Web Sustainability Guidelines 1.0

Summary Table & Checklist

2.1	Undertake Systemic Impacts Mapping				
	Success Criterion				
☐	List the negative external variables and identify where your product's sustainable impact can be diminished (systemic design).				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
2.2	Assess and Research Visitor Needs				
	Success Criterion				
☐	Primary and secondary target visitors are identified, and their needs are defined through quantitative or qualitative research, testing, or analytics, ensuring your visitors and affected communities remain a close part of the research and testing process.				
☐	Potential visitor constraints like the device age, operating system version, browser, and connection speeds are considered when designing user-experiences.				
☐	The team has researched and identified whether a technical, material, or human constraint might require an adapted version of the product or service that reduces barriers or improves access to content.				
☐	In the user-research, identify with your visitors if some barriers should be removed (pain points or dark / deceptive design patterns).				
☐	When undertaking research, identifying needs, or conducting iterative design work, ensure that all stakeholders including your visitors have an equitable role in the decision-making process.				
	Impact & Effort	Medium		High	
	GRI	Medium	Medium	Medium	Medium
2.3	Research Non-Visitor's Needs				
	Success Criterion				
☐	Consider and work with non-users and other stakeholders who might be passively impacted by a digital product or service, such as neighbors accepting parcels, traffic jams due to deliveries, etc. Research their needs and understand how they might be affected.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
2.4	Consider Sustainability in Early Ideation				
	Success Criterion				
☐	Utilize wireframes, and rapid prototyping to quickly build consensus, reduce risk, and lower the number of resources needed to build features.				

☐	Involve your users within the iteration and design process using participatory design, and when conducting user-testing reach out to your community to help improve your product by allowing them to apply their knowledge and experience to your product or service.				
	Impact & Effort	Low		Low	
	GRI	Low	Low	Low	Low
2.5	Account for Stakeholder Issues				
	Success Criterion				
☐	In the brainstorming process, consider all stakeholders using a human-centered approach.				
☐	In the brainstorming process, take the planetary needs and ecological boundaries into account.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
2.6	Create a Frictionless Lightweight Experience by Default				
	Success Criterion				
☐	The path taken to access the service (the initial contact with the website or service) should be as efficient and as simple as possible (time required to complete an action displayed, reducing too much choice, ensuring visitors know what's required at the start of a complex set of steps, etc).				
☐	Make your user-journey (when browsing an accessed website or service) as smooth as possible. User-research is key, as is building on established design patterns which people already understand.				
☐	Visitors can complete tasks without distractions or non-essential features getting in the way.				
☐	Visitors see only information that is relevant to their experience, without non-essential information being displayed on the screen.				
☐	Ensure that actionable information such as pop-up or modal windows can only be initiated by the visitor.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
2.7	Avoid Unnecessary or an Overabundance of Assets				
	Success Criterion				
☐	Decorative design is used only when it improves the user-experience, and unnecessary assets or ones that fail to benefit the visitor or sustainability are removed (or rendered optional and disabled by default).				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
2.8	Ensure Navigation and Way-Finding Are Well-Structured				
	Success Criterion				
☐	Provide an accessible, easy-to-use navigation menu with search features that help visitors easily find what they need.				

☐	Implement an efficient (human-readable) sitemap that is organized and regularly updated helps search engines better index website content, which helps visitors more quickly find what they are looking for.				
☐	Provide a way for visitors to find out about new content and services.				
	Impact & Effort	Low		Low	
	GRI	Medium	Low	Medium	Low
2.9	Respect the Visitor's Attention				
	Success Criterion				
☐	Respect a visitor's attention by allowing them to easily control how (and when) they receive information.				
☐	Prioritize features that don't distract people or unnecessarily lengthen the time they spend using the product or service.				
☐	Avoid using infinite scroll or related attention-keeping tactics.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
2.10	Use Recognized Design Patterns				
	Success Criterion				
☐	Provide only essential components visible at the time they are needed. Where appropriate, interfaces should deploy visual styles (patterns) that are easily recognized and used.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Low	Medium	Low
2.11	Avoid Manipulative Patterns				
	Success Criterion				
☐	Avoid what are commonly known as dark patterns, deceptive design, or unethical coding techniques, which manipulate visitors into taking actions not necessarily in their best interest (anti-right click, no-copy, requiring an account to purchase, etc).				
☐	Advertisements and sponsorships are both ethical and clearly identified with the product or service, only presenting them when they provide real economic and ethical value and don't diminish a visitor's experience.				
☐	Remove unused and unconsented page tracking.				
☐	Optimization for search engines, social networks, and third-party services should be organically led with good coding practices and user-experience being the focus, not manipulating the services to gain greater priority through obfuscating content, pages, websites, or applications with redundancy or non-useful and optimized (to the visitor) material.				
	Impact & Effort	High		Medium	
	GRI	Low	Low	Low	Low
2.12	Document and Share Project Outputs				
	Success Criterion				

☐	The deliverables output, including documentation, are used upstream of the project and produced in ways that will allow it to be reused in subsequent projects.				
☐	Design functionality and technical specifications are documented so that deliverables are comprehensible by the project team and transferable to the development team.				
☐	Ensure that developers have access to code comments and other View Source affordances which can reduce the burden in order to access, understand, maintain, and utilize production ready code as this will reduce redundancy and foster an open source culture.				
	Impact & Effort	Medium		High	
	GRI	Medium	Medium	Medium	Medium
2.13	Use a Design System To Prioritize Interface Consistency				
	Success Criterion				
☐	Employ a design system based on web standards and recognizable patterns to mutualize interface components and provide a consistent experience for visitors.				
	Impact & Effort	Low		Medium	
	GRI	Medium	Low	Medium	Low
2.14	Write With Purpose, in an Accessible, Easy To Understand Format				
	Success Criterion				
☐	Write clearly using plain, inclusive language delivered at an easy-to-understand reading level considering accessibility and internationalization inclusions as required (for example, dyslexia).				
☐	Deliver content formatted in ways that support how people read online, including a clear document structure, visual hierarchy, headings, bulleted lists, line spacing, and so on.				
☐	Prioritize SEO at early design stages and throughout a product or service's lifecycle to improve content findability.				
	Impact & Effort	Low		Low	
	GRI	Medium	Low	Medium	Low
2.15	Take a More Sustainable Approach to Image Assets				
	Success Criterion				
☐	Assess the need for images considering the quantity, format, and size necessary for implementation.				
☐	Resize, optimize and compress each image (outside the browser), offering different sizes (for each image) for different screen resolutions.				
☐	Provide Lazy Loading to ensure image assets only loads when they are required.				
☐	Let the visitor select the display size, and provide the option to deactivate images.				
☐	Set up a media management and use policy to reduce the overall impact of images, with criteria for media compression and file formats.				
	Impact & Effort	High		Low	
	GRI	High	High	High	High
2.16	Take a More Sustainable Approach to Media Assets				

	Success Criterion				
☐	Assess the need for video or sound usage (including only when they add visitor value), and ban non-informative media (background media) including autoplaying functionality.				
☐	Choose the right media to display by compressing according to the visitor's requirements, selecting the appropriate format, ensuring it works across browsers, and avoiding embedded player plugins.				
☐	Media requiring a lot of data to be downloaded on the client side (including the media itself) must be loaded via a facade (a non-functional, static, representational element).				
☐	Increase visitor awareness and control by informing them of the length, format, and weight of the media; allowing media deactivation, and giving a choice of resolutions; all while providing alternative resolutions and formats.				
☐	Set up a media management and use policy to reduce the overall impact of audio and video, with criteria for media compression and file formats.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
2.17	Take a More Sustainable Approach to Animation				
	Success Criterion				
☐	Use animation only when it adds value to a visitor's experience, and not for decorative elements.				
☐	Progressively display an appropriate quantity of animation so as not to overburden the visitor or diminish expected device behavior.				
☐	Allow visitors to start, stop, pause or otherwise control animated content.				
	Impact & Effort	Medium		Low	
	GRI	High	High	High	High
2.18	Take a More Sustainable Approach to Typefaces				
	Success Criterion				
☐	Use standard system-level (web-safe / pre-installed) fonts as much as possible.				
☐	Ensure the number of fonts, and the variants within typefaces (such as weight and characters) are limited within a project, using the most performant file format available.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
2.19	Provide Suitable Alternatives to Web Assets				
	Success Criterion				
☐	All proprietary file formats (such as PDF) should also be offered in HTML for accessibility and to ensure future availability				
☐	All custom typefaces (using font-display) should be subsetted and offered as part of a font stack with a system font as a backup.				
☐	All images should provide meaningful alternative text for screen reader users (or when images fail to load) accessibility.				

☐	Audio should provide text transcripts of conversations as an alternative to playing the media.				
☐	Video should provide text transcripts (at minimum), subtitles (using WebVTT), and for accessibility best practice, offer closed captions and sign language options.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
2.20	Provide Accessible, Usable, Minimal Web Forms				
	Success Criterion				
☐	Assess the need for forms and reduce form content to the bare minimum necessary to meet the visitor's needs and the organization's business goals. Clearly communicate why a form is necessary, what its value proposition is, how many steps it will take to complete, and what an organization will do with collected data (informed consent).				
☐	Avoid auto-completion / auto-suggest if it would prove unhelpful (to conserve bandwidth) whilst allowing autofill for ease of repeat entry (including the use of helpful tooling such as password managers).				
	Impact & Effort	Low		Low	
	GRI	Medium	Low	Medium	Low
2.21	Support Non-Graphic Ways To Interact With Content				
	Success Criterion				
☐	Support speech browsing and other non-graphical ways to interact with content that provide alternatives to a visual interface.				
	Impact & Effort	Low		Medium	
	GRI	Medium	Low	Medium	Low
2.22	Provide Useful Notifications To Improve the Visitor’s Journey				
	Success Criterion				
☐	Remove non-essential notifications while justifying and reducing the practice of e-mailing or text messaging to what is strictly necessary. Useful notifications (such as alerts for new content) should be used with care and restraint.				
☐	Let the visitor control notifications (for example through the browser, SMS, or by email) and adjust messaging preferences, and the option to unsubscribe, logout, and close an account should be available and visible.				
☐	Help visitors manage expectations by clearly explaining the result of a potential input through helpful prompts and messages that explain errors, next steps, and so on.				
	Impact & Effort	Low		Low	
	GRI	Medium	Low	Medium	Low
2.23	Reduce the Impact of Downloadable or Physical Documents				
	Success Criterion				
☐	Design documents to limit the printing impact. If the production of paper documents is essential, it should be designed to limit its impact to the lowest possible. Create a CSS Print stylesheet and test it with different types of content. Ensure PDF printing is encouraged over paper-based storage.				

☐	Offer optimized, compressed documents in a variety of accessible file formats.				
☐	If a document is likely to be re-used, generate the document once on the server-side (preferably on a cookie-free domain) rather than forcing the effort to be duplicated.				
☐	Clearly display the document name, a summary, the file size, and the format, allowing the visitor a choice if possible of both the format, and the language (if not the same as the web page). Furthermore, be sure to avoid embedding the document within Web pages (provide a direct link to download or view within the browser instead).				
	Impact & Effort	Medium		Low	
	GRI	Medium	Low	Medium	Low
2.24	Create a Stakeholder-Focused Testing & Prototyping Policy				
	Success Criterion				
☐	The organization has outlined processes it uses to prototype and test new features, product ideas, and user-interface components when applicable with real users who represent various stakeholder perspectives, including people with slow connection, with disabilities, with difficulties using digital services and so on.				
☐	The organization has appropriately resourced these processes to support its long-term product viability.				
☐	The organization has training materials to onboard new product team members to these practices.				
☐	The organization regularly conducts extensive testing and user interviews to validate whether the released features are meeting both business goals and visitor needs.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
2.25	Conduct Regular Audits, Regression, and Non-Regression Tests				
	Success Criterion				
☐	Check your codebase for bugs, identify any performance issues, and account for accessibility or security problems at either monthly or quarterly timeframes (depending on your scheduling allowance).				
☐	Non-regression tests are implemented for all important functionality.				
☐	Incorporate regression testing into each release cycle to ensure that new features don't introduce bugs or otherwise conflict with existing software functionality.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
2.26	Incorporate Performance Testing Into Each Major Release-Cycle				
	Success Criterion				
☐	Regularly measure with each release-cycle (using tooling or through research and auditing) the performance of a website or application to identify and resolve bottlenecks or issues in the underlying code or infrastructure which could ultimately impact the sustainability of a website or application.				
☐	Only collect the data required to provide a streamlined and effective user-journey, put policies in place to ensure strict adherence, and comply with relevant accessibility policies and privacy laws, such as the General Data Protection Regulation (GDPR).				

	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
2.27	Incorporate Value Testing Into Each Major Release-Cycle				
	Success Criterion				
☐	Consider visitor feedback and monitor adoption and churn rates of product or service features, incorporating insights into future releases.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
2.28	Incorporate Usability Testing Into Each Minor Release-Cycle				
	Success Criterion				
☐	Incorporate usability testing into product cycles and measure the impact of these tests for future releases.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
2.29	Incorporate Compatibility Testing Into Each Release-Cycle				
	Success Criterion				
☐	Establish a policy for compatibility with obsolete devices and software versions, listing the supported devices brands, operating systems, and browsers (including versions).				
☐	Avoid planned obsolescence in software updates, striving to maintain compatibility for as long as possible and clearly communicating whether an update is evolutionary (large updates that can significantly reduce performance) or corrective (smaller updates that fix bugs or improve security).				
☐	Regularly test the product or service with weak connections, old browsers, and on devices older than five years to ensure compatibility.				
☐	Prototype your interfaces using mobile-first methods to ensure progressive enhancement, content prioritization, and improved accessibility.				
☐	Consider whether a PWA will be more sustainable and compatible over a native mobile application.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
3.1	Identify Relevant Technical Indicators				
	Success Criterion				
☐	Set goals which impact the environment and performance of the service, for example HTTP requests, or the amount of DOM elements which need to be rendered.				
☐	Because the payload being delivered may not always be equal in terms of energy intensity, operators of websites and applications must ensure that consideration is given for the energy intensity (or unit being evaluated) of each component. For example, non-rendering text is less computational than CSS, which in turn is less process-heavy than JavaScript, which is less resource-heavy than WebGL.				
	Impact & Effort	Medium		Medium	

	GRI	Medium	Medium	Medium	Medium
3.2	Minify Your HTML, CSS, and JavaScript				
	Success Criterion				
☐	All source code is minified upon compilation (including inline code).				
	Impact & Effort	Low		Low	
	GRI	Low	Low	Low	Low
3.3	Use Code-Splitting Within Projects				
	Success Criterion				
☐	Breakdown bandwidth-heavy components into segments that can be loaded as required.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
3.4	Apply Tree Shaking To Code				
	Success Criterion				
☐	Identify and eliminate unused and dead code within CSS and JavaScript.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
3.5	Ensure Your Solutions Are Accessible				
	Success Criterion				
☐	Your website or application must conform to WCAG (at the necessary level), plus extend beyond to obey relevant laws and meet additional visitor accessibility requirements. Building inclusively means that people with permanent, temporary or situational disabilities will be able to more quickly find what they are looking for, and not have to spend extra time searching for a way to use your product or service.				
☐	Enhance your website or application with Accessible Rich Internet Applications (ARIA) ONLY if applicable or necessary, and accessibility enhancing features when useful or beneficial.				
☐	Deploy solutions which fight against electronic inequalities in products and services.				
	Impact & Effort	High		Medium	
	GRI	Medium	Medium	Medium	Medium
3.6	Avoid Code Duplication				
	Success Criterion				
☐	Don't be afraid to remove or simplify (through rewriting for performance) your code to focus on essential features and have a cleaner, less redundant product (and codebase).				
☐	Improve (iterate) an existing creation rather than constantly redeveloping and redesigning products from scratch (duplication of coding effort) if possible to reduce visitor learning burden and developer impact.				

☐	Within CSS and JavaScript, use methodologies (like BEM) and systems like DRY and WET to optimize the arrangement and output of your source code.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
3.7	Rigorously Assess Third-Party Services				
	Success Criterion				
☐	Assess third-party services (including plugins, widgets, feeds, maps, carousels, etc) as early in the ideation or creation process as possible and use as few as possible to reduce the product or service's overall ecological impact, including Scope 3 emissions.				
☐	Third-party content (including plugins, widgets, feeds, maps, carousels, etc) should be placed behind a click-to-load delay screen (using the "import on interaction" pattern), while alternatives to automated solutions such as chatbots should be offered.				
☐	Large CSS libraries and JavaScript frameworks should only be used if a more performant alternative which achieves the same goal cannot be used instead.				
☐	Prioritize self-hosted content over embedded content from third-party services.				
☐	Create your own clickable icons and widgets, rather than relying on third-party services to host or allow embedding within your product or service.				
☐	Third-party products, services, libraries, and frameworks are often a source of sustainability issues that cannot be controlled or managed by the first-party provider of a service. While many do provide benefits to a website, the need to justify their inclusion should be made not only by those creating the product or service but also be able to be controlled by the consumer. As showcased with cookies, websites or applications should provide a similar mechanism of disabling or refusing non-first-party features (with explanations of their purpose) - unless such features can be proven as critical for functionality.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
3.8	Use HTML Elements Correctly				
	Success Criterion				
☐	Ensure content is marked up semantically using the right HTML element for the right job.				
☐	Consider removing optional HTML tags (which aren't required for rendering), attribute quotes, or attributes that are set to their default value.				
☐	Avoid using non-standard elements or attributes.				
☐	Only use custom elements or Web Components if you cannot utilize native HTML elements or if you need tightly regulated control over the implementation of design system components.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
3.9	Resolve Render Blocking Content				
	Success Criterion				
☐	All external assets should be deferred or set to async (unless required) to avoid Flash Of Unstyled Content (FOUC).				

☐	If external resources are required on load, ensure their priorities (delivery route) are set correctly.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
3.10	Provide Code-Based Way-Finding Mechanisms				
	Success Criterion				
☐	Optimize your metadata and microdata for search engines and social media.				
☐	Assist search engines, while blocking any ill-intentioned robots and scripts.				
☐	Offer accessibility and usability aids to find content, such as skip links and signposts.				
	Impact & Effort	Low		Low	
	GRI	Low	Low	Low	Low
3.11	Validate Form Errors and External Input				
	Success Criterion				
☐	Errors should be identified through live validation as well as upon submission.				
☐	Required elements should be clearly identified and labeled (for the benefit of voice tools such as screen readers and virtual assistants), and optional elements (if unnecessary) removed.				
☐	Always allow the pasting of content (including passwords) from external sources.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
3.12	Use Metadata Correctly				
	Success Criterion				
☐	Include the required title element, plus any optional HTML head elements (such as link).				
☐	Include necessary meta tag references that search engines and social networks recognize, using a recognized name scheme such as Dublin Core Metadata Initiative (DCMI), Friend Of A Friend (FOAF), or RDFa.				
☐	Embed Microdata, Structured Data (Schema), or Microformats within your pages.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
3.13	Adapt to User Preferences				
	Success Criterion				
☐	Apply the monochrome, prefers-contrast, prefers-color-scheme, prefers-reduced-data, prefers-reduced-transparency, and prefers-reduced-motion CSS preference queries if they will benefit your website or application. Also consider the print & scripting CSS media queries if they will improve the sustainability of your website.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium

3.14	Develop a Mobile-First Layout				
	Success Criterion				
☐	Allow a website or app to work on mobile devices primarily (testing with various connection speeds), expanding to accommodate larger displays thereafter (mobile-first). It is much more effective to do the hard work to ensure that it works well on a mobile device and then scale it up to larger interfaces.				
☐	Utilize progressive enhancement and responsive web design to ensure that your work accommodates a device's capabilities, different screen sizes, and will not fail if it meets an unsupported technology.				
☐	To maximize the use of renewable energy, adapt your website or service to electricity availability using carbon-aware design techniques.				
☐	Consider supporting other indirect methods of interaction such as voice (speech), code (QR, etc), reader view (browser, application, or RSS), or connected-technology (watch, appliance, transport, etc).				
	Impact & Effort	Medium		Low	
	GRI	Medium	Low	Medium	Low
3.15	Use Beneficial JavaScript and Its APIs				
	Success Criterion				
☐	Improve sustainability through accessible and performant code implementations.				
☐	When using an API, make sure you only call it when necessary. On the other side, make sure no unrequired data is sent by the API.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
3.16	Ensure Your Scripts Are Secure				
	Success Criterion				
☐	Check the code for vulnerabilities, exploits, header issues, and code injection.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
3.17	Manage Dependencies Appropriately				
	Success Criterion				
☐	Prevent developers from downloading and installing JavaScript libraries to run locally (client-side) when they are not needed by checking for unused dependencies and uninstalling those that aren't needed and removing them from your package.json file.				
☐	Reduce the amount of JavaScript that has to be downloaded and parsed by the browser by only using libraries where necessary. Consider whether you can use a native JavaScript API instead. Check the package size, and whether individual modules can be installed and imported rather than the whole library.				
☐	Regularly check dependencies and keep them up-to-date.				
	Impact & Effort	Medium		Low	

	GRI	Low	Low	Low	Low
3.18	Include Files That Are Automatically Expected				
	Success Criterion				
☐	Take advantage of the favicon.ico, robots.txt, opensearch.xml, site.webmanifest, and sitemap.xml documents.				
	Impact & Effort	Low		Low	
	GRI	Low	Low	Low	Low
3.19	Use Plaintext Formats When Appropriate				
	Success Criterion				
☐	Utilize standards such as ads.txt, carbon.txt, humans.txt, security.txt and robots.txt.				
	Impact & Effort	Low		Low	
	GRI	Medium	Low	Medium	Low
3.20	Avoid Using Deprecated or Proprietary Code				
	Success Criterion				
☐	Upgrading or avoiding deprecated formats is important, the only exception being if consumer support demands maintaining older standards to provide a functional product.				
☐	Don't use an older standard if a newer recommendation will do the same job as or more effectively.				
	Impact & Effort	Low		Medium	
	GRI	Low	Low	Low	Low
3.21	Align Technical Requirements With Sustainability Goals				
	Success Criterion				
☐	List (and choose carefully) the requirements of the product or service. A simpler technological implementation may use more human resources, but could have a smaller footprint. A prebuilt solution may use more system resources (and thereby produce more emissions upon render) but have a faster build-time (emitting less carbon during development).				
☐	As a general rule, coding from scratch is the best-performing methodology (though if an existing solution is actively maintained, it may be better optimized than what you could produce). Therefore, prefer native components and file systems to a WYSIWYG editor or heavy framework, and be considerate of the impact of third-party solutions.				
☐	If you do decide to use a code generation tool, consider using a Static Site Generator in preference to a bulky content management system. Because SSGs often start using a minimalist content entry format (like markdown) and all of the compilation is done before the website is uploaded, the emissions benefit comes from the server not having to place as much effort into serving pages (as they are static) for each visitor. In the case of a CMS, the dynamic nature of a site will involve additional computation (server-side processing) and bulkier libraries.				
☐	Plugins, extensions, and themes have been carefully reviewed and selected to maximize interoperability, accessibility, and performance. They are regularly audited over time to ensure continued compatibility.				
☐	Make sure all the components of the user-interface are the subject of special attention in terms of its sustainability impact, while respecting accessibility and the performance of such components.				

	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
3.22	Use the Latest Stable Language Version				
	Success Criterion				
☐	Use the latest build of your chosen syntax language and its coupled framework.				
☐	Many tools and programming languages are optimized for performing particular tasks, and utilizing those most appropriate to the problem, especially if there is a reasonable visitor base involved justifies the time and effort, as long as it doesn't impact ESG factors such as the well-being of those involved or become too cost prohibitive.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
3.23	Take Advantage of Native Features				
	Success Criterion				
☐	Use native functions, APIs and features over writing your own.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
3.24	Run Fewer, Simpler Queries As Possible				
	Success Criterion				
☐	If you need information that is stored in a database, and you require it (or its likely to be requested) more than once in your code, access the database only once, and store the data locally for subsequent processing. Also, avoid reliance on framework helpers that might defer filtering to later on in the process.				
	Impact & Effort	Medium		Low	
	GRI	Low	Low	Low	Low
4.1	Choose a Sustainable Hosting Provider				
	Success Criterion				
☐	To assess the environmental impacts of hosting and detect overconsumption, some indicators should be monitored: energy / water usage, CPU / Memory usage, allocation of servers and CPU cores, etc. These indicators could be used to calculate metrics directly related to environmental impacts, such as Power Usage Effectiveness (PUE), Water Usage Effectiveness (WUE), and Carbon Usage Effectiveness (CUE). They could be displayed to visitors for transparency and monitoring reasons.				
☐	Manage equipment responsibly by keeping them as long as possible, using them as efficiently as possible, making sure they are certified, and purchasing long-lifespan products.				
☐	Recover, recycle, and upcycle waste including equipment.				
☐	Electricity comes entirely from sources with the lowest possible carbon intensity (ideally generated by wind or solar rather than from non-renewable sources). For example, Renewable Energy Credits (RECs) can help verify the source, or, ideally, prove that electricity comes directly from renewable sources.				

☐	Compensate remaining emissions, keeping in mind that the priority should be to avoid then reduce them and only compensate for them if they cannot be avoided. Carbon credits may not be sustainable, therefore the effectiveness of an offset solution must be verified, shown to be both environmentally viable and sustainable, and part of a longer-term strategy to eliminate emissions entirely from a chain, benefitting the wider ecosystem.				
	Impact & Effort	High		Medium	
	GRI	Low	Low	Low	Low
4.2	Optimize Browser Caching				
	Success Criterion				
☐	If using a CMS, install an applicable plugin to enable on-the-fly server-side caching. Otherwise, use the provided server configuration files to include and tweak the file-type cache expiration using expires, bfcache, or cache-control HTTP header. If using a language or framework that generates pages on request, cache responses for static pages so that they can be reused for future visitors.				
☐	Client-side JavaScript uses a combination of ServiceWorkers, WebWorkers, storage Application Programming Interfaces (APIs), or cookies (if necessary) to reduce friction in the user-journey. For example, through the use of a PWA (Progressive Web Application) to ensure that an offline version is available and accessible at all times to reduce inequality and improve accessibility.				
	Impact & Effort	High		High	
	GRI	Medium	High	Medium	High
4.3	Compress Your Files				
	Success Criterion				
☐	If using a CMS, install an applicable plugin to enable on-the-fly server-side compression, such as Brotli or GZIP. Otherwise, use the provided server configuration files to include and tweak the performance-related features to the requirements.				
☐	Compress your various images, fonts, audio, and video; by reducing the quality and offering different resolutions / dimensions (sizes) before uploading to a server or content management system.				
	Impact & Effort	High		Low	
	GRI	Low	Low	Low	Low
4.4	Use Error Pages and Redirects Carefully				
	Success Criterion				
☐	Maintain sites by ensuring links are correct, and if errors occur, provide suitable way-finding within optimized pages for each error type to ensure resources can be identified to help a visitor complete the task they started.				
☐	Redirect websites, subdomains, and pages only when necessary. Proactively seek broken or outdated links and fix them. A redirect or search will often help reduce the number of pages a visitor needs to load.				
	Impact & Effort	Low		Low	
	GRI	Low	Low	Low	Low
4.5	Limit Usage of Additional Environments				

	Success Criterion				
☐	Ensure no unused environment is available, balancing the cost of deploying an environment with the cost of keeping it online while unused.				
	Impact & Effort	Medium		Low	
	GRI	Low	Low	Low	Low
4.6	Automate To Fit the Needs				
	Success Criterion				
☐	Every recurring task, such as deployment, testing, or compilation, can be run automatically, as is recommended by continuous integration / continuous delivery best practices.				
☐	To reduce wasted processing cycles, every automated task is only run when needed.				
☐	Use automated scaling infrastructure to automatically increase the capacity of the web server and implement buffering / throttling to respond to visitor demand.				
☐	Web browsing from bots has been steadily increasing in recent years. As such, it is a growing concern for security, performance, and sustainability. Use security tools that automatically block bad actors and minimize bad behavior. This results in substantially less load on the server, fewer logs, less data, less effect due to compromise, and more. The result of compromised websites is a large increase in HTTP, email, and other traffic as malicious code attempts to infiltrate other resources and exfiltrate data. Compromised websites are typically identified by anomalous patterned behavior.				
	Impact & Effort	High		Medium	
	GRI	Low	Low	Low	Low
4.7	Maintain a Relevant Refresh Frequency				
	Success Criterion				
☐	The frequency for refresh (of both the cache, locally stored data, and the page) is defined depending on visitor needs.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
4.8	Be Mindful of Duplicate Data				
	Success Criterion				
☐	Backups of system and user data are both incremental and secure.				
	Impact & Effort	Low		Low	
	GRI	Low	Low	Low	Low
4.9	Enable Asynchronous Processing and Communication				
	Success Criterion				
☐	By default, non-critical processes and communications are batched and launched only when carbon-intensity is under a given threshold.				
☐	Ensure the communication protocols are relevant to the visitor's needs and data transferred. Avoid using insecure protocols (HTTP, FTP), and prioritize more efficient and privacy-aware data routes for visitors (HTTPS, SSH).				

☐	When creating products or services that utilize state changes (without triggering a complete refresh), consider if the utilization of Event-Driven Architecture and Microservices will be more environmentally friendly (based on the ESG variables involved) than traditional APIs in handling the server-side workload of your solution.				
	Impact & Effort	Medium		Medium	
	GRI	Low	Low	Low	Low
4.10	Consider CDNs and Edge Caching				
	Success Criterion				
☐	When building for a globally distributed audience, use a CDN to store and serve simple read-only, pre-generated resources in a fast and efficient manner. Although they definitely can increase performance, it is also another layer of infrastructure which needs to be considered for sustainability.				
☐	Check the CDN to verify that it provides a commitment to sustainability.				
☐	Choose a hosting provider with servers located close to the visitor.				
☐	Avoid using the service to host dynamic resources or JavaScript (unless through a first-party host) as due to cache partitioning, cross-origin resource sharing (CORS), and other browser mechanics, any benefits are negated by weaker performance, the inability to cache or interact, and the potential introduction of security and privacy issues to be introduced. This doesn't affect JSON or other static assets.				
☐	All information passed between the layers of an application incurs a cost, both in terms of data transferred, and CPU cycles for (de)serialization. Wherever possible, data transformations should be performed close to the source to reduce these costs and avoid processing data that will later be discarded.				
	Impact & Effort	Medium		Low	
	GRI	Low	Medium	Low	Medium
4.11	Use the Lowest Infrastructure Tier Meeting Business Requirements				
	Success Criterion				
☐	Select infrastructure elements with the lowest requirements tier, meeting your service-level agreements. Avoid over-provisioning multi-datacenter, multi-zone, or distributed deployments if standalone instances meet the requirements. Also avoid provisioning infrastructure that will be under-utilized by provisioning for established average loads, ensuring reasonable resource utilization and autoscaling occurs as needed. Avoid provisioning for peak loads.				
	Impact & Effort	Medium		Medium	
	GRI	Low	Low	Low	Low
4.12	Store Data According to Visitor Needs				
	Success Criterion				
☐	Remove unnecessary and redundant data from your servers, whether it is single-use (dark data) or abandoned.				
☐	Create data with an expiration date. Excess data is a form of technical debt, and routinely cleaning up old data needs to be normalized.				
☐	Use a data classification / tagging policy to make it easier to find, handle, and remove.				

☐	Store data only when it is difficult to recreate.				
☐	Optimize log collection, storage (off-site), and rotation; scheduling during low-activity hours and using carbon-neutral backup providers.				
☐	Ensure long-term assets, especially those of a large size, are made available for download.				
	Impact & Effort	Low		Low	
	GRI	Low	Low	Low	Low
5.1	Have an Ethical and Sustainability Product Strategy				
	Success Criterion				
☐	The organization has published a publicly available Code of Ethics, Product Guidelines, Sustainability, or ESG Statement that includes language specific to digital products, services, policies, and programs.				
☐	List achievements, features, compliance, and anything beyond the scope of these guidelines and publish it in a sustainability section of your product or service.				
☐	The organization can show how it effectively governs implemented digital sustainability, climate policies, and related ESG practices over time.				
☐	The organization has training decks and workshops it uses to onboard new team members on how it implements more sustainable product strategies.				
☐	Raise awareness with your visitor's by documenting your methodology, through impact storytelling, documentation, and helping individuals make more informed decisions.				
☐	The organization can show how it powers digital products and services with renewable energy.				
	Impact & Effort	High		High	
	GRI	High	High	High	High
5.2	Assign a Sustainability Representative				
	Success Criterion				
☐	Choose and assign an ecological referee (with specific digital expertise) for the product or service within your organization.				
	Impact & Effort	Medium		Low	
	GRI	Medium	Medium	Medium	Medium
5.3	Raise Awareness and Inform				
	Success Criterion				
☐	Make sure that all project stakeholders, including product teams, colleagues, and organizational decision-makers (managers and clients) are informed about and trained in your business's use of sustainable technology.				
☐	Encourages stakeholders to actively reduce their environmental impact by providing resources on sustainable design, practices, and concepts.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
5.4	Communicate the Ecological Impact of User Choices				

	Success Criterion				
☐	Clearly communicate the ecological implications of visitor choices and allow visitors to configure settings based on those choices.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
5.5	Estimate a Product or Service's Environmental Impact				
	Success Criterion				
☐	Conduct a full life-cycle Analysis based on the functional unit defined in Guideline 5.15.				
☐	Estimate the environmental impact of your or your competitor's current service to inform decision-making (as a potential target goal).				
☐	When identifying the environmental impact of your product or service, be sure to include the impact (or estimates of) of any tooling used to create the product or service along with any third-party solutions utilized in the pipeline. While not created by you, the emissions they generate from production to maintenance are considered integral to your overall solution.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
5.6	Define Clear Organizational Sustainability Goals and Metrics				
	Success Criterion				
☐	The organization has defined and published a clear set of sustainability goals. It publicly communicates how it will meet these goals, including which performance metrics are important to help the organization and its various stakeholders thrive.				
	Impact & Effort	Low		Medium	
	GRI	Low	Low	Low	Low
5.7	Verify Your Efforts Using Established Third-Party Business Certifications				
	Success Criterion				
☐	The organization has achieved one or more business sustainability certifications and incorporated operational policies and practices to support them.				
☐	The organization maintains its certification through evolving policies and practices over time.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
5.8	Implement Sustainability Onboarding Guidelines				
	Success Criterion				
☐	The organization has dedicated training manuals, workshops, and materials that outline the ESG policies and practices it follows and how to implement them. While managing and maintaining these materials over time, adapting them as new policies and practices arise.				
☐	The organization incentivizes leadership, teams, and stakeholders to make progress toward the goals outlined in their training, including time for sustainability activities, recognition for completion, and so on.				

☐	The organization anticipates and maps potential negative external variables on the service, and acts to minimize their overall impact.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
5.9	Support Mandatory Disclosures and Reporting				
	Success Criterion				
☐	The organization has created and published policies and practices for disclosing the social and environmental impacts of its products, services, policies, and programs in line with existing reporting standards such as GRI Performance, SASB, etc.				
☐	The organization produces a publicly available impact report outlining its progress against previous reports on social and environmental goals at least once per year.				
☐	The organization publicly and transparently follows existing or emerging environmental standards and legislative policy that promotes mandatory disclosures and reporting for emissions. This is done alongside other social and environmental criteria in its impact reporting, maintaining these practices over time for future reports.				
☐	The organization clearly identifies how it reduces its environmental impact, avoiding double accounting, greenwashing, excluded data, or other manipulative techniques.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
5.10	Create One or More Impact Business Models				
	Success Criterion				
☐	The organization has completed (and operationalized) a Theory of Change process with requisite documentation to identify the impact it hopes to create, how it will generate revenue, shared, or added value from these activities, how it will measure results based on desired outcomes; or in the case of launched projects, is generating revenue, actively tracking and measuring progress against any desired outcomes.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
5.11	Follow a Product Management and Maintenance Strategy				
	Success Criterion				
☐	The organization has documented policies outlining how it approaches product management and maintenance.				
☐	The organization has maintenance / security plans in place for all the digital products and services it manages.				
☐	The organization appropriately resources products over time via staffing and budgeting to support refactoring code, addressing technical debt, new product features, ongoing testing, and product or service maintenance plans to continue supporting its customers, visitors, and other stakeholders.				
☐	The organization incorporates carbon and resource measurement into maintenance programs and can show measurable improvement over time.				
	Impact & Effort	High		Low	

	GRI	High	High	High	High
5.12	Implement Continuous Improvement Procedures				
	Success Criterion				
☐	The organization has created policies and practices to enable continuous improvement and has resourced the organization appropriately to support these efforts over time.				
☐	Agile sprints and update frequency must go through a review process to ensure project teams have enough time to conduct user-research, identify technical debt, and produce quality output.				
☐	Use (and show a track record of) continuous improvement (iteration) to analyze your website or application while also addressing the by-products and potential consequences of ongoing experimentation, such as technical debt, product performance, emissions, and related issues. Limiting analytics to only necessary features to aid with decision-making, encouraging visitor feedback, and comparing performance against business goals and visitor needs.				
☐	Justify and prioritize the retention of existing features, the creation of new functionality, and the decommission or elimination of unused functionality and unvisited pages through the product's life-cycle.				
☐	Provide corrective security and policy updates during the product or service lifecycle, while distinguishing these updates from more extensive evolutionary updates.				
☐	Develop sustainable product and data strategies along with appropriate training techniques that help your team (managers, colleagues, etc) build capacity and learn new skills to manage and maintain products and services over time.				
	Impact & Effort	High		High	
	GRI	High	High	High	High
5.13	Document Future Updates and Evolutions				
	Success Criterion				
☐	The user-experience considers possible changes to the product or service such as adding, updating, or removing features.				
	Impact & Effort	Low		Low	
	GRI	Low	Low	Low	Low
5.14	Establish if a Digital Product or Service Is Necessary				
	Success Criterion				
☐	Review and identify whether your product or service aligns with one of the U.N. (SDGs).				
☐	Evaluate the desirability, feasibility, and viability of the digital product or service they wish to create to ascertain whether it is necessary.				
☐	Determine that no existing digital product or service offers the same value. They have conducted analysis to understand whether a new product or service is necessary.				
☐	Consider any obstacles to using a product or service, such as accessibility, equality, technical, or territorial.				
	Impact & Effort	High		Low	
	GRI	High	High	High	High
5.15	Determine the Functional Unit				

	Success Criterion				
☐	Consider and conduct a life-cycle Assessment (LCA) to define the requirements of your product's function throughout its lifecycle.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
5.16	Create a Supplier Standards of Practice				
	Success Criterion				
☐	The organization has created specific policies to vet potential partners in its supply chain based on ESG principles.				
☐	The organization has partnered with suppliers to create, track, and measure collective impact on issues that impact their stakeholders.				
☐	The organization promotes its partnerships in a publicly available place, along with information on how the partnership creates a collective impact.				
	Impact & Effort	High		High	
	GRI	High	High	High	High
5.17	Share Economic Benefits				
	Success Criterion				
☐	The organization publicly commits to paying employees, contractors, and other stakeholders a living wage.				
☐	The organization has policies and practices in place to incentivize stakeholders, such as workers and contractors, to meet its impact goals.				
☐	The organization provides benefits to employees in accordance with its resources, including, where relevant, healthcare, retirement planning, flex time, profit sharing, and so on.				
☐	The organization advocates for responsible legislation that supports employment rights, transparency, and accountability related to sharing economic benefits.				
	Impact & Effort	High		High	
	GRI	High	High	High	High
5.18	Share Decision-Making Power With Appropriate Stakeholders				
	Success Criterion				
☐	Ensure that the project team's goals are aligned with key business objectives, and project stakeholders (for example, project managers) have the power and autonomy to make key decisions on the organization's behalf.				
	Impact & Effort	Low		High	
	GRI	Low	Low	Low	Low
5.19	Use Justice, Equity, Diversity, Inclusion (JEDI) Practices				
	Success Criterion				

☐	The organization has documented its commitment to JEDI practices with clear policies on how it prioritizes marginalized or otherwise underserved communities, including Black, Indigenous, People of Color, LGBTQIA+, Women, Disabled, Veterans, Seniors, and so on.				
☐	The organization has an accessibility policy for digital products and services and can show this via a verified accessible website, application, product, or service.				
☐	The organization has JEDI-related training materials and schedules ongoing workshops related to how this topic manifests itself in digital products and services (algorithmic bias, digital divide, gig economy work, mis / disinformation, etc).				
☐	The organization can show measurable JEDI improvement over time in its hiring, leadership, and operations.				
☐	The organization advocates for responsible legislation relating to JEDI practices, especially as related to digital products and services.				
	Impact & Effort	High		High	
	GRI	High	High	High	High
5.20	Promote Responsible Data Practices				
	Success Criterion				
☐	The organization has a public-facing privacy policy in place and supports existing privacy laws such as the General Data Protection Regulation (GDPR), California Consumer Privacy Act (CCPA), and so on. This policy must be both accessible for all visitors, including those with accessibility and reading comprehension needs, and abide by plain English best practices to avoid jargon, technical language, and legalese.				
☐	The organization can show measurable progress over time on how it respects data privacy and ownership, including a visitor's "right-to-be-forgotten" and provides the ability to export data.				
☐	The organization supports new and emerging legislation related to data privacy, data sustainability, and responsible data practices.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
5.21	Implement Appropriate Data Management Procedures				
	Success Criterion				
☐	Outdated or otherwise expired product content and data are archived and deleted via automated expiration dates and scheduled product audits. Create an archiving schedule with a lighter version of the old searchable content available.				
☐	Enable users to control, manage, and delete their data, subscriptions, and accounts.				
	Impact & Effort	Low		High	
	GRI	Low	Low	Low	Low
5.22	Promote and Implement Responsible Emerging Technology Practices				
	Success Criterion				
☐	The organization has public-facing policies in place for emerging technologies.				
☐	The organization can show how it up-skills workers as new technologies and practices potentially disrupt its business model.				

☐	The organization supports responsible legislation related to automation and emerging technologies.				
☐	Organizations must consider, audit, and account for any environmental considerations that may derive from the use of emerging technologies they wish to either promote or implement within a chosen setting. Also note that this should include third-party choices, the "expense" (in terms of waste or emissions) of the utilization of the technology to create a desired result, and consequential issues to the environment that may arise from its deployment.				
☐	Don't roll out post-quantum encryption for high-traffic services that don't need resilience against harvest now, decrypt later.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
5.23	Include Responsible Financial Policies				
	Success Criterion				
☐	The organization has divested from fossil fuels and moved its banking, sponsorship, and other affiliations to more responsible partners.				
☐	The organization engages in flexible financing and responsible budgeting for its digital products and services to accommodate long-term care and maintenance.				
	Impact & Effort	High		High	
	GRI	High	High	High	High
5.24	Include Organizational Philanthropy Policies				
	Success Criterion				
☐	The organization has a clear corporate giving policy and creates philanthropic partnerships with strategically aligned organizations.				
☐	The organization engages in free or volunteer projects, which help its team learn new tools and tactics, while also helping charities and non-profit organizations build capacity.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
5.25	Plan for a Digital Product or Service’s Care and End-of-Life				
	Success Criterion				
☐	Establish clear, documented end-of-life guidelines that include data disposal, archiving, file deletion, and so on.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
5.26	Include E-Waste, Right-To-Repair, and Recycling Policies				
	Success Criterion				
☐	The organization has specific policies in place to recycle e-waste and repair owned technology products whenever possible.				
☐	The organization has formed relationships with local partners for e-waste recycling and repair.				

☐	The organization buys refurbished equipment whenever possible.				
☐	The organization should allow consumers to repair (to the best of their ability) the consumables they purchase, offering (if possible at cost) replacement components and clear instructions to resolve faults that occur.				
	Impact & Effort	High		Medium	
	GRI	High	High	High	High
5.27	Define Performance and Environmental Budgets				
	Success Criterion				
☐	The product team has defined, baselined, and documented a clear sustainability and environmental budget criteria that covers the page, user-journey, and digital service levels and metrics (such as a CO2.js score) that are approved by relevant product stakeholders.				
☐	Use tools such as a performance budget to determine the maximum size (goals) your app or website can weigh to reduce the data transfer and HTTP request impact (using metrics like Google Lighthouse).				
☐	Define KPIs around engineering hours, development time, or sprints keeping the health and wellbeing of your workers paramount. Consideration should be taken around optimizing your workflow sustainably to allow all tasks to be performed with care.				
☐	The product team can measurably show how much the budgeting process improved performance and reduced emissions.				
☐	The product team invests in resources to build capacity and maintain the budgets over time.				
	Impact & Effort	Medium		Medium	
	GRI	Medium	Medium	Medium	Medium
5.28	Use Open Source Tools				
	Success Criterion				
☐	The organization has a clear open source policy in place that outlines how it uses open source tools and the practices it supports surrounding open source development.				
☐	The organization has a track record of collaboration and community-building around open source principles.				
☐	The organization regularly contributes to open source community-based projects.				
	Impact & Effort	High		High	
	GRI	High	High	High	High