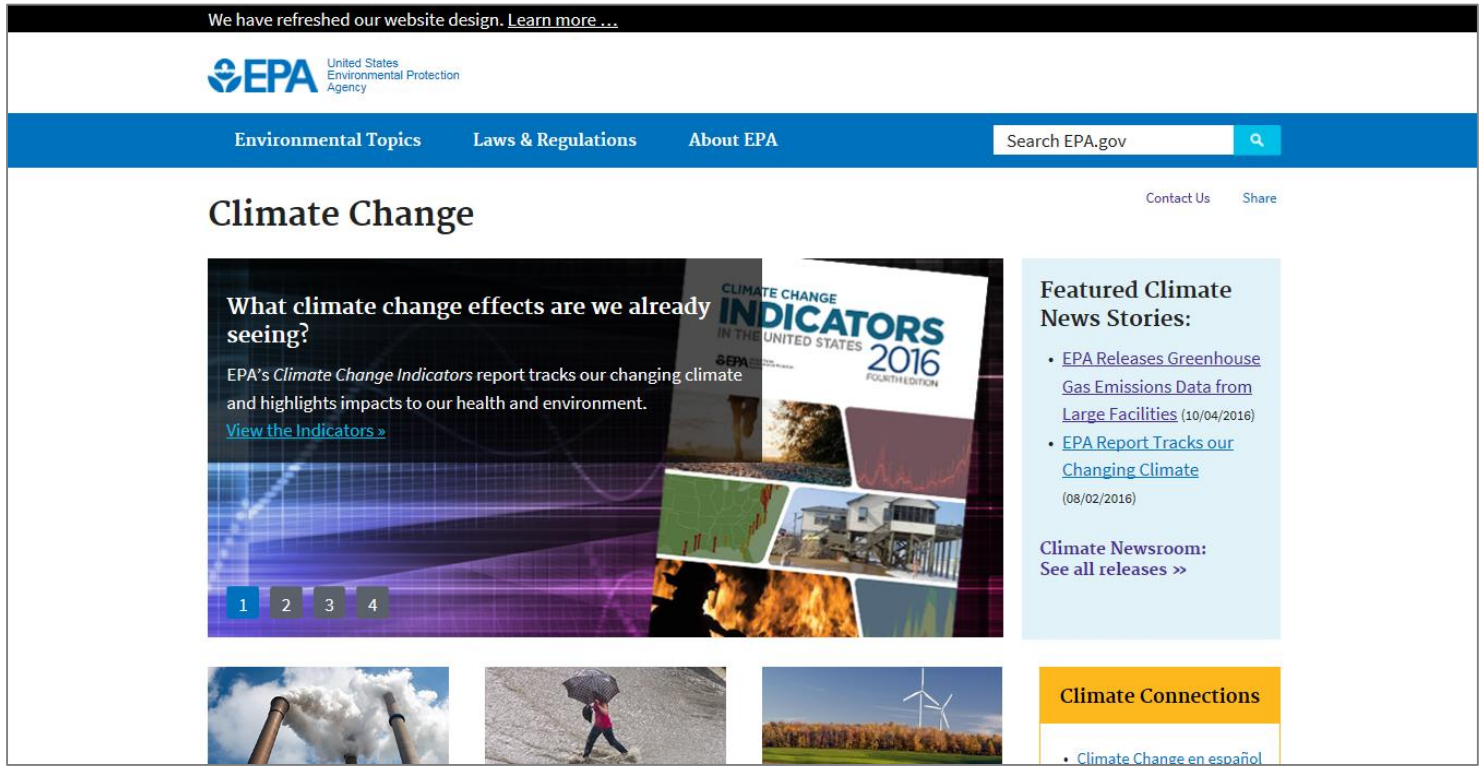
ForeSee Usability Process

- Audit
- Analysis
- Independent Evaluation
- Target Visitor Needs and Expectations

Usability Indicators

- Individual Application
- Pass/Fail Metric
- Measures Specific Aspect of Usability
- Proprietary to ForeSee
- Website Analysis and External Research
- Best Practice

Scope and Specifications



- January 2017
- 1366 x 768
- Iterative Evaluation

This audit examines content and navigation within Climate Change Home, Climate Change Science, Climate Change Impacts, Climate Change Indicators, and Greenhouse Gas (GHG) Emissions to evaluate the organization and categorization of information, the intuitiveness of navigation, and how clearly labeling communicates the nature of content and its structure.

Agenda

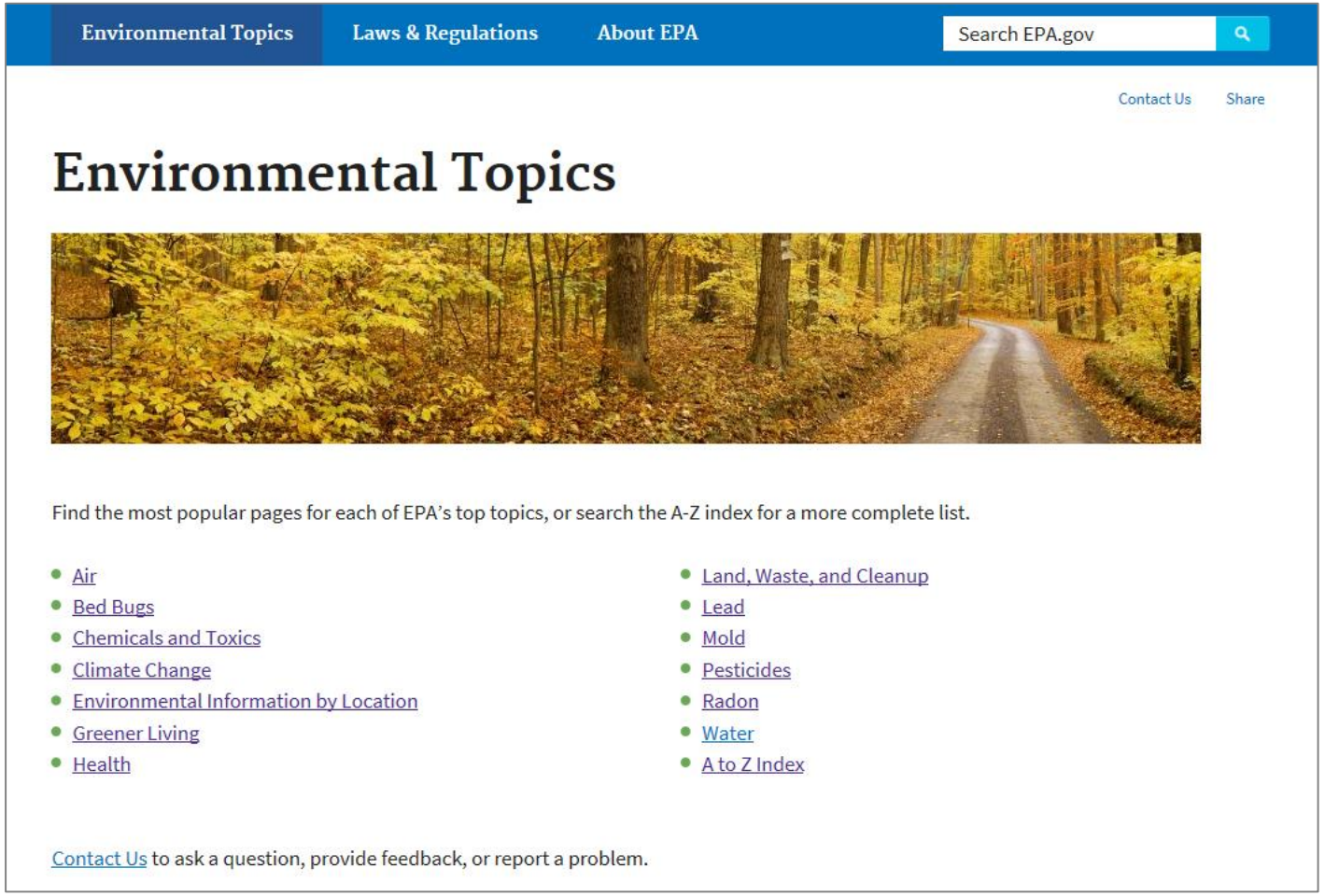
- Overview of Usability Audit Review
- › **Top Usability Issues**
- Bottom Line

Top Usability Issues

- Category Awareness
- Scope Notes
- Presence of Local Navigation
- Execution of Local Navigation
- Orientation
- Hidden Content
- In-Page Navigation
- Expected Location
- Link Execution
- Print and Email

Category Awareness

Category information is missing from Environmental Topics page

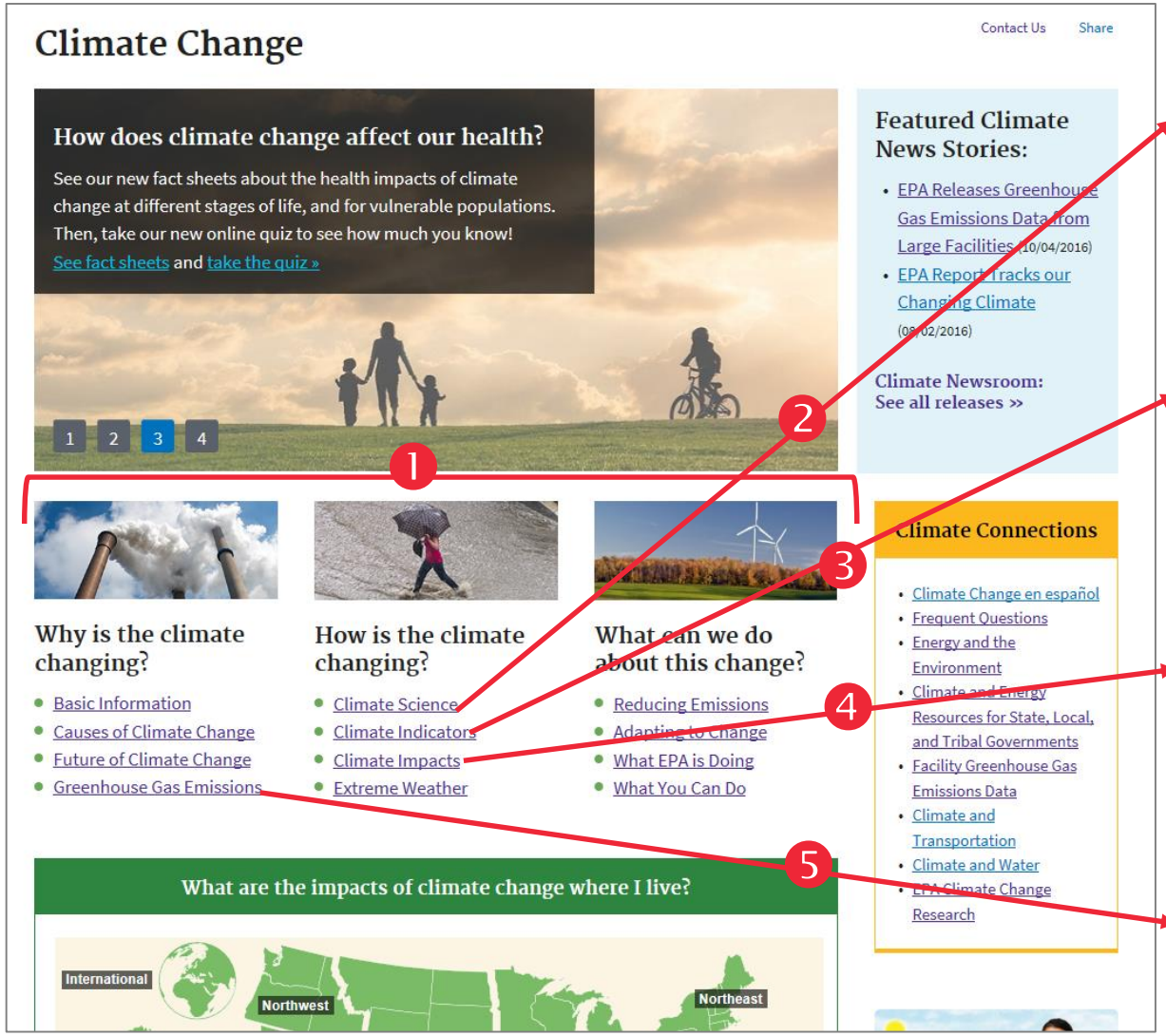


EPA.gov does not display subcategories for Climate Change, and other topics, on the Environmental Topics page. As a result, visitors may have difficulty gaining a mental model of the contents and organization of the site and may fail to locate desired content.

The site has an opportunity to provide an overview and convenient navigation for each topical subcategory by listing and linking to subcategories under each topic on this page.

Recommendation: Provide a hierarchical overview of Climate Change and other topics by listing and linking to subcategories on the Environmental Topics page.

Primary page link groups do not reflect the structure of the section



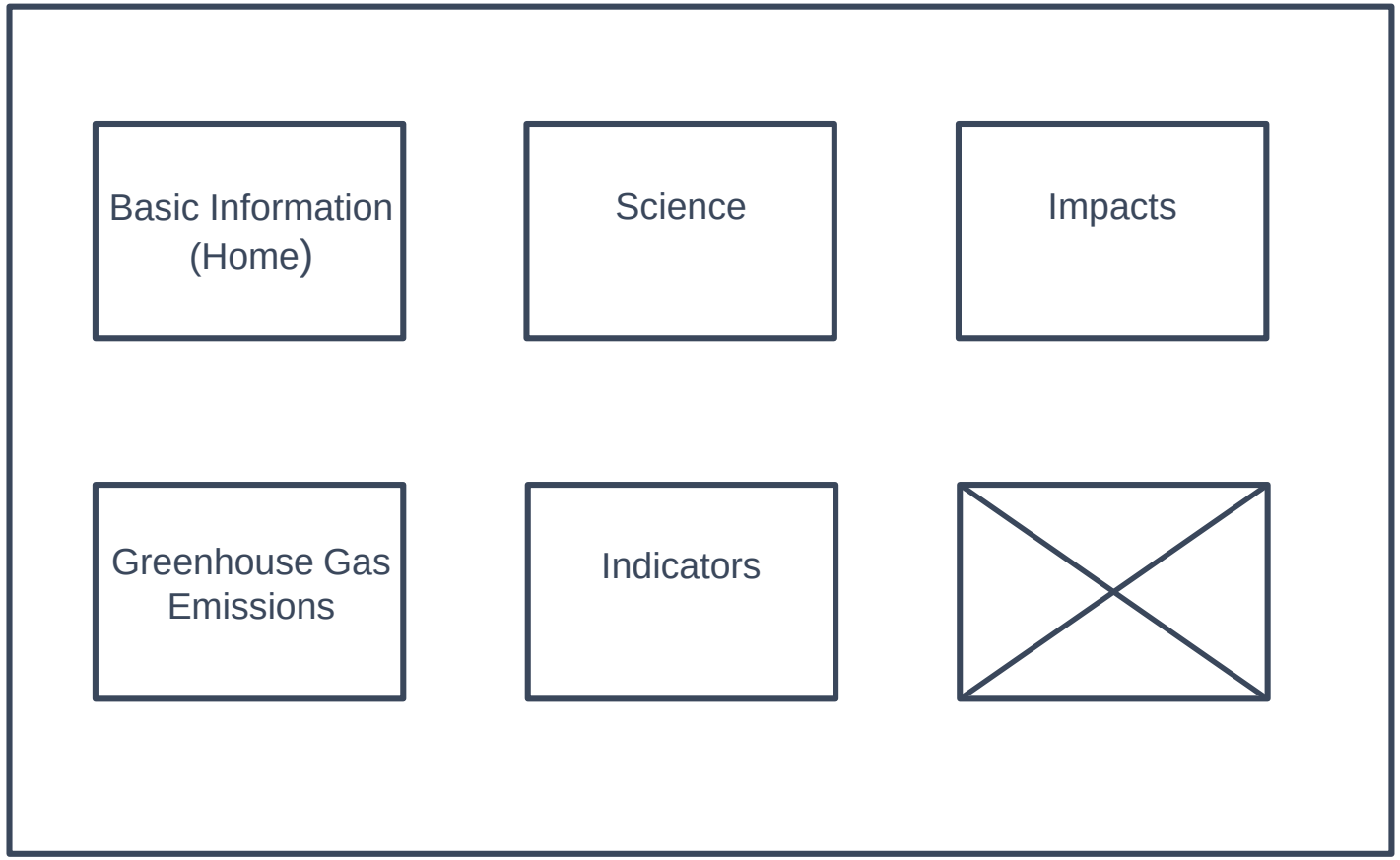
Primary pages serve to introduce a section's content, set visitor expectations about what can be accomplished, and provide efficient pathways for doing so. Typically, visitors look to the centerwell for overview text and linkage to content on deeper pages within the section.

Visitors expect the three headings ❶ in the Climate Change Home centerwell to reflect the section's categories. However, links to the actual Climate Change categories ❷ ❸ ❹ ❺ are unevenly distributed among these groups, indicating that the groups do not reflect the present organization of the section.

The difference between the organization of content on the primary page and the categories within the section prevents visitors from acquiring a mental model of the section which would allow them to navigate confidently and efficiently to content of interest.

Recommendation: Ensure the organization of links on the home page accurately reflects the structure of the section.

Organization of the centerwell: Wireframe



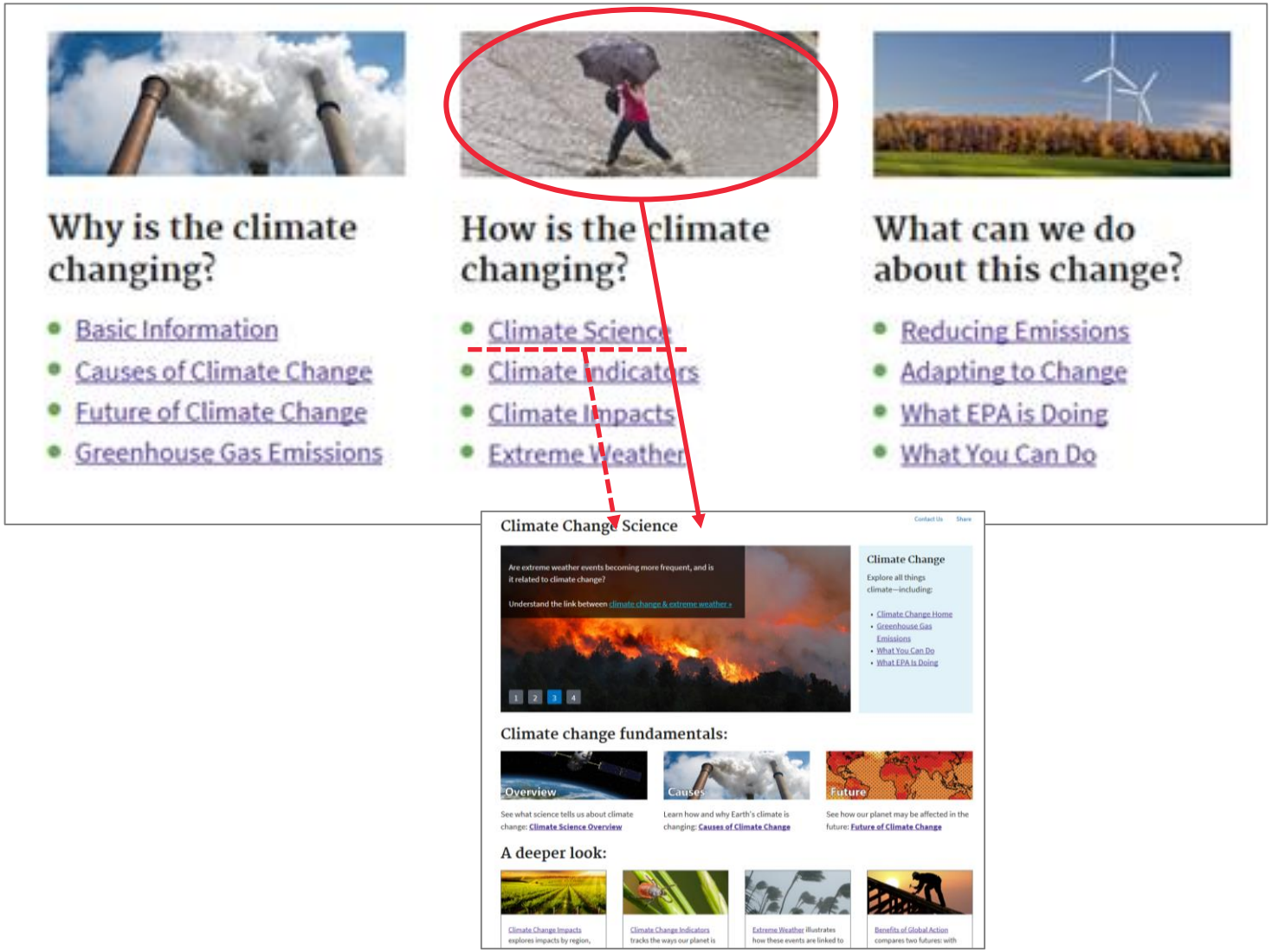
This wireframe demonstrates a possible layout for the centerwell of the Climate Change Home page. By representing each of the existing categories with explicit labels and linkage, the layout builds awareness of the contents and organization of the section, ensuring that visitors can understand what information is offered, how it is organized, and how to navigate to it.

Categories are misrepresented by linked images

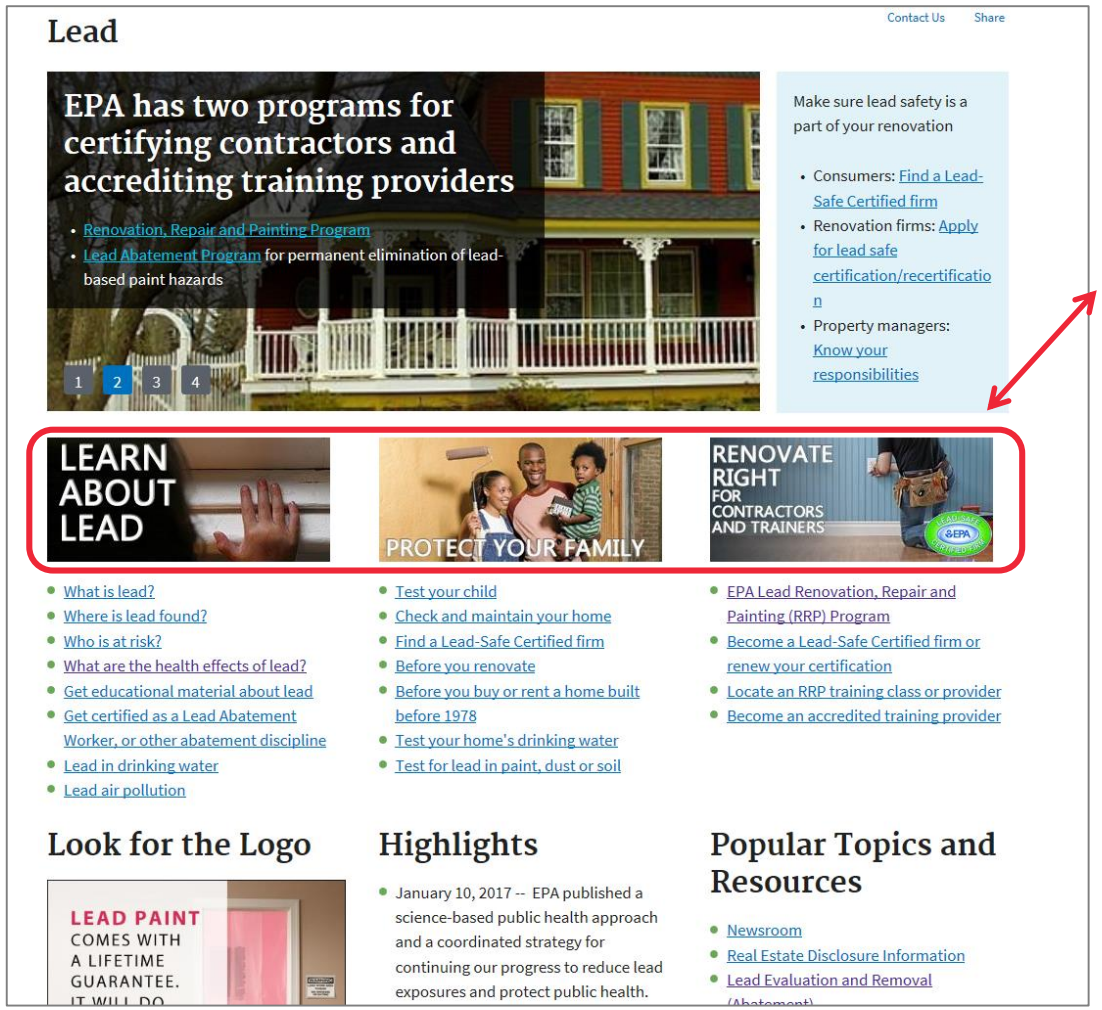
Next, the linked images on Climate Change Home do not set expectations regarding the destination of the links. The proximity of these images to the group headings may lead visitors to assume that the images are linked to category pages for these topics. Instead, each image is linked to the same page as the first hypertext link in the list below the heading.

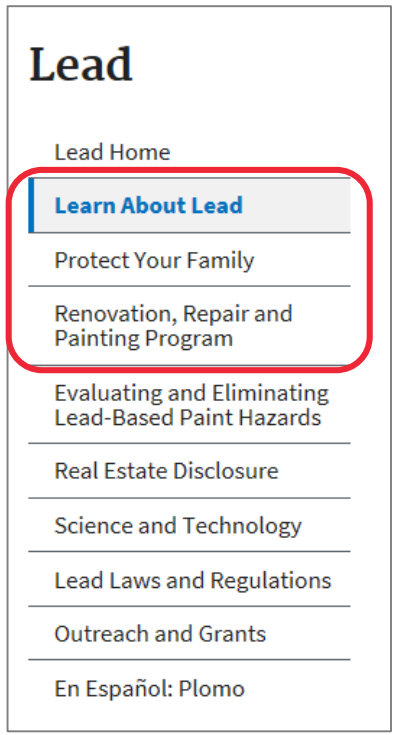
For instance, visitors may be surprised when clicking on the image above **How is the climate changing?** loads the Climate Change Science landing page. Instead, the images should accompany headings which introduce key content in the section.

Recommendation: Ensure the destination of linked images matches their associated labels or headings.



Category Awareness: Best practice





This other primary page on EPA.gov provides groups of links which reflect the key categories within the topic. Additionally, text labels on the linked images accurately indicate the destination of the links.

Category Awareness

Recommendations

- Provide a hierarchical overview of Climate Change and other topics by listing and linking to subcategories on the Environmental Topics page.
- Ensure the organization of links on the home page accurately reflects the structure of the section.
- Ensure the destination of linked images matches their associated labels or headings.

Scope Notes

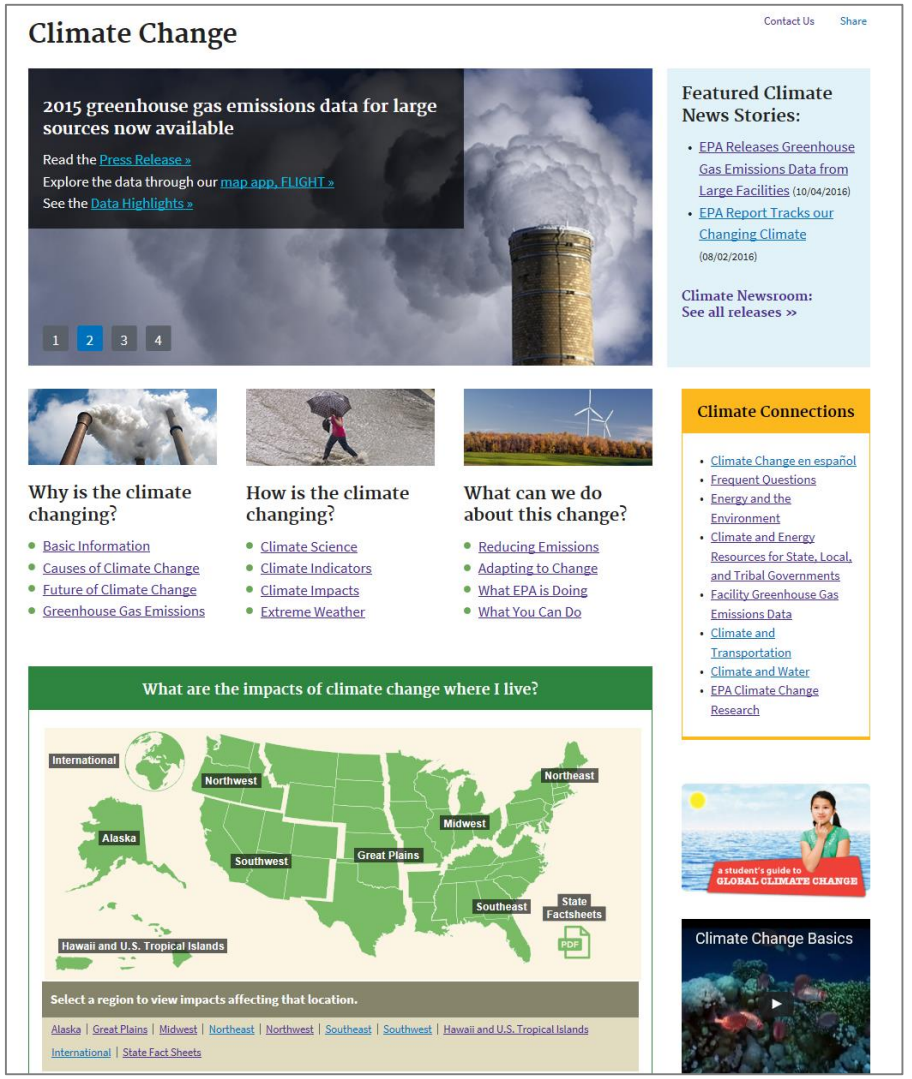
Categories are not explained

Climate Change does not provide scope notes, or introductory text, on the primary and category pages. The inclusion of scope notes helps to explain the nature of content and categories and entice visitors to learn more.

In addition to clarifying the type of content visitors will encounter by clicking on navigation choices, these notes help to guide visitors down the correct path and assure them that the first click they make from the primary page is the correct one.

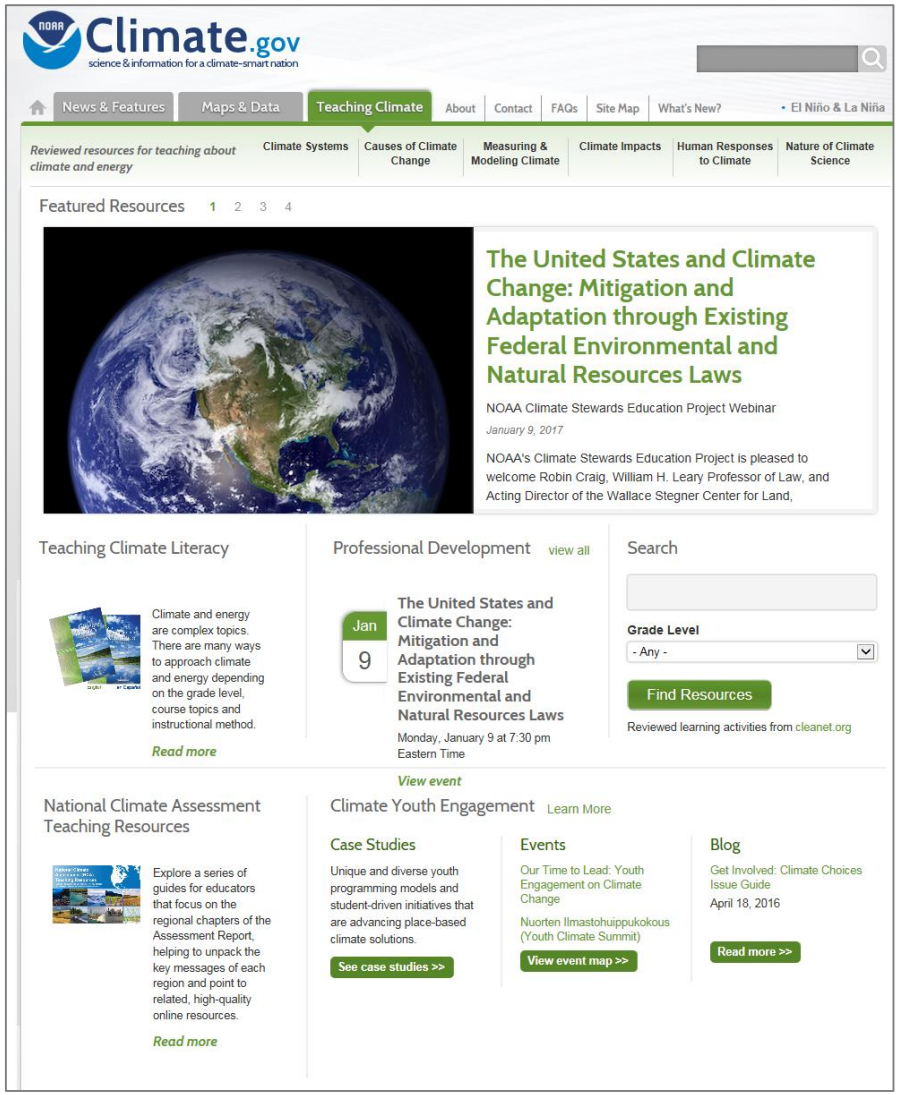
Scope notes can range in length from a short phrase to a few sentences, depending on the link or links they are describing.

Recommendation: Supplement links with succinct scope notes that set initial expectations and help visitors select the best one.



Scope notes: Best practice

This site provides scope notes to inform visitors upfront about the type of content associated with each link. This facilitates browsing by allowing them to make an informed decision about which links they wish to follow.



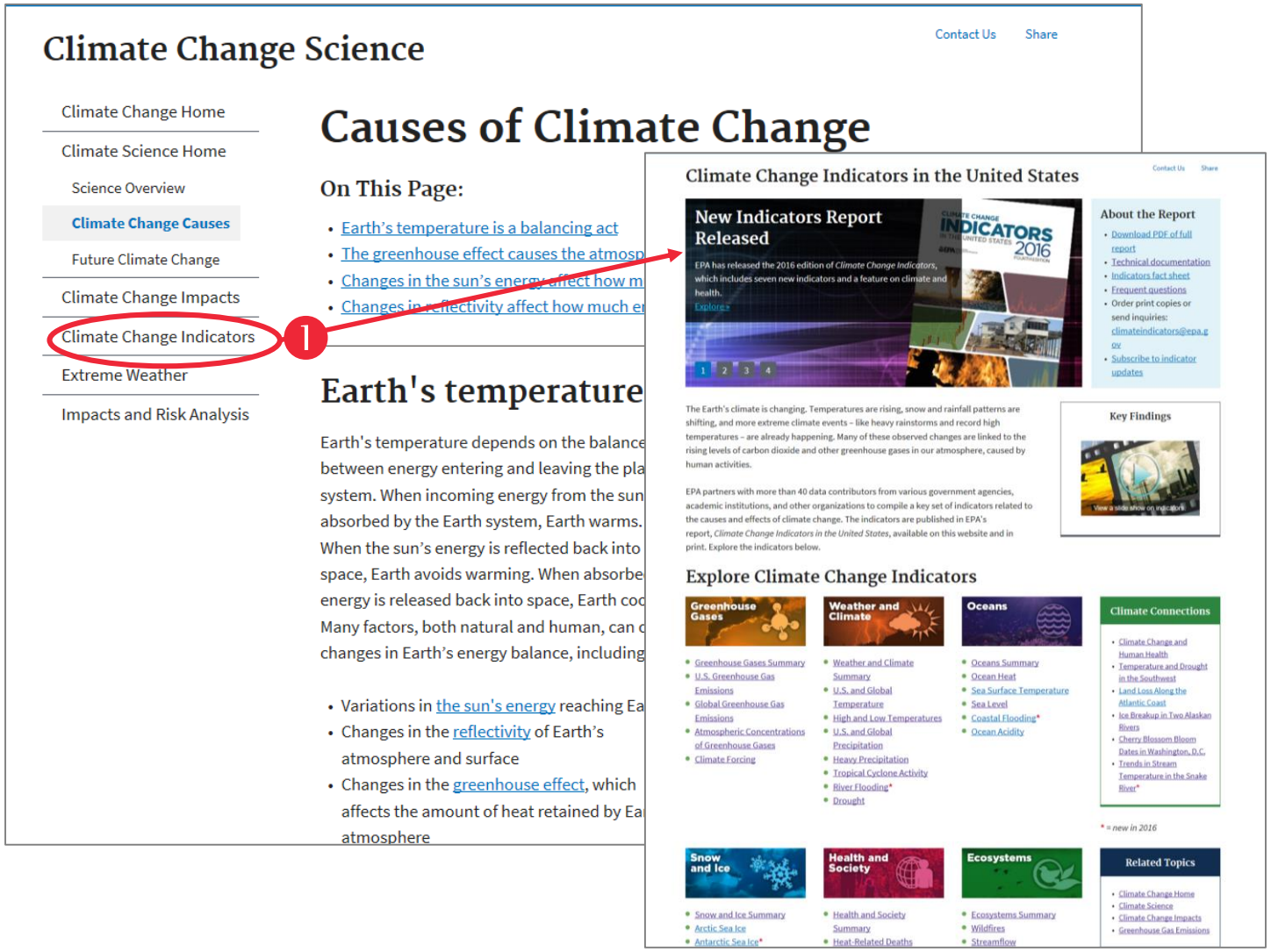
Scope Notes

Recommendations

- Supplement links with succinct scope notes that set initial expectations and help visitors select the best one.

Presence of Local Navigation

Local navigation is missing on category pages

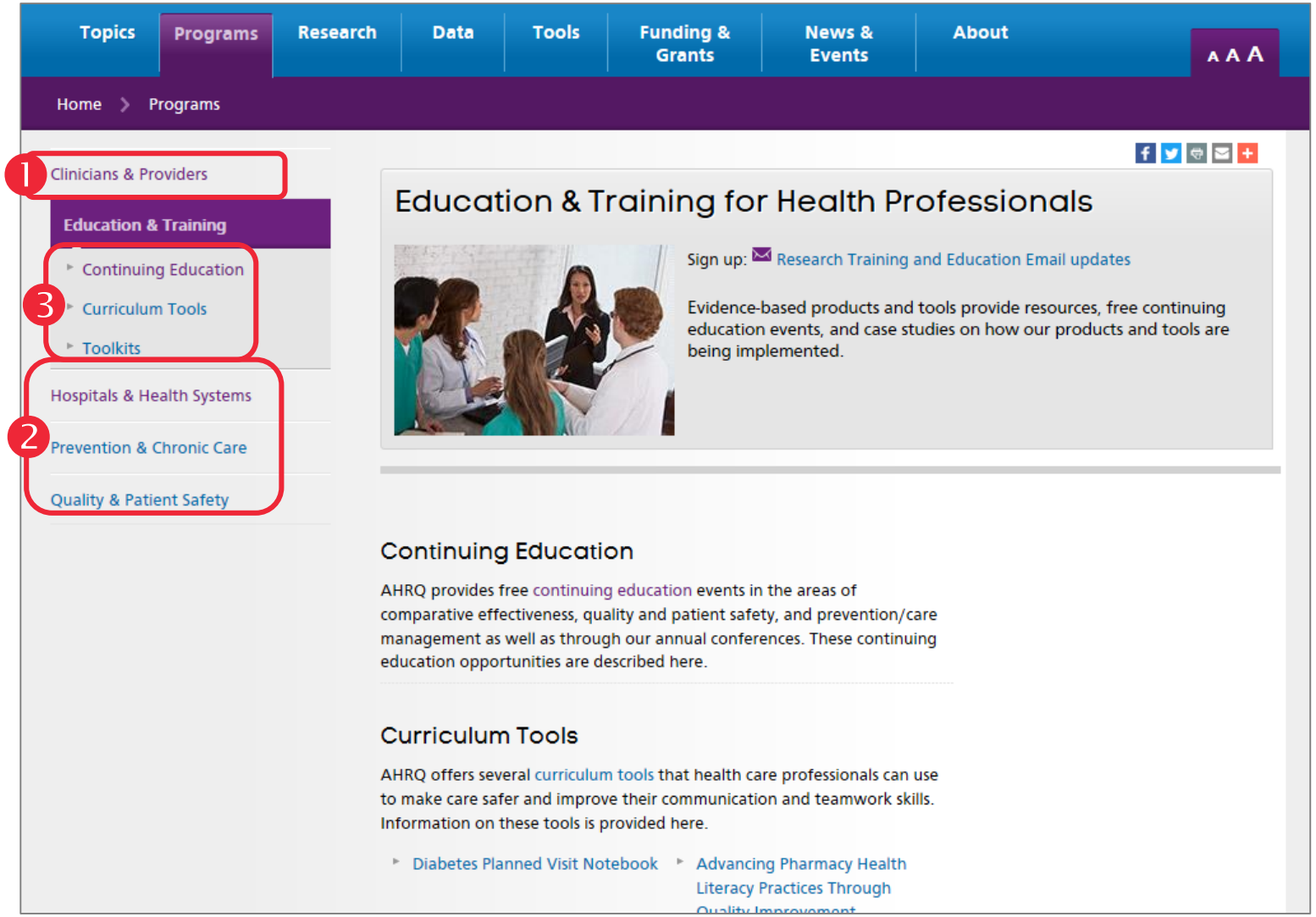


Although the site provides local navigation menus on content pages, navigation between categories is hindered by the absence of these menus on category pages. Thus, as visitors move from content pages to category pages ❶, the loss of the menu requires them to scan the category page to determine their options. When present, hub and spokes navigation increases orientation, as visitors can understand the relationship of the current page to the rest of those in this section, simply by noting which navigation options are highlighted and the how subsequent menus are nested.

Recommendation: Provide local navigation menus on category pages.

Local navigation: Best practice

This site effectively implements a local navigation area on introductory category pages that provides cross linkage to pages at the same level ❶ ❷ and also to subsequent pages within the current topical area ❸.



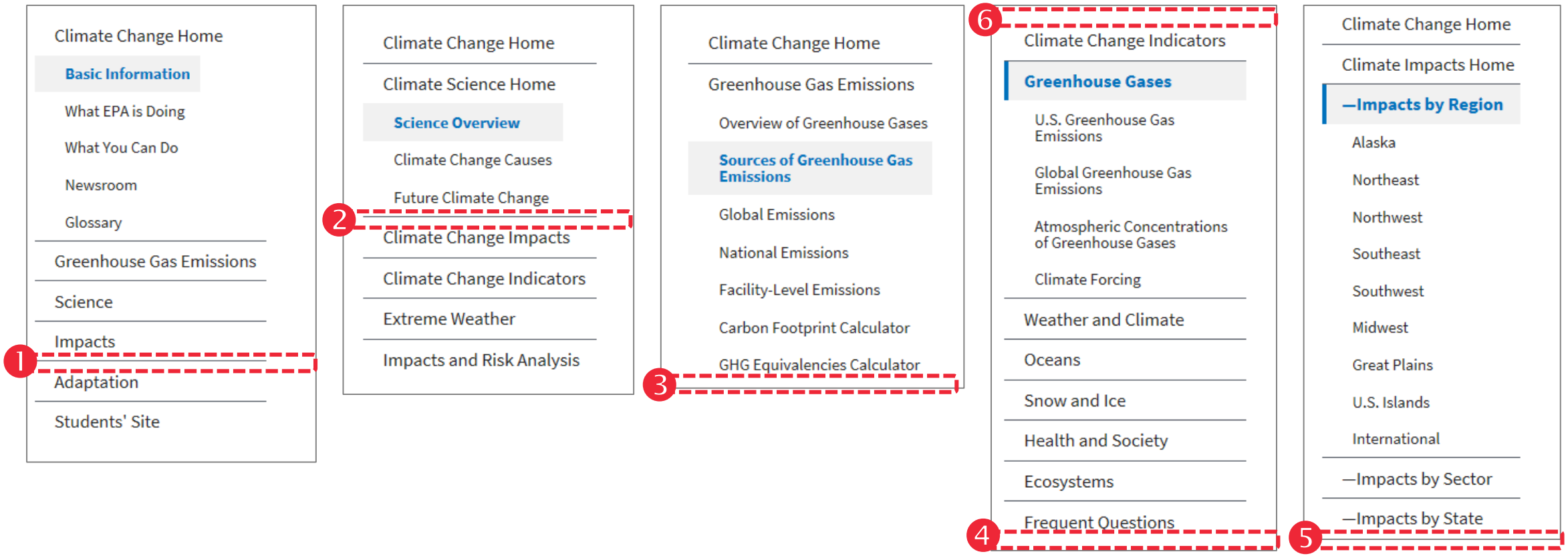
Presence of Local Navigation

Recommendations

- Provide local navigation menus on category pages.

Execution of Local Navigation

Menus do not consistently include top-level categories

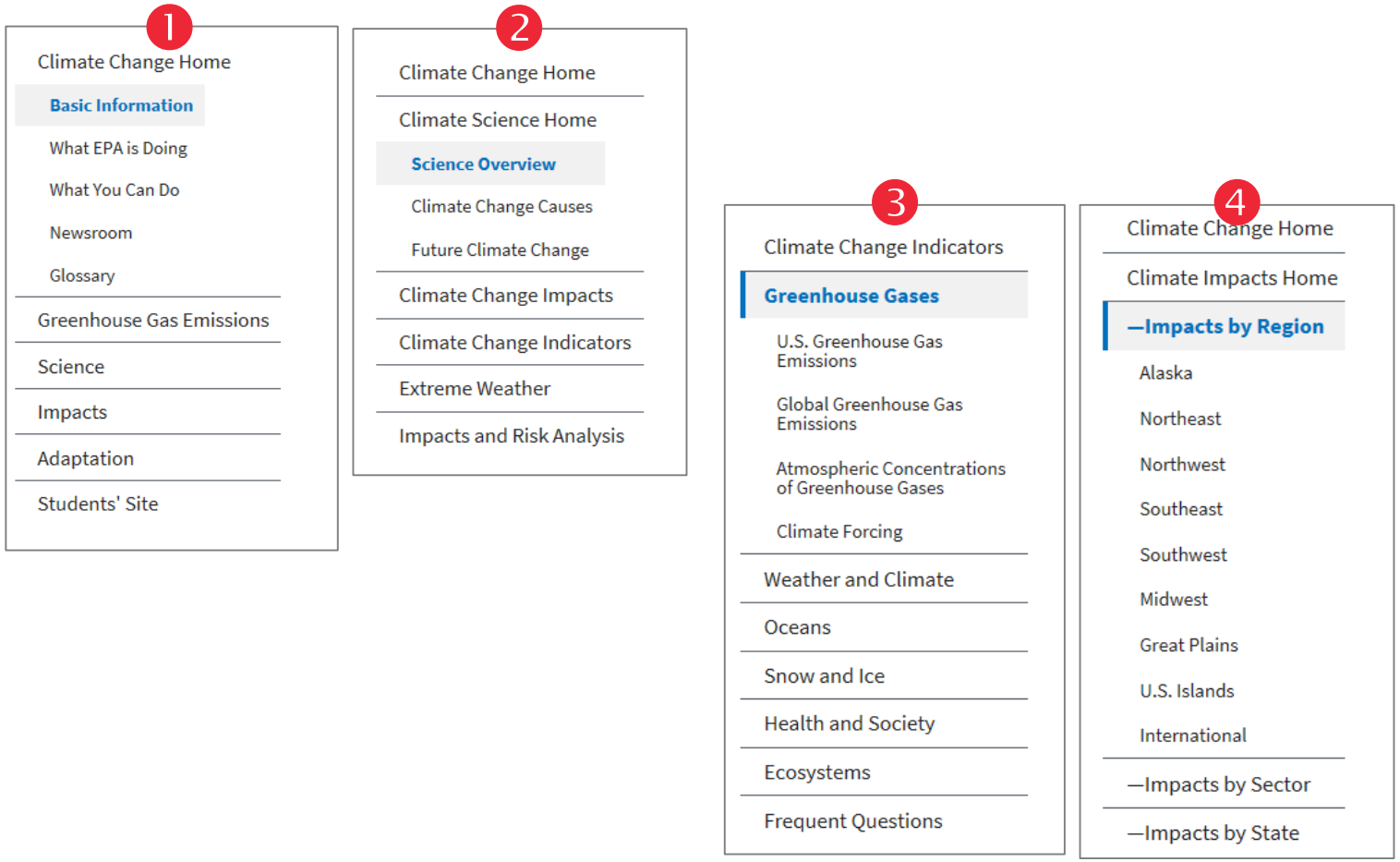


Local navigation menus within the Climate Change sections are inconsistent in the inclusion of linkage to other top-level categories within the section. For example, the menu in the Home category does not include a link to the Indicators category page ❶. In the Science category, no link is provided for Greenhouse Gas Emissions ❷, and the Greenhouse Gas Emissions, Indicators, and Impacts pages are lacking cross-linkage to all other Climate Change categories ❸ ❹ ❺. Furthermore, the Indicators menu omits linkage to the Climate Change Home page ❻.

These omissions prevent visitors from gaining a clear mental model of the organization and contents of the site, and risks that they will not find desired content. Additionally, visitors must work harder to find information residing on the pages which are not included and may be unable to complete their tasks if they conclude the information is not available.

Recommendation: Provide linkage to all Climate Change category pages in local navigation menus.

Menus display inconsistent visual hierarchy



Visitors should be able to understand the relationship of the current page to the rest of the section, simply by noting which navigation option is highlighted and how the subsequent menus are nested. However, the use of visual elements varies across the section.

For instance, in the Home and Science sections ❶ ❷, horizontal rules are used to separate the top-level categories, but the Indicators and Impacts categories ❸ ❹ employ these elements to separate subcategories.

Inconsistency in the implementation of the menus impairs visitors' ability to acquire an accurate mental model of the structure of the section and requires them to relearn the organization of the menu as they move between categories.

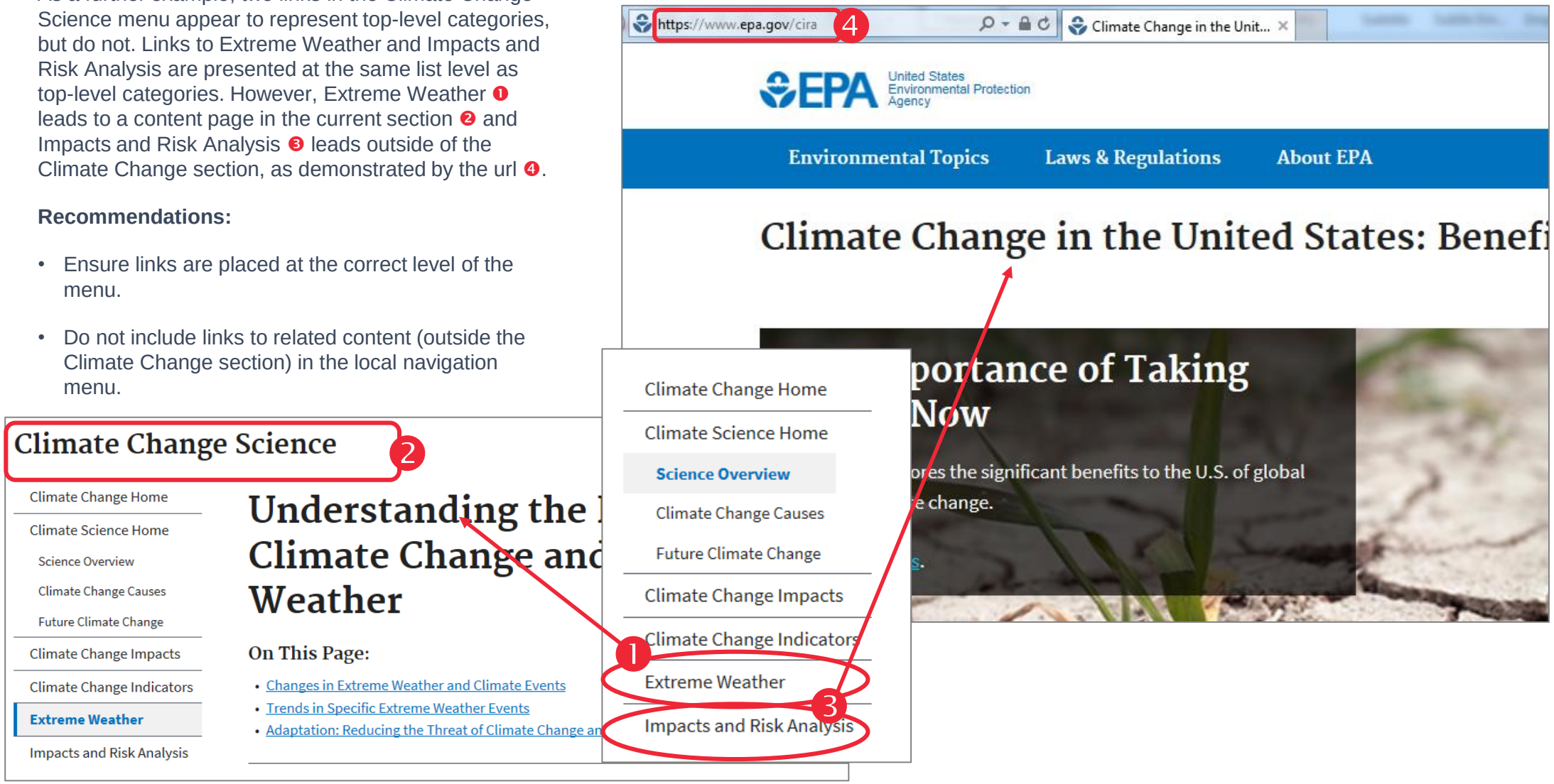
Recommendation: Ensure visual elements in the navigation menus are consistently employed throughout the section.

Presentation of top-level categories is inconsistent

As a further example, two links in the Climate Change Science menu appear to represent top-level categories, but do not. Links to Extreme Weather and Impacts and Risk Analysis are presented at the same list level as top-level categories. However, Extreme Weather ❶ leads to a content page in the current section ❷ and Impacts and Risk Analysis ❸ leads outside of the Climate Change section, as demonstrated by the url ❹.

Recommendations:

- Ensure links are placed at the correct level of the menu.
- Do not include links to related content (outside the Climate Change section) in the local navigation menu.



Execution of Local Navigation

Recommendations

- Provide linkage to all Climate Change category pages in local navigation menus.
- Ensure visual elements in the navigation menus are consistently employed throughout the section.
- Ensure links are placed at the correct level of the menu.
- Do not include links to related content (outside the Climate Change section) in the local navigation menu.

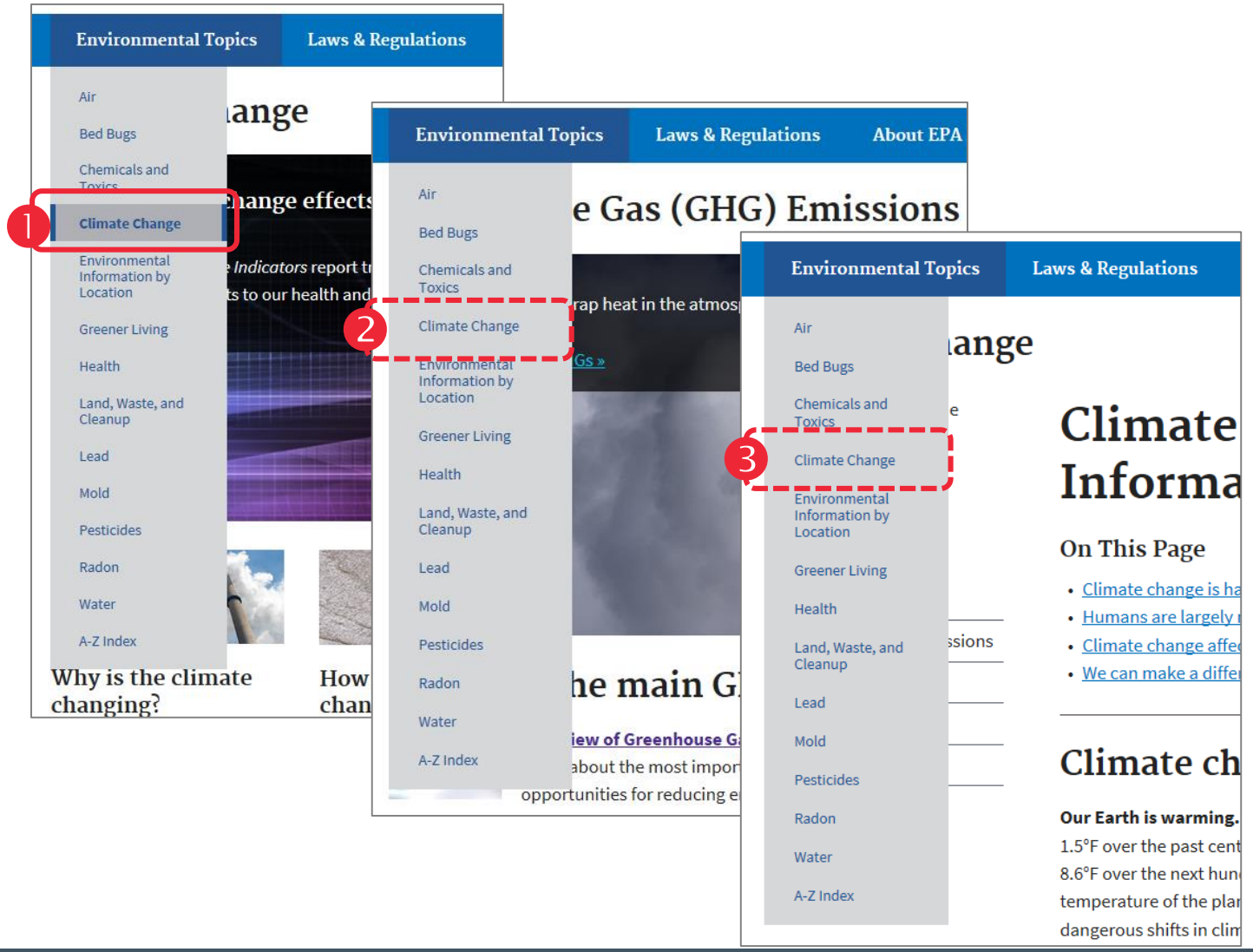
Orientation

Menu does not consistently indicate the current location

While the site visually differentiates the current category on the top-level category page ❶, the site does not continue to highlight the category on deeper pages ❷ ❸.

Without this important visual cue, visitors are unaware of which section corresponds to the current page and are unable to navigate intuitively to desired content.

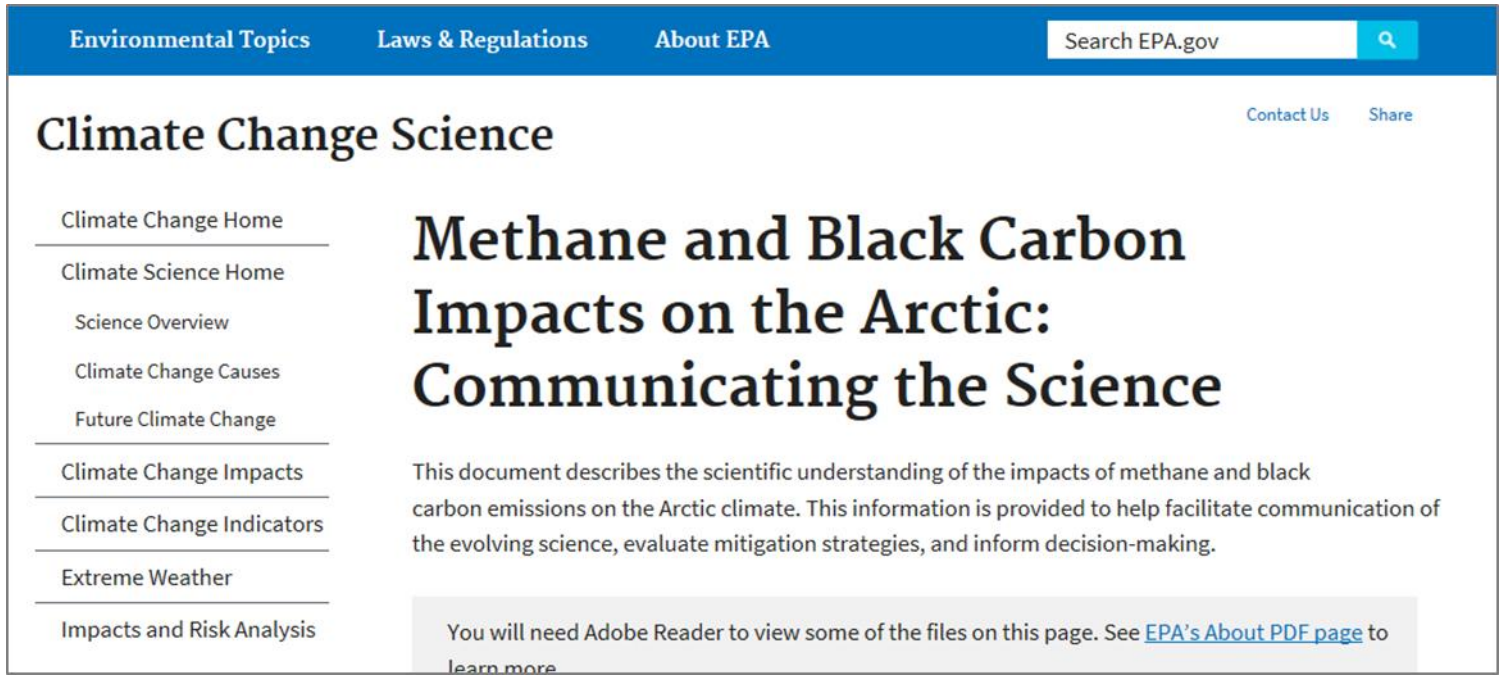
Recommendation: Ensure the global link corresponding to the current category is visually differentiated at all levels within the category.



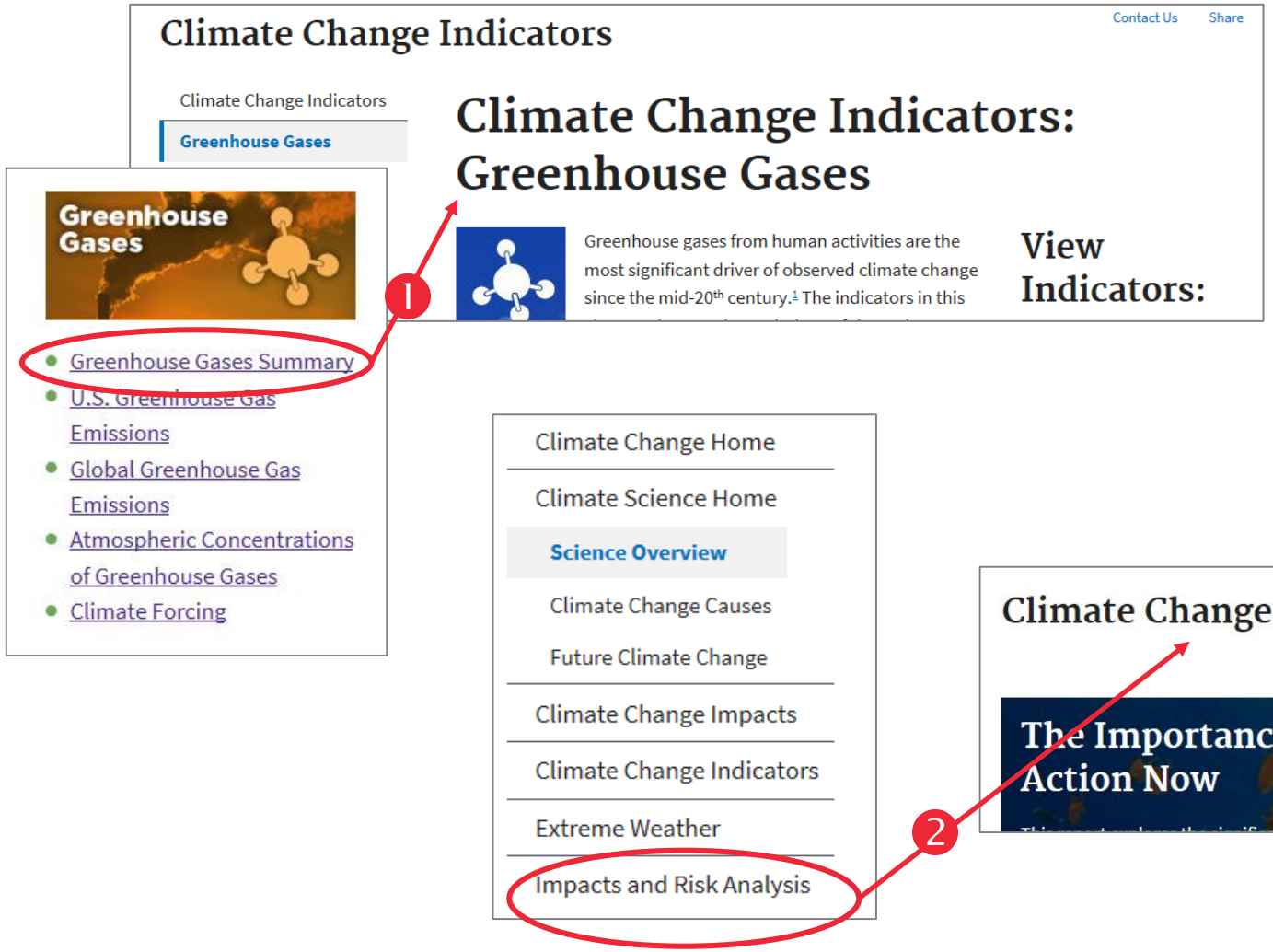
Breadcrumb trails are not provided

Without breadcrumb trails, visitors must use other page elements to determine where the current page resides within the site. Breadcrumb trails are navigation and orientation tools that list the pages which are directly parent to the present page in the site hierarchy. Breadcrumb trails also provide one-click navigational access to these pages.

Recommendation: Add breadcrumb trails to all pages on EPA.gov.



Link labels do not consistently match page headings



The Climate Change section does not ensure link labels and corresponding page headings have a one-to-one match to orient visitors and reassure them they have accessed the correct page.

For example, when visitors click Greenhouse Gases Summary, on the Climate Change Indicators page, they are taken to a page with the heading of Climate Change Indicators: Greenhouse Gases ❶. Likewise, clicking on Impacts and Risk Analysis leads to Climate Change in the United States: Benefits of Global Action ❷.

Visitors can be momentarily confused by the difference in labeling. Unless there is a compelling reason, the site should ensure page headings exactly match the labels of links visitors clicked.

Recommendation: Ensure link labels and corresponding page headings have a one-to-one match.

Orientation

Recommendations

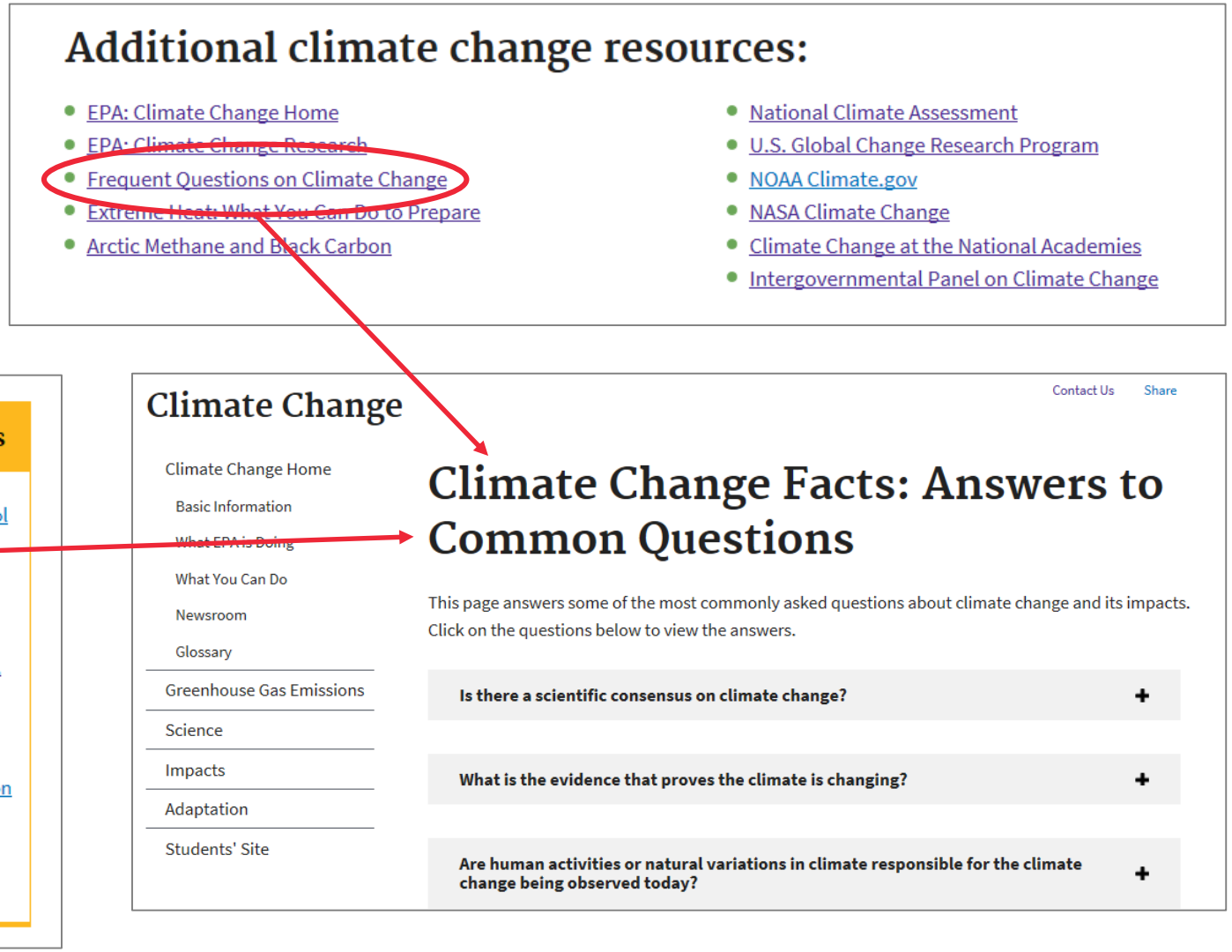
- Ensure the global link corresponding to the current section is visually differentiated.
- Add breadcrumb trails to all pages on EPA.gov.
- Ensure link labels and corresponding page headings have a one-to-one match.

Hidden Content

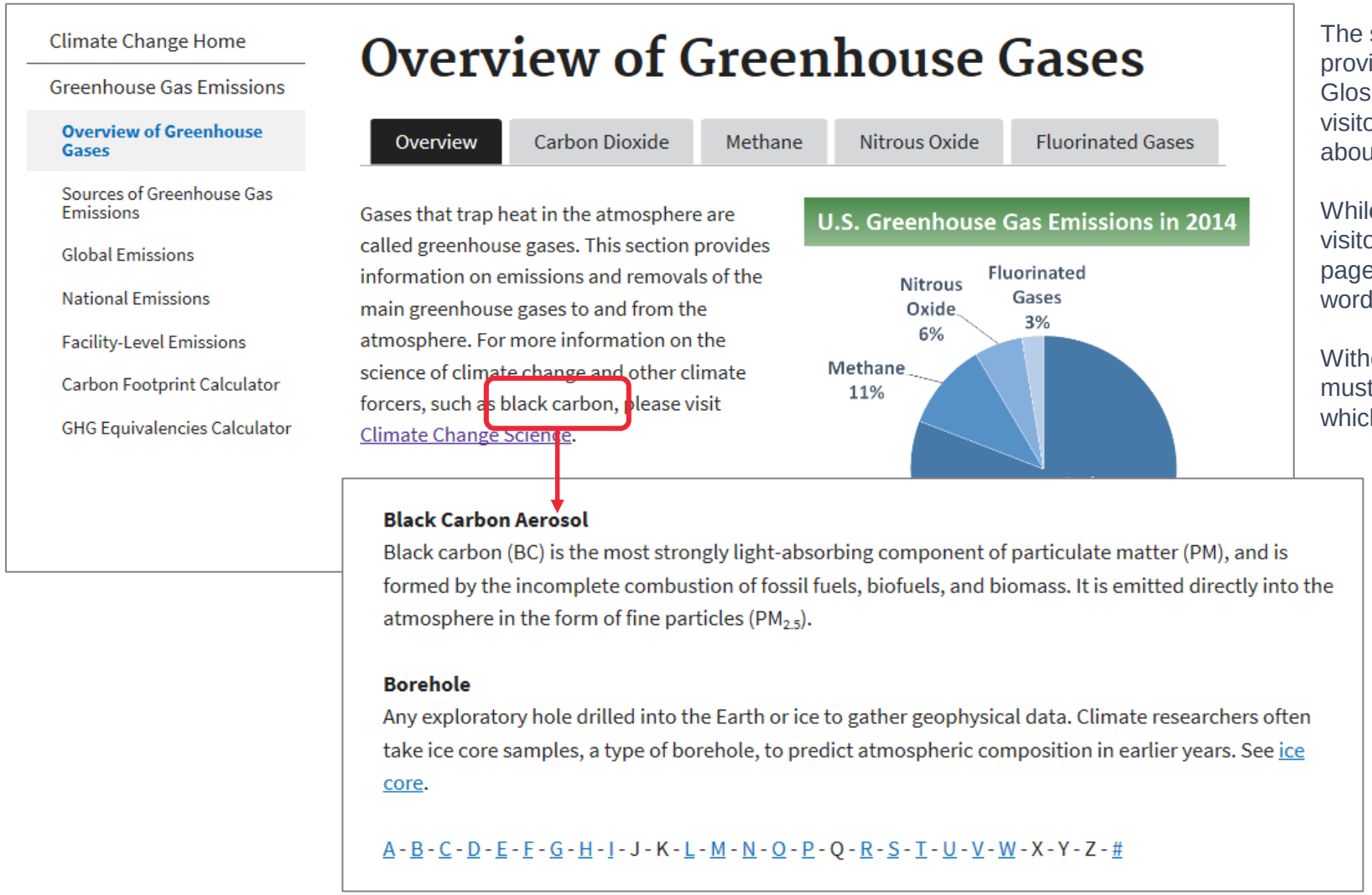
Some pages cannot be found in the category structure

The section fails to provide access to some pages via the category structure and navigation. For example, visitors looking for an FAQ page may find a link in the Climate Connections group on the Primary Page or in Additional climate change resources on Climate Change Science page, but the page is not represented in the local navigation. This increases the likelihood that visitors will overlook relevant content or assume the site does not provide this information. Instead, all pages should be accessible through the existing category structure.

Recommendation: Provide access to all pages through the existing category structure.



Access to glossary content is limited



The site misses an opportunity to assist visitors by providing easy access to relevant glossaries. Glossaries are a conventional Help feature that many visitors look for in order to answer their questions about how specific terms are defined within the site.

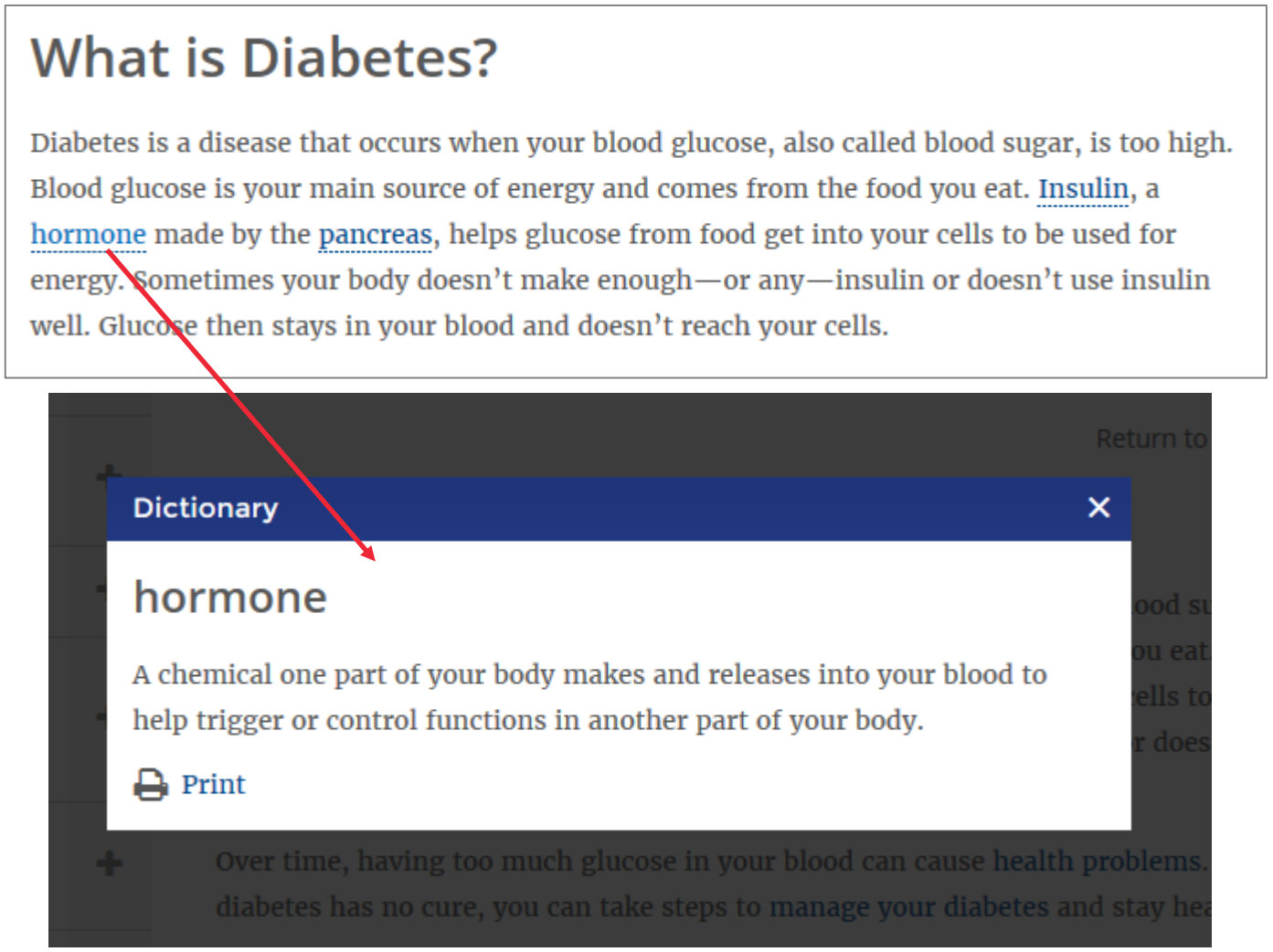
While the site does offer definitions within a glossary, visitors are forced to view that information on a new page, taking them outside the context in which the word is being used.

Without access to contextual glossary content, visitors must rely on their memory or open new windows, which increases the complexity of their task.

Contextual glossary layers: Best practice

Instead, the site should offer glossary information on the page itself through tool tip text or an overlay, as shown in this example from another site. This allows visitors to understand how the site is using particular words without taking them away from the context of the page it is being used on.

Recommendation: Present glossary definitions on the page where the terms occur.



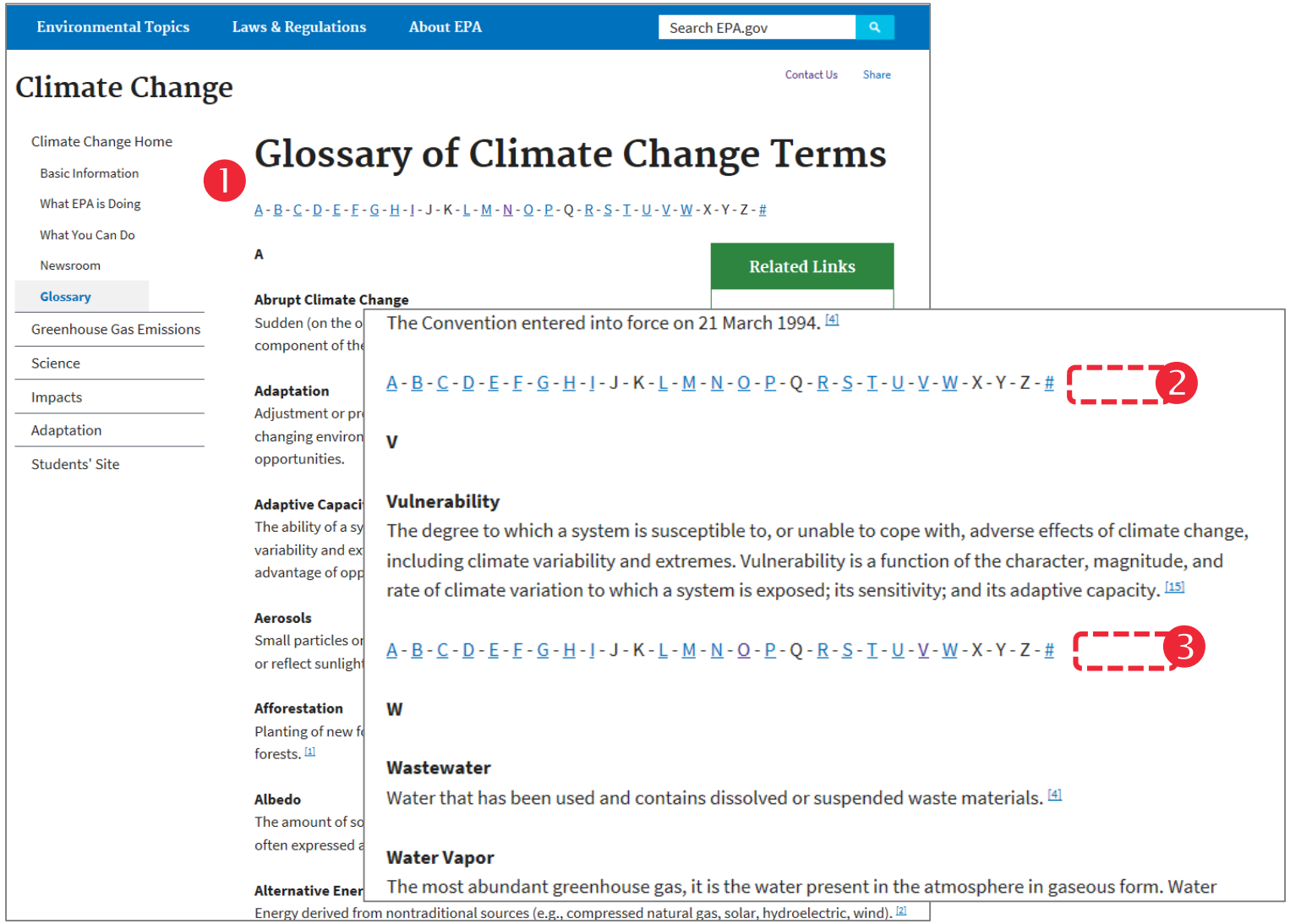
Hidden Content

Recommendations

- Provide access to all pages through the existing category structure.
- Present glossary definitions on the page where the terms occur.

In-Page Navigation

Glossary lacks an explicit link to Top of Page



The Climate Change section demonstrates good usability in providing a glossary with A to Z index links ❶ to facilitate navigation within the long list of terms and definitions. However, explicit linkage to the top of the page is missing ❷ ❸. Although visitors can access the top of the page, and the navigational options there, by clicking on the **A** link, some visitors are likely to overlook this option and waste time scrolling. The site can assist intuitive navigation to the top of the page by including an explicit link in the A to Z index positioned between each content section.

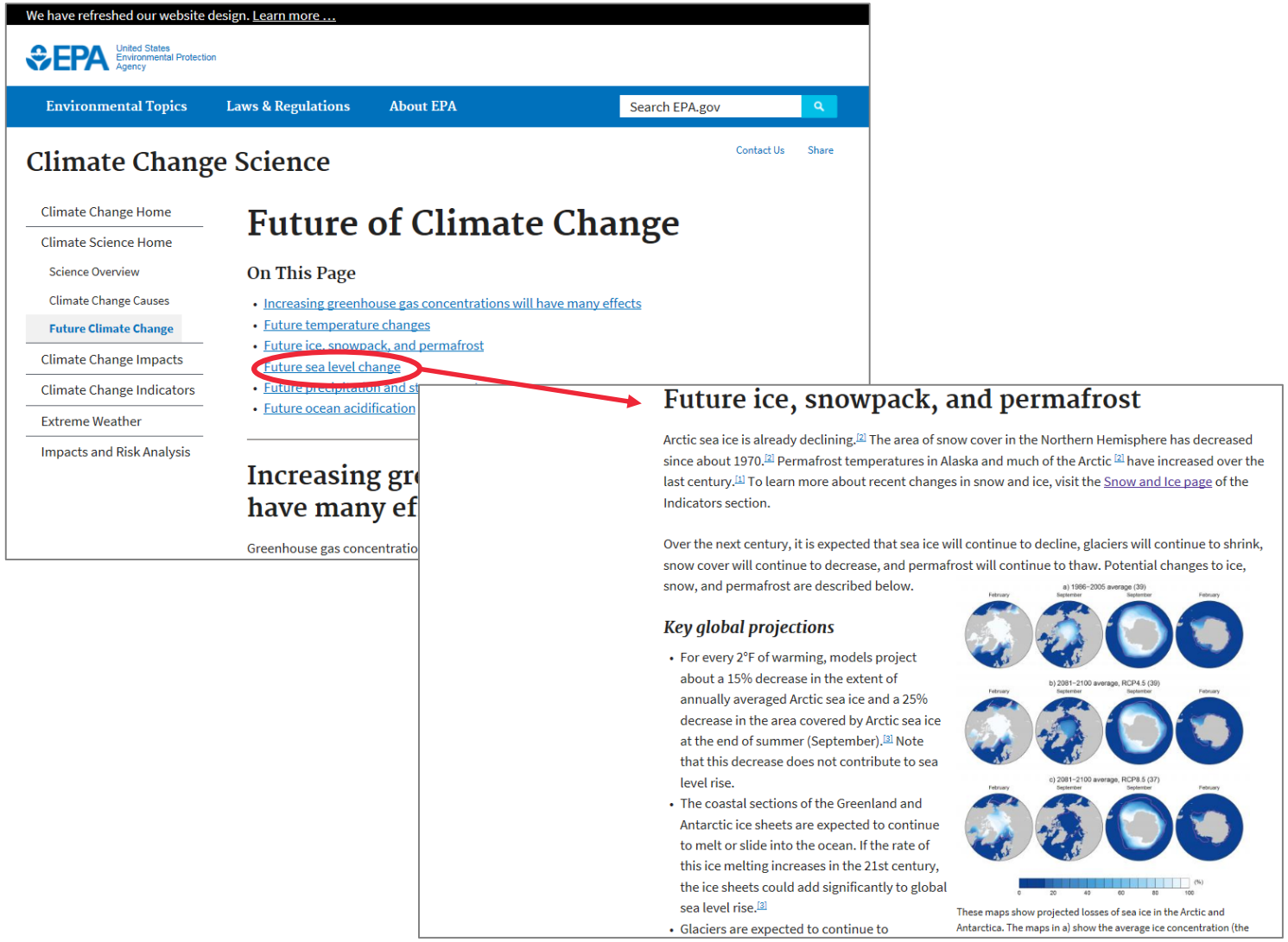
Recommendation: Provide an explicit Top of Page link between each content section in the Glossary.

Topical links transition too quickly

When visitors click a topical link they are transported to the related section in the page so swiftly they may fail to understand what has occurred, this risks that visitors may mistakenly conclude they have navigated to a different page. To avoid confusion and disruption, the site should ensure this movement is noticeable.

Recommendation: Ensure the movement up or down the page that occurs after clicking a topical link is gradual enough to be observed and understood, yet rapid enough to be preferable to scrolling manually.

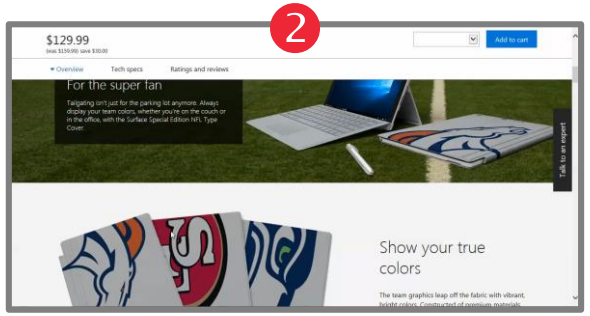
Video runtime: 3 seconds



Topical links: Best practice

Observable movement between page sections ❶ ❷ on this site promotes orientation since visitors are aware that they are still viewing the same page. Additionally, the fixed-position (sticky) element ❸ which contains topical links facilitates both orientation and in-page navigation.

Recommendation: Consider placing topical links in a fixed-position element.



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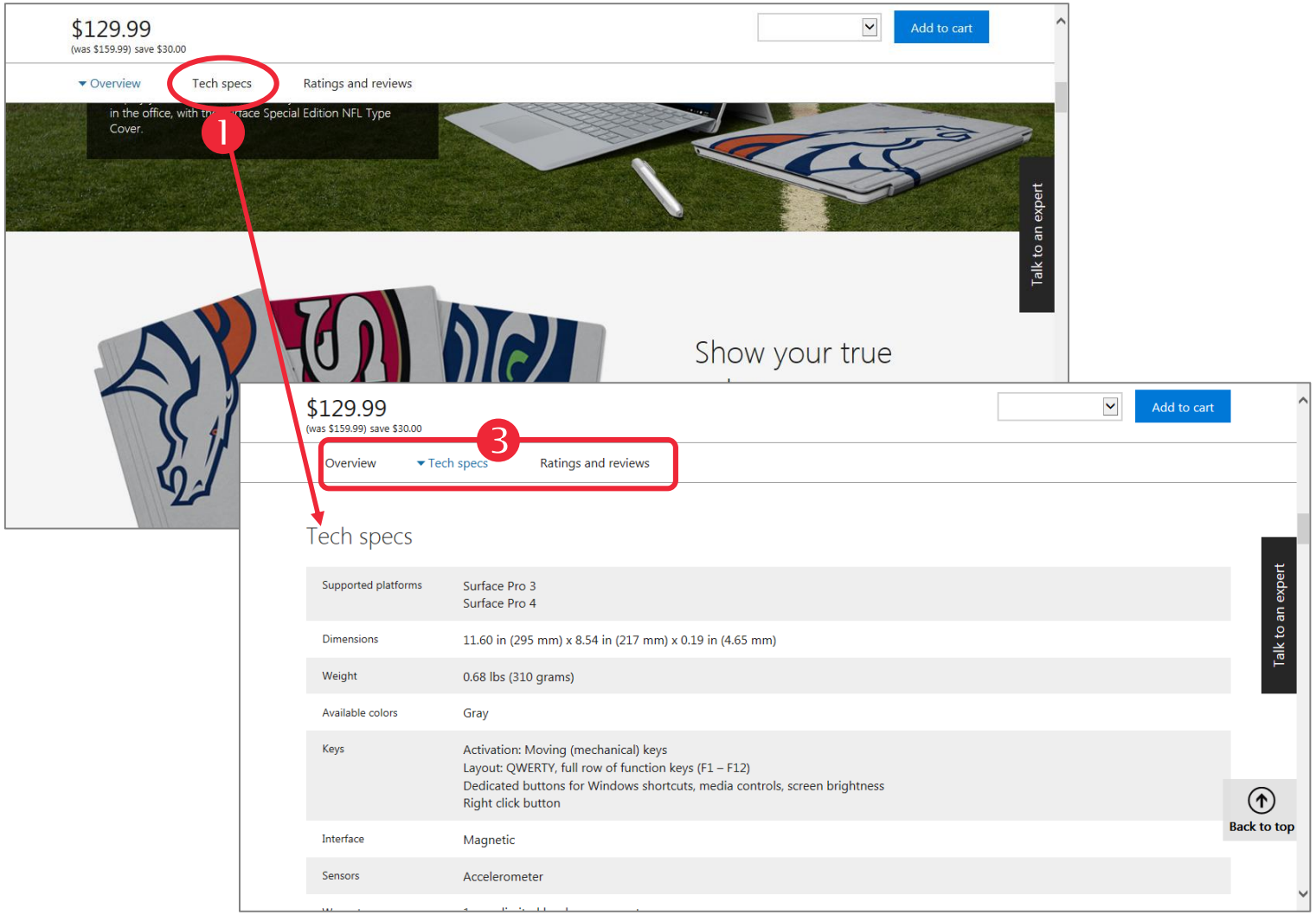


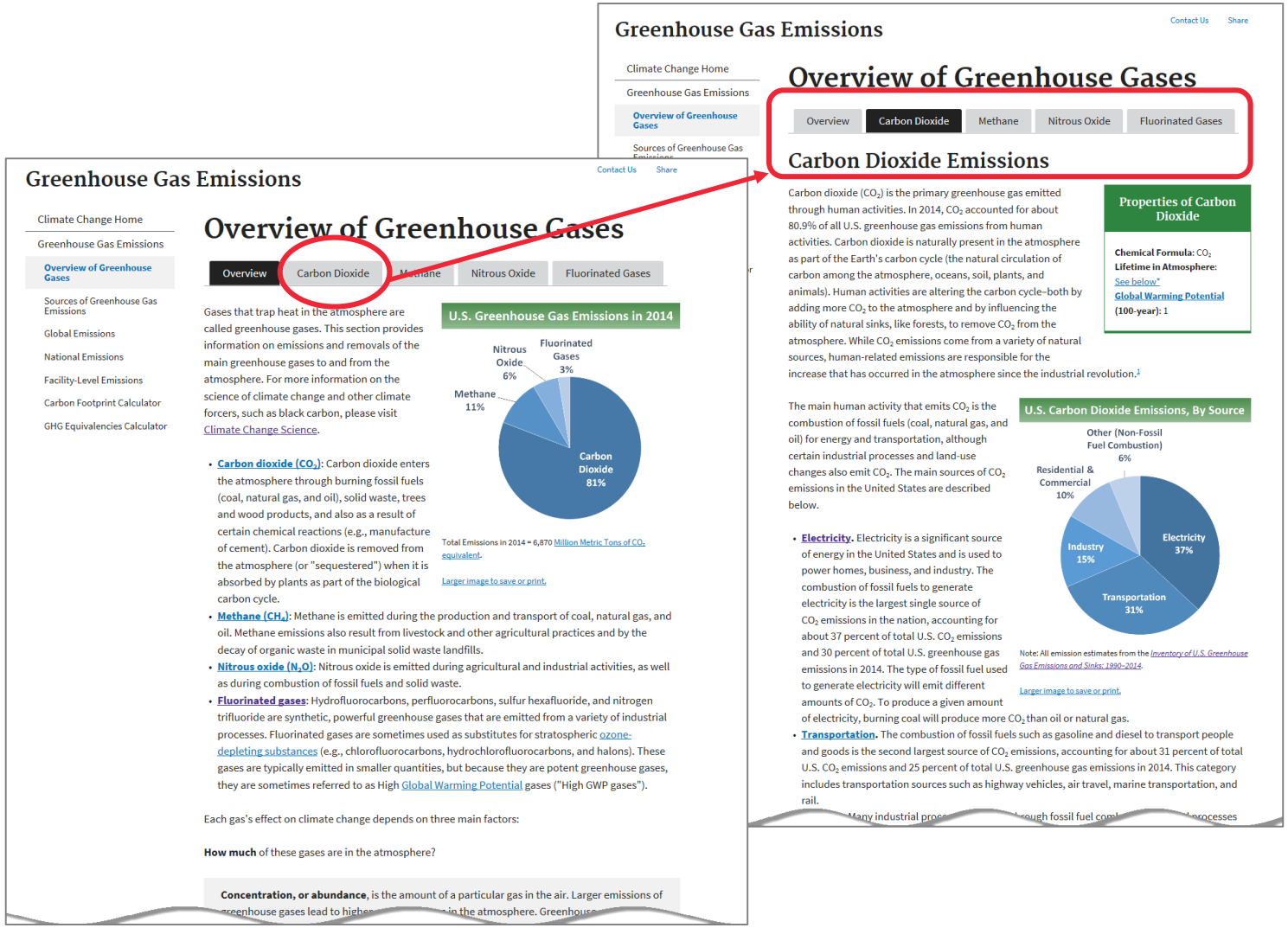
Tab interface hinders efficient access to information

On some pages, a considerable amount of information is located in tabs. This risks that visitors may not find content of interest if they overlook the tabs and scroll past them. Additionally, the tab interface prevents visitors from viewing or printing all content on the page.

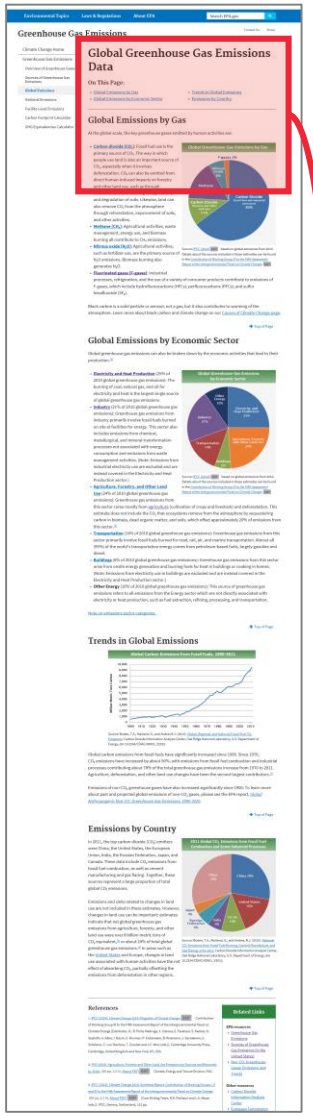
To improve the findability of the content and ensure that visitors are able to print it as needed, the site should provide this content directly on the page. Efficient navigation to sections of content can be provided through topical links at the top of the page. In cases where the amount of information in each tab is extensive, the site should consider creating a subsequent category of pages which can be accessed through the local navigation menus.

Recommendations:

- Place content directly on the page instead of within tabs.
- Provide topical navigation links to related sections of content on the page.
- Consider placing content on separate pages with appropriate linkage in the local navigation.



Topical links: Best practice



Global Greenhouse Gas Emissions Data

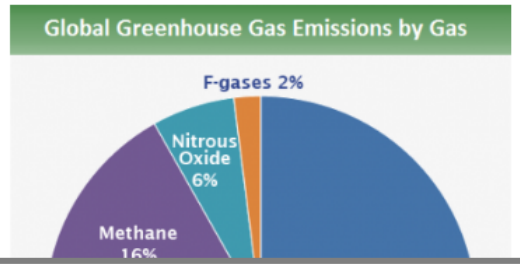
On This Page:

- Global Emissions by Gas
- Global Emissions by Economic Sector
- Trends in Global Emissions
- Emissions by Country

Global Emissions by Gas

At the global scale, the key greenhouse gases emitted by human activities are:

- **Carbon dioxide (CO_2)**: Fossil fuel use is the primary source of CO_2. The way in which people use land is also an important source of CO_2, especially when it involves deforestation. CO_2 can also be emitted from direct human-induced impacts on forestry and other land use, such as through



On this page, convenient access to sections of related content is provided through topical links at the top of the page. If visitors overlook these links, they can still locate the content by scrolling. Additionally, the entire page is printable.

In-Page Navigation

Recommendations

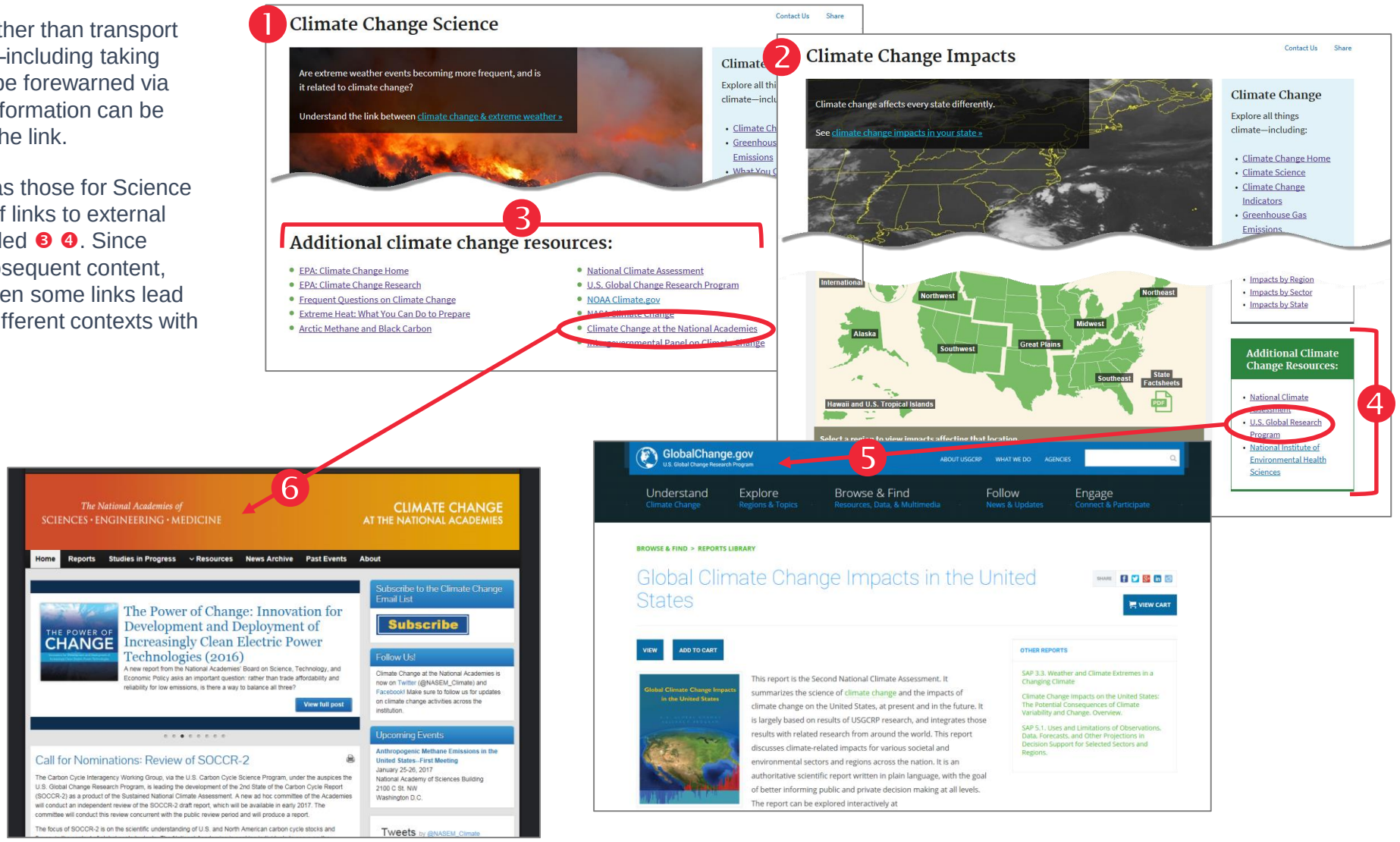
- Provide an explicit Top of Page link between each letter section in the Glossary.
- Ensure the movement up or down the page that occurs after clicking a topical link is gradual enough to be observed and understood, yet rapid enough to be preferable to scrolling manually.
- Consider placing topical links in a fixed-position element.
- Place content directly on the page instead of within tabs.
- Provide topical navigation links to related sections of content on the page.
- Consider placing content on separate pages with appropriate linkage in the local navigation.

Expected Location

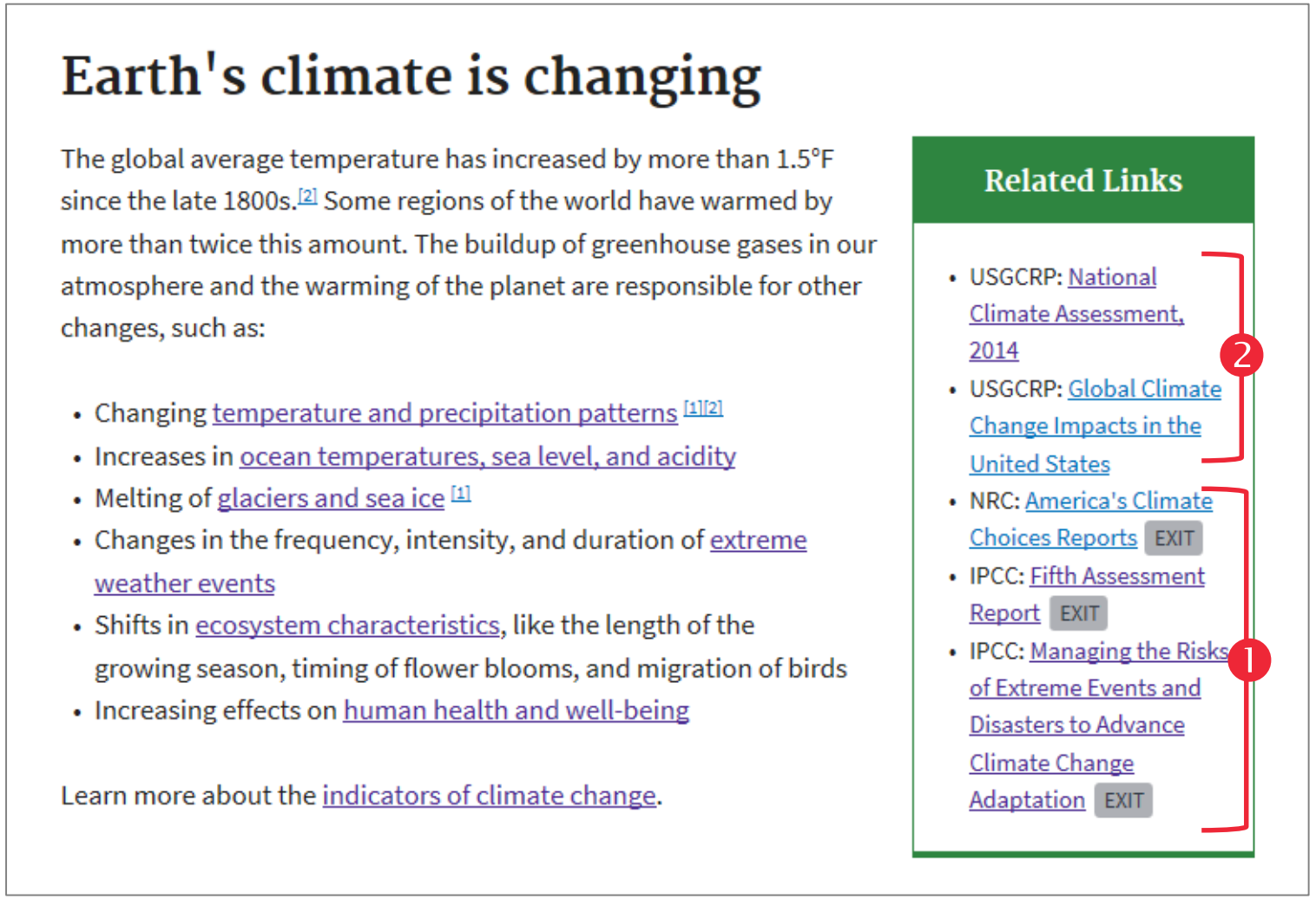
Offsite Links are not consistently indicated (1 of 2)

When hypertext links do anything other than transport visitors to another page of the site—including taking visitors to a new site—they should be forewarned via messaging or an icon so that this information can be taken into account prior to clicking the link.

Introductory category pages, such as those for Science ❶ and Impacts ❷, contain groups of links to external sites which are not adequately labeled ❸ ❹. Since these pages primarily introduce subsequent content, visitors may be caught off guard when some links lead offsite placing them in completely different contexts with altered navigational options ❺ ❻.



Offsite Links are not consistently indicated (2 of 2)



On other pages, explicit labels are provided for some ❶, but not all ❷, links to external sites. Visitors may assume that the unlabeled links lead to pages within EPA.gov.

Recommendation: Ensure visitors are consistently forewarned of external links via explicit textual messaging adjacent to the link.

Expected Location

Recommendations

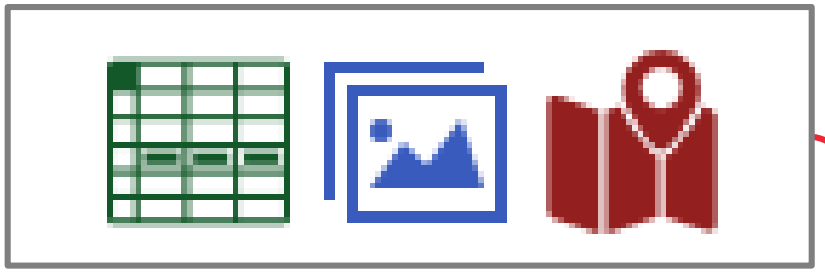
- Ensure visitors are consistently forewarned of external links via explicit textual messaging adjacent to the link.

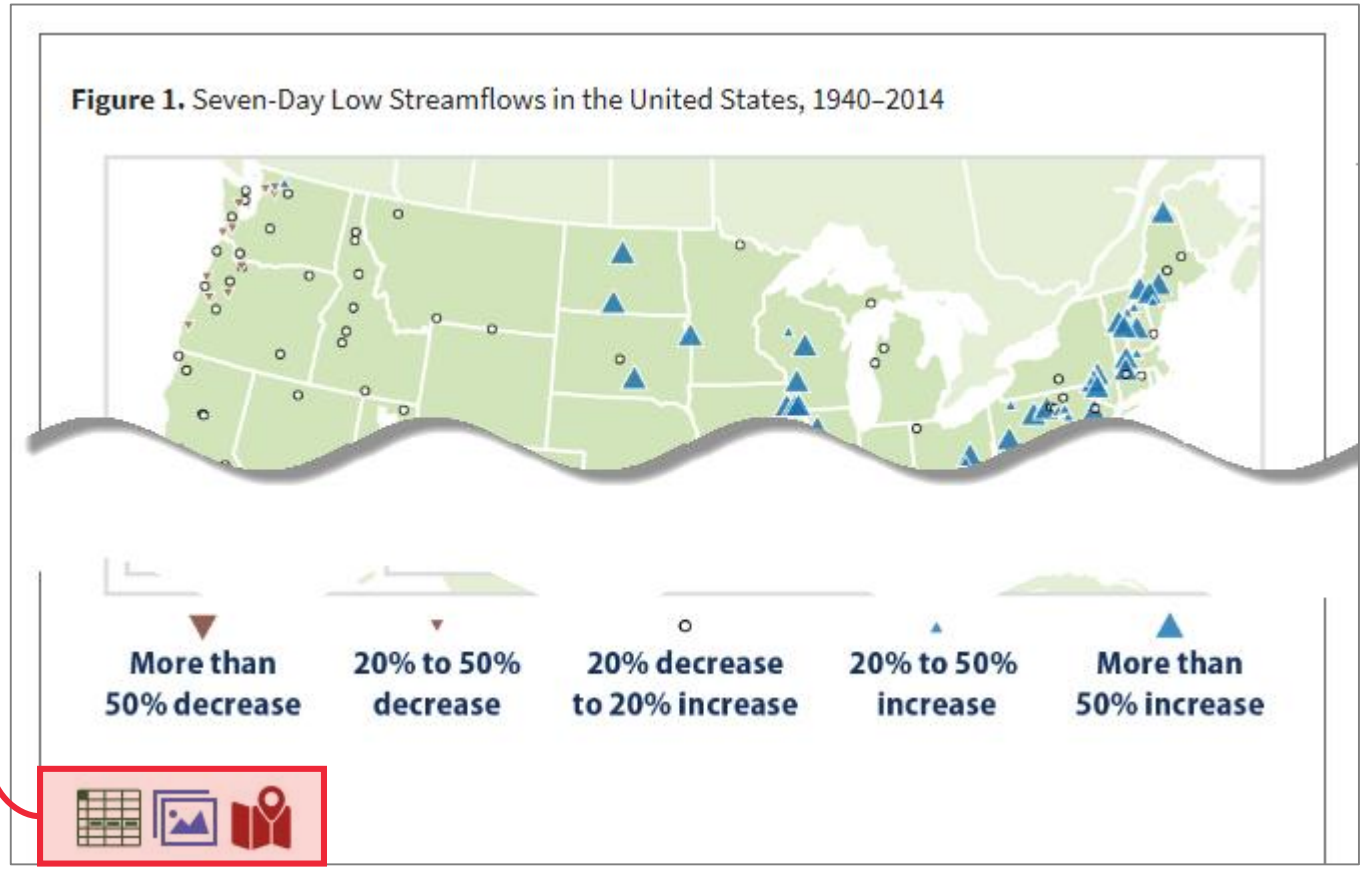
Link Execution

Linked icons require text labels

The data graphs in the Indicators section provide a group of linked icons which allow visitors to download the data or image, or to interact with the map. However, these icons lack text labels. As a result, visitors must experiment with clicking on the links simply based upon their interpretation of each icon's meaning. This places an undue cognitive burden on visitors, and needlessly risks misinterpretations which result time-wasting trial and error. While icons can help visitors identify the best link, they must not replace text labels.

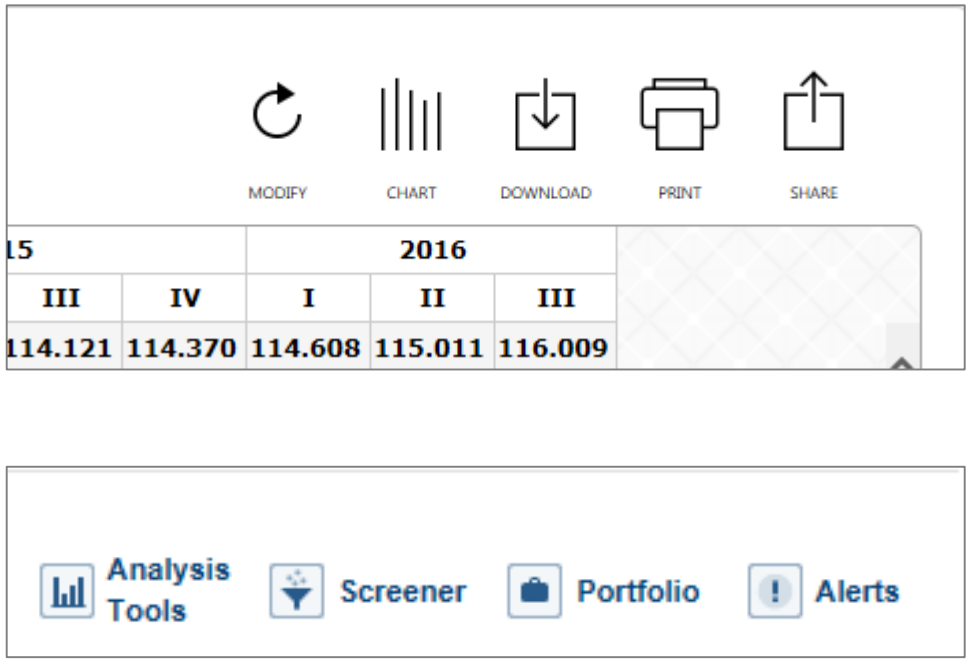
Recommendation: Provide text labels that accurately describe the destination page for all linked icons.



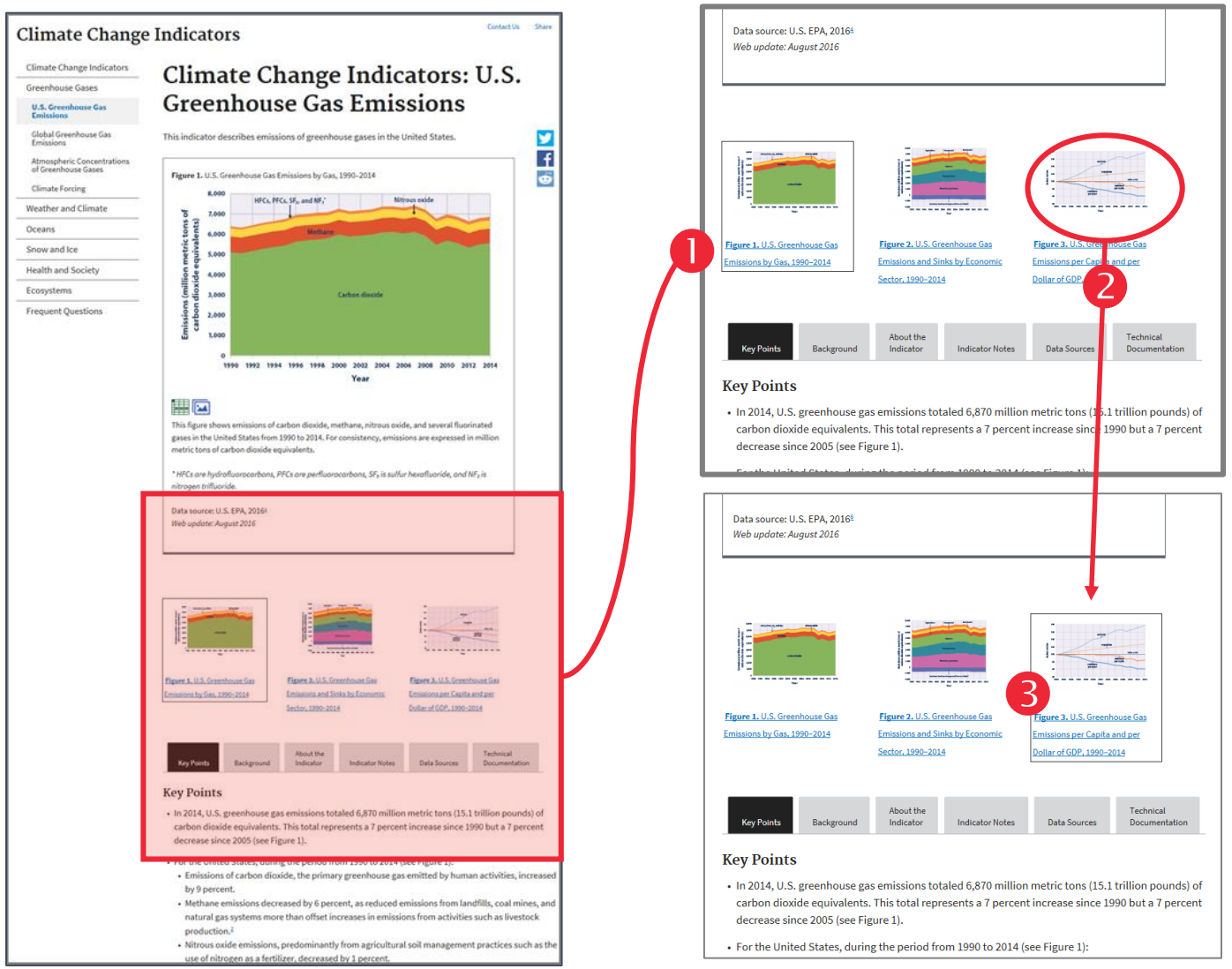


Icon labels: Best practice

These sites combine icons and text to create labels that are informative and memorable.



Purpose of linked thumbnails is unclear



Also on the Indicators pages, thumbnails of alternate data figures are provided ❶. Although clicking on a thumbnail ❷ loads the associated figure, visitors may miss this interaction, since the focus of the page does not change. In some instances, the only perceptible change is the altered highlight ❸. Visitors may assume that the functionality does not work, and miss useful content.

Instead, the link should also return the focus to the top of the graph to orient visitors to the new content and allow them to begin consuming the information.

Recommendation: Ensure newly loaded content is visible by moving the focus to the top of the data figure on the Indicators pages.

Link Execution

Recommendations

- Provide text labels that accurately describe the destination page for all linked icons.
- Ensure newly loaded content is visible by moving the focus to the top of the data figure on the Indicators pages.

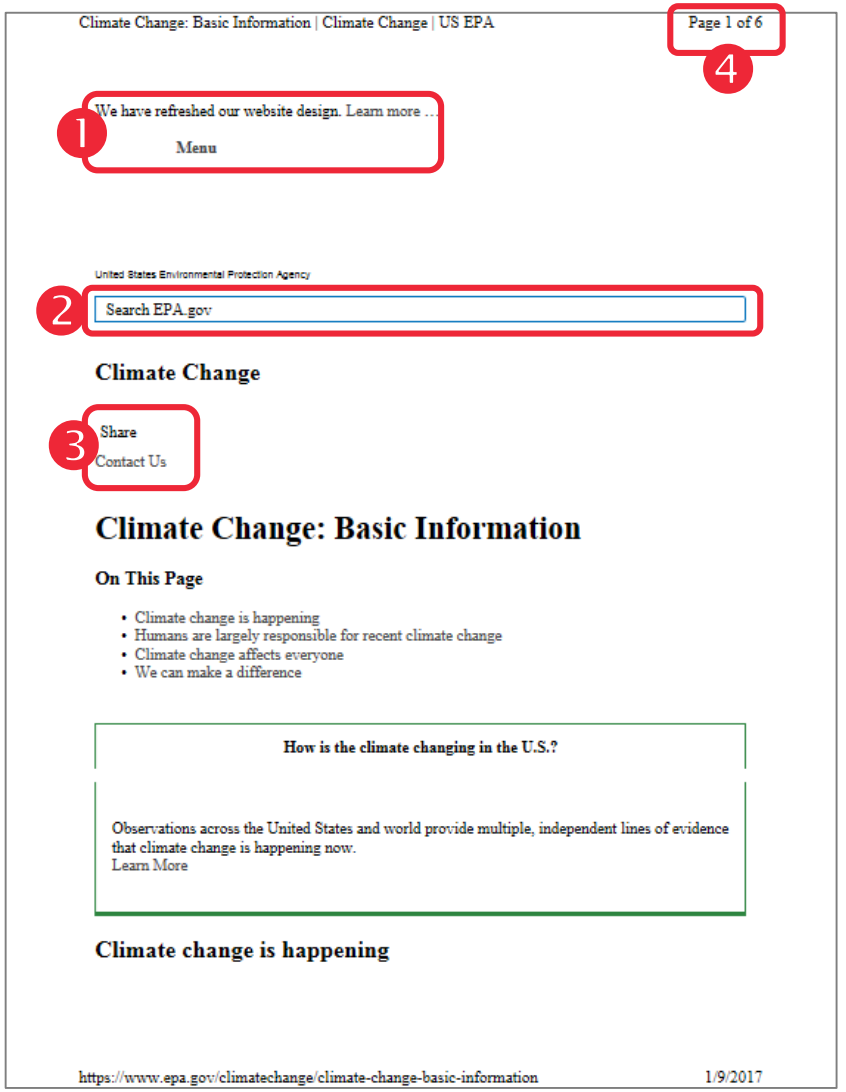
Print and Email

Pages lack explicit Print functionality

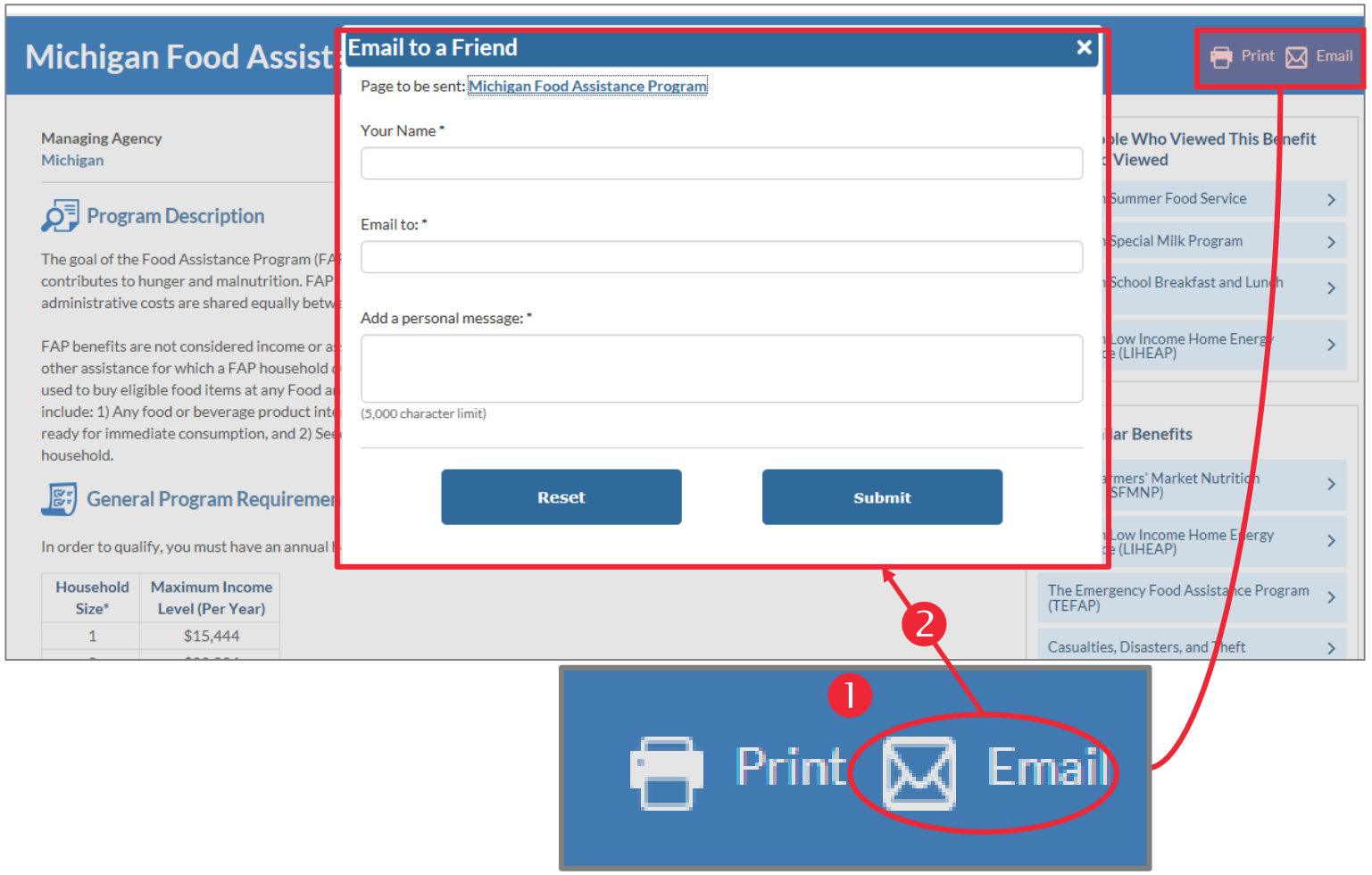
Visitors often want to print content pages for review offline, for their own personal use, or for the use of others. However, the site does not provide explicit Print functionality on content pages. When visitors use the browser's Print functionality, the result is a printout that fails to format the content correctly. As shown, navigational elements ❶ ❷ ❸ are included, resulting in a six-page document ❹. Instead, the printout should include properly formatted text for only the main body content, and be free of navigation and other page elements.

Recommendations:

- Provide explicit print functionality on all pages.
- Ensure printed pages are properly formatted and free of extraneous page elements.



Email functionality is missing



Visitors often want to share content via email, yet the site does not provide access to Email functionality. This limits their ability to share information once they have found it. Without Email functionality, visitors must resort to copying the page's URL, shown in the browser, opening their email program, and pasting the address into new email message. In contrast, best practice is to provide an explicit link or icon that opens pop-up window or layer offering a form which visitors may complete to easily share the page they are viewing.

This site provides persistent and prominent access to email and print functionality on content pages ❶. The Email link causes a pop-up window to appear ❷, containing a form that allows visitors to easily share the link with others and then return to browsing the site.

Recommendation: Provide an explicit link or icon that opens a pop-up window offering a form visitors may fill in to easily email the page they are viewing.

Print and Email

Recommendations

- Provide explicit print functionality on all pages.
- Ensure printed pages are properly formatted and free of extraneous page elements.
- Provide an explicit link or icon that opens a pop-up window offering a form visitors may fill in to easily email the page they are viewing.

Agenda

- Overview of Usability Audit Review
- Top Usability Issues
- › **Bottom Line**

Bottom Line

The Climate Change section can facilitate visitor tasks by strengthening awareness and understanding of the categories through providing clear descriptions and linkage to them on the Climate Change Home page.

Additionally, implementing consistent and complete local navigation menus throughout the section will further support this effort.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Appendix

Substitute navigation lists are inadequate

It appears that the Climate Change section attempts to compensate for the absence of local navigation by providing linkage to top-level categories in the right sidebar of most category pages. However, these lists are inadequate stand-ins for local navigation because: they do not appear on all category pages, they do not consistently list all categories, and they do not include linkage to subsequent pages in the current category. Furthermore, the heading is too general.

If this feature is to be maintained as a substitute for local navigation, it must:

- Include links to all top-level categories, as well as all subsequent pages of the current category
- Indicate through indentation or grouping the hierarchy of linked pages
- Be present on all category pages
- Include a descriptive heading, such as Climate Change Contents