



# Africa RISING Web presence report

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The [Africa Research in Sustainable Intensification for the Next Generation](#) (Africa RISING) program comprises three research in development projects supported by the United States Agency for International Development (USAID) as part of the U.S. Government's Feed the Future initiative.

Through action research and development partnerships, Africa RISING is creating opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base.

The three regional projects are led by the International Institute of Tropical Agriculture (in West Africa and East and Southern Africa) and the International Livestock Research Institute (in the Ethiopian Highlands). The International Food Policy Research Institute leads the program's monitoring, evaluation and impact assessment.




Africa RISING appreciates support from the American people delivered through the USAID Feed the Future initiative. We also thank farmers and local partners at all sites for their contributions to the program and the [CGIAR Trust Fund](#).

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## Abbreviations and acronyms

<b>URL</b>	Unified resource locator
<b>SSL</b>	Secure Socket Layer
<b>UX</b>	User Experience

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## Executive summary

The communication and knowledge management team of the Africa Research in Sustainable Intensification for the Next Generation (Africa RISING) sought an independent consultant to evaluate the performance of their website and advise on the web presence status of the program. The consultant was required to evaluate the program's current website and other key platforms like CG Space, YouTube, Flickr, and SlideShare with a view to making recommendations about how best to revamp its website. The consultant was also tasked to benchmark performance of the Africa RISING website against websites of other programs that are similar in scope and objectives to Africa RISING. Upon conclusion of the review, the consultant was required to provide a comprehensive web report that would inform the communication team on areas of the website revamp.

# Introduction

## Background

In a quest to improve the online presence of the Africa RISING website, the communication team of Africa RISING engaged the Computing for Development Lab (C4DLab) of the University of Nairobi, Kenya to provide a comprehensive report on how the institution performs online.

The Communications and Knowledge Sharing Coordinator provided all the necessary links and resources, which were to be used as a basis of the analysis. These included: the login credentials and links to resources where the institution hosts her information. The C4DLab therefore set out to establish the following:

- The relevance of written and graphical content on the website.
- The web design standards followed and structure of content on the website.
- An evaluation of technical issues around design and development of the website.
- An evaluation of the website's usability and aesthetics.
- A comparison of the institution's website against other programs working in the same domain.
- An evaluation of web traffic sources and distribution on the institution's website.

Based on the findings of the foregoing, the consultant offers recommendations on how to better improve the online presence of the institution in this report. Once evaluated and executed, the consultant guarantees an increase in the number of views on the websites, thus increasing the online community of the program.

### *Context*

The report analysis borrows from various web standards; it analyzes and compares the performance of Africa RISING's website with sister organizations with a similar mandate.

The communication team provided access to relevant credentials and a list of comparative organizations' websites that allowed the consulting team to review and cross examine them against the following set of parameters:

- The quality and size of graphics uploaded.
- The size of the website's pages and other related contents.
- The load time for the websites.
- The worldwide ranking for the websites.
- The overall grading of the websites based on some proprietary third-party analysis tools.
- The categories of the websites based on worldwide indexing tools.

An analysis of all the websites against these parameters would help the consulting team to better advise Africa RISING on the planned website revamp to ensure that the revamped platform fully utilizes its online potential.

# Methodology

The methodology adopted during the website evaluation involved an in-depth analysis of the Africa RISING website, its adjunct online platforms, available social media platforms used and integrated to the websites, and third-party research companies where publications related to the organizations are posted.

The reviewing team sought to find the following issues upon which the website's review would be based:

- Frequency and relevance of the content posted on the websites.
- Promotion of the content developed and shared on social media platforms.
- Structure of websites, content placement, and ease of finding information on the website.
- Usability of the web platforms and responsiveness in different devices visitors may use to access the website.
- Technical optimization made on the websites.
- Design and aesthetics of the websites.

Borrowing from Nielsen Norman Group, who are leaders in Research Based User Experience, the website review team started by checking through the website to ensure it meets some generic standards. These standards were assessed by answering the following questions:

- Does the website load when accessed through the popular web browsers (Google Chrome, Firefox Mozilla, Opera Mini, Internet Explorer)?
- How long does the website take to fully load on these popular browsers?
- When was the last time the website was updated?
- Is the font used in the website consistent with the respective content? E.g., Do all titles have the same font? Do all paragraphs have the same font?
- How does the website respond when accessed through devices of different screen sizes and resolutions?
- Is there any consistency in the color scheme used in the website?
- Are there more than three key colors on the website?
- Are there any call to actions on the website?
- Are there any captivating and relevant images on the website?
- Is there a site map to show the arrangement of pages on the website?

Once we addressed the above basic checks, we utilized third-party proprietary tools to further establish a technical measure on how the website compared with other organizations. In this step we further sought to establish issues of ranking and categorization, web traffic, and basic security measures employed by the organizations.

Amongst many other parameters, one of the most prominent factors towards response of any requests on web servers is the size of data accessed and required to be delivered to the corresponding party at a given time. Therefore, more often than not, a request of texts would be much faster than one of images or of a video stream. Advances in servers over the years has made this significantly low for small volumes of information. However, when issues of Internet speed are considered, then the size and the number of requests over a network becomes a huge factor towards a good user experience on a web platform. Using an array of developer tools to find the mean measure of the website sizes, the team sought to check sizes of images, developer scripts, and the number of requests to and from the website servers.



Website ranking is a model of measuring how a website performs on different search engines from the highest to the lowest based on the relevance of information. Over the years, there have been different approaches towards increasing web rankings, the most popular being Search Engine Optimization (SEO). This is the process of maximizing the number of visitors to a particular website by ensuring that the site appears high on the list of results returned by a search engine. The key question we sought to answer in this section was how easily would we find the website when we search the words *Africa RISING* or *Africa RISING project* on any browser? The team found out that capitalization of the word *RISING* shows the website as the first on the search page. This is very commendable considering the words *Africa* and *RISING* are very popular English words.

Thirdly, through the available website statistics provided within WordPress (a framework on which the website is built) and online analysis tools, we sought to analyze the traffic to the website. This involved checking on any websites referring the Africa RISING website or backlinks in organizations that have mentioned and linked the institution. We also sought to find out any specific words or combinations of words that led most people to the website. As social media is a huge contributor to ranking of websites, we researched on whether or not there are any effective integrations that are drawing traffic to the website; this was with a major focus on Facebook, Twitter, LinkedIn, and Flickr.

Cyber security and data privacy and access are one of the most discussed topics in current technology, so we evaluated whether or not the organization had employed any form of website security to ensure data is safe and can counter any cyber-attack threats.

Lastly, and most importantly, we evaluated the content shared through the website. This involved issues of the quality of images and texts posted, the frequency of posting and the reach, the impact of these articles shared, and how content is organized on the website to ensure it is easy to find and consume.

# Findings and discussion

## Content analysis and relevance

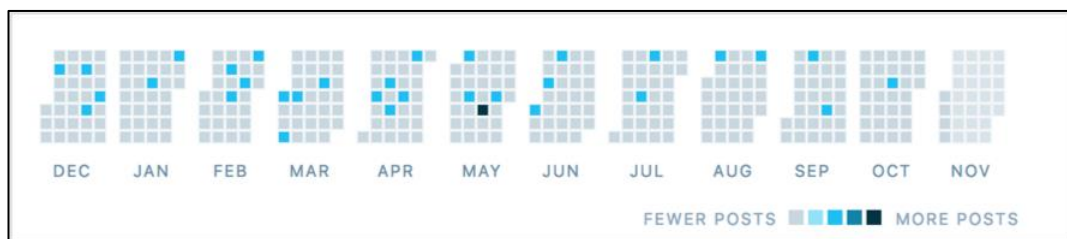
A quick overview of the content shared on the Africa RISING website portrays an institution generating a lot of content but hosting the same content in secondary platforms. This greatly reduces the ability of the institution to fully benefit from the content produced.

Accessing the website, one is provided with links to ILRI blogs and a number of backlinks to blogs of sister organizations but less of her own. Therefore, it is easily confusing to visitors when they want to read Africa RISING blogs to find themselves on a completely new website. Since visitors come to the website with the intention to learn more about what Africa RISING does, they are easily lost since there is no tagline or descriptive statement that states the mandate of the organization on the landing page, or at least a paragraph with prominence on the homepage.

Besides blogs, the website hosts links to CGSpace for publications where all her publications are archived. To properly benefit from her own content, Africa RISING should allow content to be automatically pulled from CGSpace publications; this will greatly help visitors to read from the same website thus improving their user experience. As that happens, CG Space should have backlinks to the Africa RISING website to increase its traffic.

Lack of high-resolution images on the landing page of Africa RISING could be one of the reasons for minimal conversions of first-time visitors. As discussed in the traffic section, there is a reduction of more than 80 percent from those who view the landing page to those who visit other pages of the website. There is a high pull of well-taken, high-resolution images that can be greatly used to communicate and capture more visitors; unfortunately, the same is hosted in Flickr as an image repository. There is a need to properly create a gallery section and ensure users can see as many images from Flickr as they possibly can without leaving the site.

Figure 1 shows a frequency distribution of the number of times articles were shared within a period of about one year. There is reduced distribution towards the end of the year 2018 since only two articles were posted and only one in the month of October. An increase in the number of articles posted on the website is likely to greatly increase the viewership on the website.



**Figure 1.** Distribution of articles posted on the Africa RISING website.

Figure 2 analyzes content posted in the website since 2011. The year 2015 records the highest number of posts at 115 posts followed by 84 in 2014. This is directly proportional to the number of viewers who were 48,697 the same year.

Annual Site Stats							
Year	Total Posts	Total Comments	Avg Comments per Post	Total Likes	Avg Likes per Post	Total Words	Avg Words per Post
2011	2	0	0.0	0	0.0	113	57
2012	69	43	0.6	14	0.2	25,516	370
2013	40	2	0.1	4	0.1	18,309	458
2014	84	15	0.2	18	0.2	41,295	492
2015	115	32	0.3	51	0.4	48,697	424
2016	58	17	0.3	28	0.5	23,793	410
2017	58	12	0.2	27	0.5	28,009	483
2018	30	4	0.1	20	0.7	14,869	496

**Figure 2.** Analysis of the content posted between 2011 and 2018.

### *Graphical content*

Graphical content on a website refers to images, videos, infographics, and any animations used in the web pages. Proper usage of these tools provides brilliant and beautiful, aesthetic pages that increase users' experience and enhance branding.

Despite a huge pull of images on Flickr, there is minimal usage of these images on the actual website. Proper images convey emotions, which increase conversions on a website. Therefore, Africa RISING needs to harness all the images and videos and visualize the same within their own website.



**Figure 3.** Header banner image on the Africa RISING website.

The Africa RISING banner and logo, on the top left corner of the website (Fig. 3) shows a pixelated image with multiple colors, this is not good for branding since it is the first image visitors see. There is need to enhance the logo and create a color theme that is then maintained throughout the pages of the website.

The font used in the website is Times New Roman, a font popular in print publications but not hugely liked by online communities. Therefore, there is need to find a more suitable font family and align the titles and body content of all pages to ensure a memorable pattern for the visitors is drawn.

## Web ranking

Web ranking refers to the position in which websites are ranked by web search engines results.

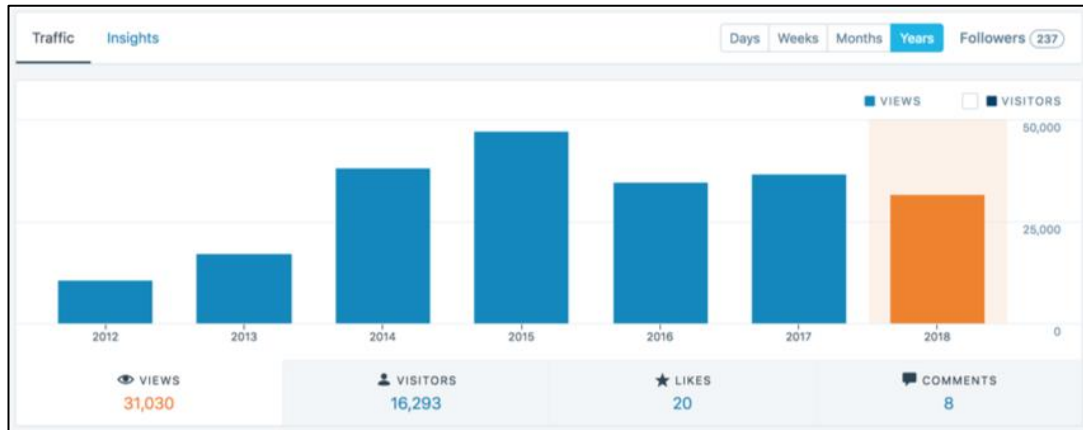
As shown in Table 1, Africa RISING website worldwide ranks at position **8,834,553**. The website is categorized under the Science category where it stands at position **49,586**. Amongst the organizations shared for comparison, SIIL Project [by KSU] was the leading website with a worldwide ranking of **28,104** under the category of Career and Education where it was position **525**.

**Table 1.** Selected websites' comparative ranking.

Organization	Website url	Load time(s)	Ranking	Category
K-State	<a href="http://www.k-state.edu/siil/">http://www.k-state.edu/siil/</a>	2.3	28,104	Career and Education
IITA	<a href="http://www.iita.org">http://www.iita.org</a>	3.65	514,068	Books & Literature
ILRI	<a href="https://www.ilri.org">https://www.ilri.org</a>	3.33	620,324	Business & Industry
Cassava weed project	<a href="http://www.cassava-weed.org">http://www.cassava-weed.org</a>	10.97	3,469,489	–
CSISA	<a href="https://csisa.org">https://csisa.org</a>	1.62	4,047,674	News and Media
Africa RISING	<a href="https://africa-rising.net/">https://africa-rising.net/</a>	1.51	8,834,553	Science
ACAI Project	<a href="http://acai-project.org">http://acai-project.org</a>	2.35	36,309,972	–
SAIRLA Project	<a href="https://sairla.nri.org">https://sairla.nri.org</a>	1.34	–	–
Soybean	<a href="http://soybeaninnovationlab.illinois.edu">http://soybeaninnovationlab.illinois.edu</a>	3.39	–	–

## Web traffic

Web traffic is the amount of data sent and received by visitors on a website. This is determined by the number of visitors and page views on a given website. A proper analysis of this data would greatly inform an organization of the different trends and patterns that could be emerging in their data thus guiding them on how better to shape different avenues of communication for maximum gain.



**Figure 4.** Visitors to the website between 2012 and 2018.

Figure 4 shows the number of views segregated per year to the Africa RISING website. Year 2015 registers the highest number of views at about 49,000. This year, Africa RISING website has gathered a total of 31,030 views with 16,293 of those being visitors, these are first-time viewers. Unfortunately, despite the high viewership, there is little conversion in the number likes and comments gathered.

All-time posts, views, and visitors	
Posts	457
Views	213,088
Visitors	93,225
<b>Best Views Ever</b> February 16, 2017	

**Figure 5.** All-time post, view, and visitor' count on the website.

Since inception, the website has gathered 93,225 visitors with a page view of 213,088 and 457 posts. These views are distributed over the past six years, demonstrating an actively visited website through the period stated as shown in Figure 5.



**Figure 6.** Visitors on the Africa RISING website in 2018.

To further analyze the data, we sought to find out the distribution of visitors to the website over the past 15 months (Fig. 6). The analysis showed that the month of October, which is ongoing as of the writing of this report, shows a promising rise to about 1,985 visitors. Of these visitors, about four can be quantified to have converted by the number of likes registered.

To further analyze views across the years and months, Figure 7 provides a detailed breakdown of the data. The darkest spots are those that gathered the most views.

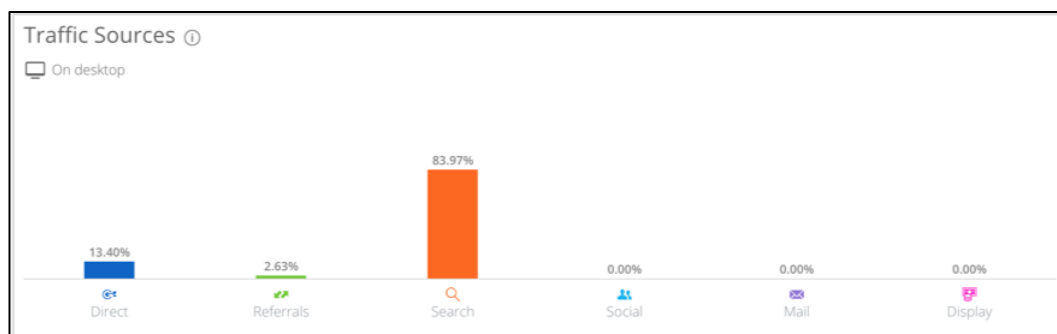


**Figure 7.** Distribution of number of views per month between 2012 and 2018.

As discussed, the year 2015 shows a consistent amount of viewership across most of the months with a high of 46,000 views in the month of July 2015. It is worth noting that the month of October 2018 is the best performing month in the year 2018 so far, with about 37,000 views.

### Traffic source distribution

Web traffic can be categorized based on their sources. These are the platforms or channels that visitors use to get to your website. These include Referrals, Direct search, and Organic searches.









**Figure 8.** Website's Traffic source distribution.

The web traffic categorization as displayed in Figure 8 shows Search as the highest source of traffic with 83.97%. Traffic from Search is when a visitor or user accesses a website by typing words or phrases into a web browser that then leads them to the website. For example, typing Africa RISING West Africa project into a browser would be considered as a search. This is then followed by Direct Traffic at 13.40%, this is traffic gathered when a user types a web URL into a browser thus directly accessing the website, this is common to return users of the website. In the third place is Referrals traffic, this happens when other websites have backlinks to the Africa RISING website on them; this stands at 2.63%.

Other common sources of traffic to websites, which did not gather enough content to display on the diagram above are: Emails, Newsletters, and Social Media. Therefore, it is advisable to enforce linkages between the different organizations and placement of links on articles and publications that tie to the Africa RISING website.




### Country distribution over different periods

The following diagrams provide an overview of the traffic distribution per country on different periods.

Country	Views
 Ghana	21
 United States	15
 Tanzania	11
 European Union	8
 Nigeria	5
 Malawi	3
 Kenya	2
 Germany	2
 South Africa	2
 India	1

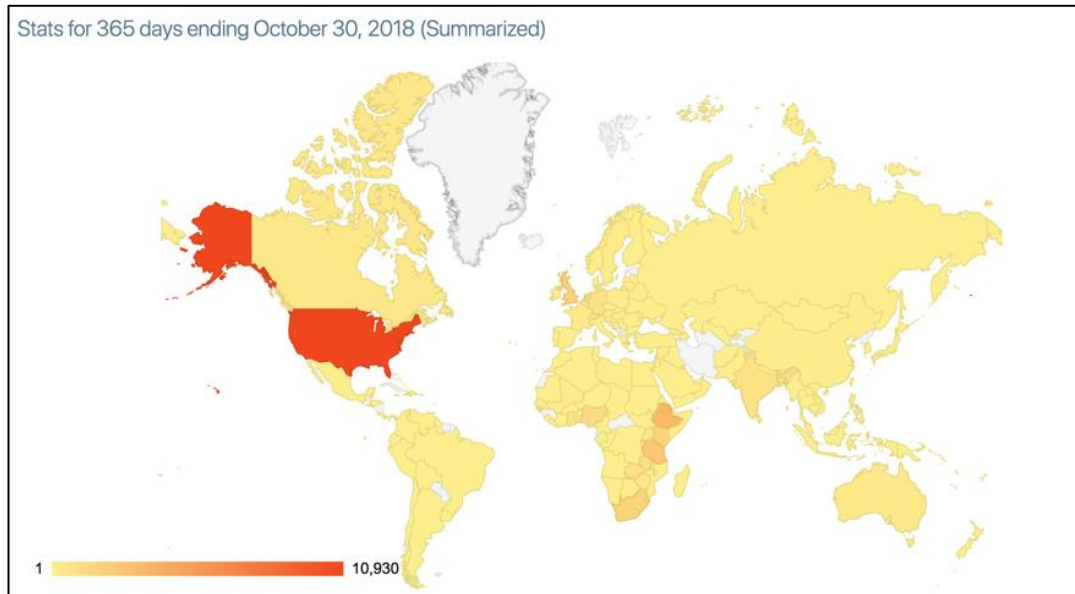
**Figure 9.** Views per country distribution on 30 October 2018.

Figure 9 provides an overview of the access distribution to the website on a given day—30 October 2018. As of the time of analysis, the top country was Ghana with 21 views, closely followed by United States and Tanzania. This analysis is then aggregated to an annual distribution as discussed in Figure 10.

Country	Views
 United States	10,930
 Ethiopia	3,407
 Tanzania	2,503
 United Kingdom	1,792
 South Africa	1,756
 Kenya	1,646
 Netherlands	1,209
 Nigeria	1,179
 Zambia	913
 European Union	866
 India	841
 Germany	817
 Ghana	788
 Malawi	501

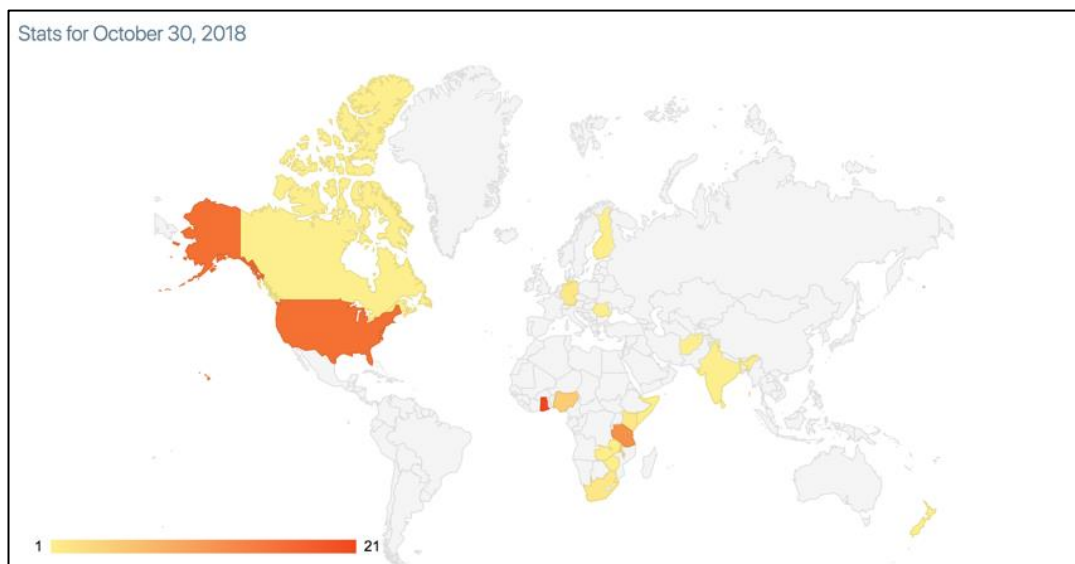
**Figure 10.** Views distribution per country between October 2017 and 2018.

Figure 10 provides an annual breakdown of views per country, between October 2017 and October 2018, listed in descending order of views. Top of the list is United States at 10,930 views which is the further followed by Ethiopia at 3,407 views.



**Figure 11.** Distribution of the 1-year breakdown of the views across the world.

Figure 11 provides a geographical distribution of the access to the website as listed in Figure 10. The sections with darker shades of orange indicate sections with website activity across the globe.



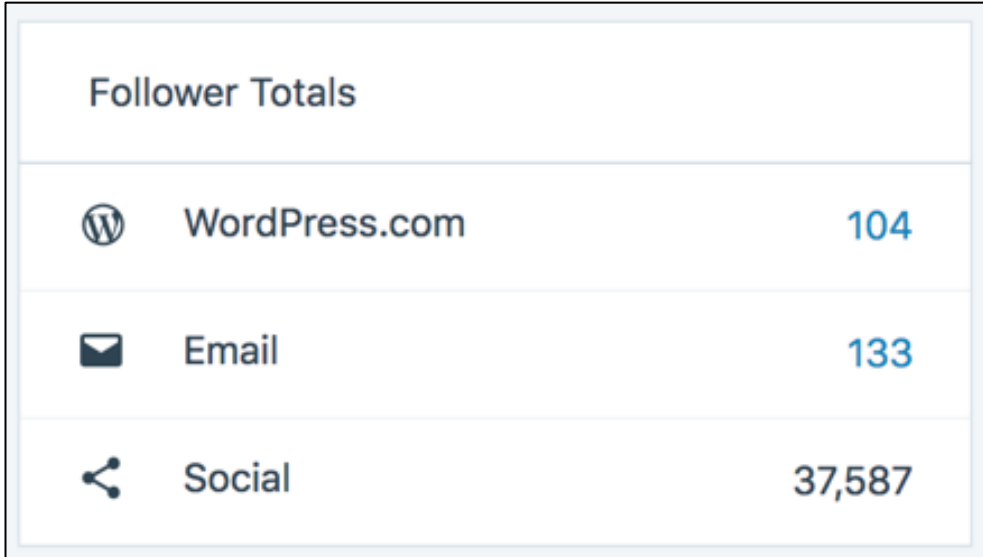
**Figure 12.** Distribution of traffic across countries on 30 October 2018.






## Social media

As discussed in the traffic distribution section, social media contributes a huge percentage towards traffic to any website. This is done through both configurations and sharing of information through different social media channels. From our analysis, despite having Facebook, Twitter, and Flickr configurations on the website, there is little analyzable traffic from these applications, both of which have a following of 37,587 people.

Since Africa RISING channels content through IITA\_CGIAR, ILRI, and occasionally IFPRI social media accounts, there is need to ensure that there exists a linkage between the website and the social media accounts. These linkages could be through sharing of website-related links on the social media platforms; these links would be articles or particular pages on the website. This will hugely contribute to backlink sources to the site.



Follower Totals		
	WordPress.com	104
	Email	133
	Social	37,587

**Figure 13.** Social media following on Africa RISING.

An improved strategy of sharing content between these applications will greatly increase the number of viewers on the website. Introduction of sharing posts on LinkedIn would be great since from our previous research, visitors drawn from LinkedIn may stay in a website for more than two minutes since they are often looking for professional materials.

As social sharing is improved, there will be more need for sharing of high-quality images and videos over these channels since most consumers are interested in graphical content as opposed to lots of text. Africa RISING has a huge repository of images on Flickr but to properly use these images to drive traffic to the website, they need to be shared on other social media channels frequently accessed by people.

## Website organization

Website structure and organization refers to how the website is setup. This is how the individual pages are linked to one another. This information is important to web crawlers when indexing websites. The structure of a website also greatly determines the paths that visitors take to find information.

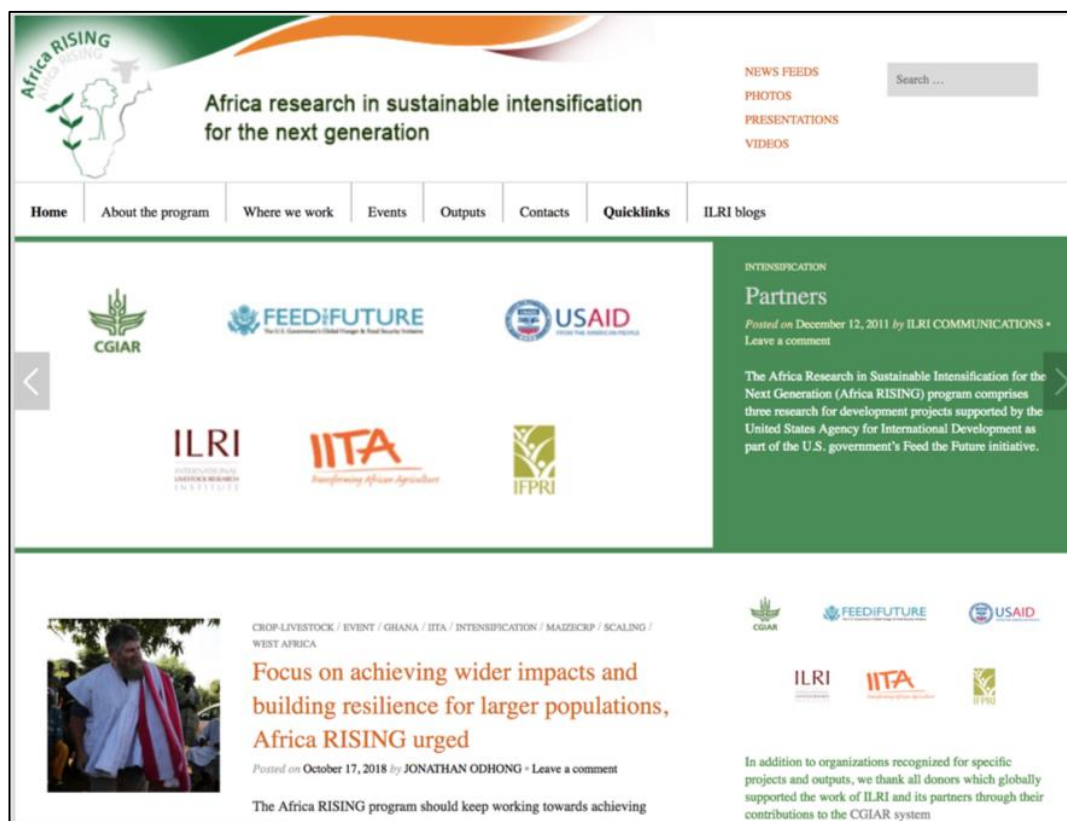
## Front page



**Figure 14.** Africa RISING website menu distribution.

Figure 14 provides an overview of the page links on the website menu section. There is need for optimization of content listed on the menu page. This is because, once different devices access the website, the sub-menu item at the top (containing: News Feeds, Photos, Presentations, and Videos) and the search bar disappear.

Since most readers read from left to right and top to bottom, it is imperative to use the same convention to put content on the website. Therefore, from building the website branding through logos and content on the website, the latter should be observed.



**Figure 15.** Africa RISING's website front page.

The front page in this section refers to the landing page of the Africa RISING website. Having a detailed but well-organized homepage is key for any organization. This is because first time visitors might choose to stay or leave a website based on the following issues:

- Ease of finding the desired information.
- General aesthetics of the website.
- Load and response time of the website.
- Responsiveness and adaptability in different devices and web browsers.

It is imperative that the homepage design use high resolution images, brilliant colors, and graphics that would attract a higher retention time. According to Nielsen and Norman Group, the following are the ten key considerations for any productive homepage:

1. Include a one-sentence tagline.
2. Write a window title with good visibility in search engines and bookmark lists.
3. Group all corporate information in one distinct area.
4. Emphasize the site's top high-priority tasks.
5. Include a search input box.
6. Show examples of real site content.
7. Don't just describe what lies beneath the homepage. Specifics beat abstractions, and you have good stuff. Show some of your best or most recent content.
8. Begin link names with the most important keyword.
9. Offer easy access to recent homepage features.
10. Don't over-format critical content, such as navigation areas.
11. Use meaningful graphics.

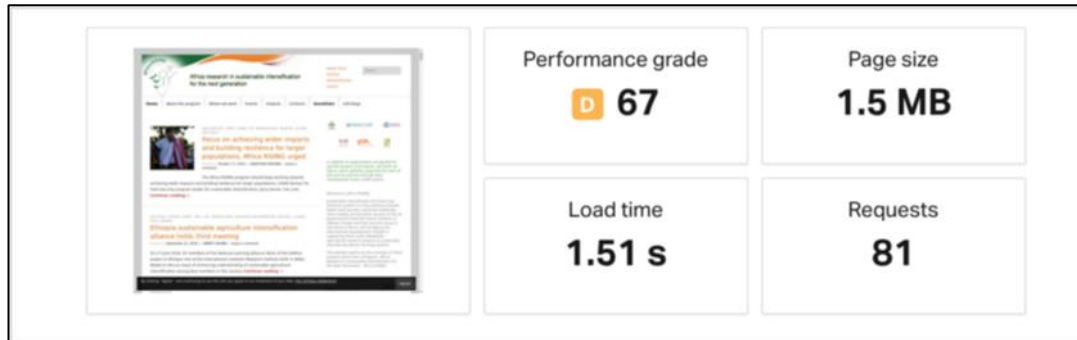
Title	Views
Home page / Archives	12,211
Aims and objectives	2,513
Tanzanian farmers cash in on new tomato variety	2,109
About the program	1,034
Contacts	557
Ethiopian highlands	506
Expanding use of solar irrigation pumps in Ethiopia	464
East and Southern Africa	435
Quality cowpea seed production offers Zambian women farmers opportunities for quality lives	428
Characterizing farming and livestock production systems in Ethiopia: Assessing the potential for Africa RISING interventions	338
Role of soil bunds on soil and water conservation in southern Ethiopia	300
Tanzania farmers embrace vegetable farming to access more high-value markets and improve nutrition	276
Happy New Year 2010 Ethiopia!	261

**Figure 16.** Breakdown of page views between October 2017 and 2018.

Figure 16 shows a breakdown of page views of the past year. A notable concern in the distribution of information in the pages mean that Africa RISING losses so many views from the first page (homepage) to other subsequent pages. For example, within the last year we have 12,211 views to the homepage but only 2,513 of those views converted to check the second highest page on Aim and Objectives. This is then later followed by 1,034 views to the About the Program page. This emphasizes the need to align content properly and ensure as many views are retained on the website and the distribution is consistent through the pages.

## Technical analysis

This chapter of the report provides a detailed technical analysis of the performance of the website.



**Figure 17.** Website's performance breakdown.

Figure 17 shows the Africa RISING website to be of size 1.5 MB, with a loading time of 1.5 s with 81 requests being tested. This gives the website an overall performance of 67%.

Response codes	
RESPONSE CODE	RESPONSES
200 OK	77
302 Found	1
400 Bad Request	1
404 Not Found	2

**Figure 18.** Response status from the website's URL requests.

Out of the 81 requests tested, 77 calls were okay, to mean they returned the desired information with a confirmatory notification of status 200; one of the requests returned a status 302, to mean that the resource being searched for had been temporarily moved. One request returned an error message 400 meaning the call was wrongly placed on the respective resource while two requests returned error 404 meaning the resources being sought were not found in the servers.






From the above error response status shared, the four requests of 302, 400, and 404 contributed to a relatively longer load time. This might be negligible since the website responded after 1.51 seconds. However, an increase in these errors in the website usually overworks the server thus delaying website response.

**Table 2.** Comparative websites' load time ranking.

Organization	Website url	Load time(s)
SAIRLA	<a href="https://sairla.nri.org">https://sairla.nri.org</a>	1.34
Africa RISING	<a href="https://africa-RISING.net/">https://africa-RISING.net/</a>	1.51
CSISA	<a href="https://csisa.org">https://csisa.org</a>	1.62
K-State	<a href="http://www.k-state.edu/siil/">http://www.k-state.edu/siil/</a>	2.3
ACAI Project	<a href="http://acai-project.org">http://acai-project.org</a>	2.35
ILRI	<a href="https://www.ilri.org">https://www.ilri.org</a>	3.33
Soybean	<a href="http://soybeaninnovationlab.illinois.edu">http://soybeaninnovationlab.illinois.edu</a>	3.39
IITA	<a href="http://www.iita.org">http://www.iita.org</a>	3.65
Cassava Weed Project	<a href="http://www.cassavaweed.org">http://www.cassavaweed.org</a>	10.97

Table 2 provides a comparative analysis of the load times of the websites shared for cross-checking. The website that loaded the fastest was SAIRLA with a speed of 1.34 seconds while Cassava Weed Project took 10.97 seconds. Africa RISING performed fairly well, coming up at position 2 with a load time of 1.51 seconds.

### Content size types







CONTENT TYPE	PERCENT	SIZE
 Script	42.12%	630.9 KB
 Image	36.52%	547.0 KB
 HTML	15.09%	226.0 KB
{ } CSS	4.68%	70.1 KB
 Font	1.55%	23.2 KB
 Redirect	0.05%	690.0 B
Total	100.00%	1.5 MB

**Figure 19.** Content type distribution on Africa RISING website.

Figure 19 gives an overview of the percentages of content on the website. This breakdown is made based on the type of resources being retrieved from the server. Constituting a total of 1.5 MB the requests comprised developer scripts, images, and redirects.

Despite the fact that images make load time considerably longer, the Africa RISING website appeared to have very few images, all which amounted to about 36.52% of the requests made with a size of 547.0 KB of data. It would be necessary trade-off to use images to make the website more appealing and reduce on the bounce rate.

Optimizations of the scripts is well done on the website since all the scripts pulled from the website are below 1 MB of data. This means the website renders much faster when all other factors are constant.

CONTENT TYPE	PERCENT	REQUESTS
 Script	36.71%	29
 Image	34.18%	27
 CSS	20.25%	16
 HTML	6.33%	5
 Redirect	1.27%	1
 Font	1.27%	1
Total	100.00%	79

**Figure 20.** Content distribution by content type requests.

Figure 20 categorizes requests by content type, these are all items the website fetches for rendering at a given time. The site made a total of 79 content request calls. The breakdown from the image shows a fairly optimized website with a faster load time. However, there needs to be a key balance between the value and relevance of content shared (especially images and videos) versus the move to fully optimize a website. For example, a website might be performing really well since its analysis shows very few requests to the resource servers, while readers who seek content through the website barely find much to consume.

### Requests by domain

CONTENT TYPE	PERCENT	REQUESTS
www.facebook.com	24.69%	20
s2.wp.com	14.81%	12
platform.twitter.com	8.64%	7
agintensificationafrica.files.wordp...	7.41%	6
s0.wp.com	4.94%	4
syndication.twitter.com	4.94%	4
other	34.57%	28
Total	100.00%	81

**Figure 21.** Content distribution by domain requests.

Requests are calls made to a server in search for a particular resource. Since the website has integrations with Facebook and Twitter amongst other platforms, we sought to analyze the breakdown of content per the requests shared. Of these requests, Facebook made the most calls which contributed to 24.69% of the requests made to other domains from the website.

## Content size by domain

CONTENT TYPE	PERCENT	SIZE
www.facebook.com	34.75%	503.7 KB
agintensificationafrica.files.wordp...	26.70%	386.9 KB
s2.wp.com	11.41%	165.4 KB
i1.wp.com	6.34%	91.8 KB
platform.twitter.com	5.26%	76.2 KB
africa-rising.net	5.04%	73.1 KB
other	10.49%	152.1 KB
Total	100.00%	1.4 MB

**Figure 22.** Content distribution by domain size.

From Figure 22, we see each of the request calls returned data of different sizes. Facebook topped at 503.7 KB of data received. This means that the information from Facebook that is displayed on the website might be providing more data on a particular request than the website domain itself produces. Therefore, there is need to explore whether there are any approaches of optimization to ensure external integration is much smaller and non-blocking so that the websites load faster.

### Comparative website sizes

We sought to review the sizes of websites shared by the communication team for benchmarking. These sizes encompass all the items hosted in a website and rendered on request. As shown in Table 3, ILRI ranked highest as the website with the least amount of content, or the most optimized website while the ACAI Project ranked highest in size. Africa RISING was in the second place with 1.5 MB of size. Considering proper content optimization measures are observed, the website ranks fairly well in this front.

**Table 3.** Comparative ranking of selected websites by website size.

Organization	Website url	Website size (mb)
ILRI	<a href="https://www.ilri.org">https://www.ilri.org</a>	0.641
Africa RISING	<a href="https://africa-RISING.net/">https://africa-RISING.net/</a>	1.5
SAIRLA	<a href="https://sairla.nri.org">https://sairla.nri.org</a>	1.5
K-State	<a href="http://www.k-state.edu/siil/">http://www.k-state.edu/siil/</a>	1.7
Cassava Weed Project	<a href="http://www.cassavaweed.org">http://www.cassavaweed.org</a>	2
CSISA	<a href="https://csisa.org">https://csisa.org</a>	4.6
IITA	<a href="http://www.iita.org">http://www.iita.org</a>	5.9
Soybean Innovation Lab	<a href="http://soybeaninnovationlab.illinois.edu">http://soybeaninnovationlab.illinois.edu</a>	6.3
ACAI Project	<a href="http://acai-project.org">http://acai-project.org</a>	17.8

## User experience

User experience is the ability of a website to provide pleasure or satisfaction by increasing usability and usefulness to a user when consuming the product. Good user experience in software increases user loyalty.

Google provides an elaborate tool that helps web developers to check their user experience on both mobile and desktops. This is through algorithms they have developed over years of experience in analyzing web systems. From this analysis, Table 4 provides a ranking of the websites shared for analysis.

**Table 4.** Comparative ranking by user experience.

Org.	Website url	Website grade	Website size (mb)	Ui score (mobile)	Ui score (desktop)
K-State	<a href="http://www.k-state.edu/siil/">http://www.k-state.edu/siil/</a>	C73	1.7	87	72
IITA	<a href="http://www.iita.org">http://www.iita.org</a>	D70	5.9	–	65
Africa RISING	<a href="https://africa-rising.net/">https://africa-rising.net/</a>	D67	1.5	66	64
Cassava Weed Project	<a href="http://www.cassava-weed.org">http://www.cassava-weed.org</a>	C71	2	48	61
SAIRLA	<a href="https://sairla.nri.org">https://sairla.nri.org</a>	D68	1.5	46	47
ILRI	<a href="https://www.ilri.org">https://www.ilri.org</a>	C76	0.641	30	45
CSISA	<a href="https://csisa.org">https://csisa.org</a>	D67	4.6	54	25
Soybean	<a href="http://soybeaninnovationlab.illinois.edu">http://soybeaninnovationlab.illinois.edu</a>	C77	6.3	79	23
ACAI Project	<a href="http://acai-project.org">http://acai-project.org</a>	C79	17.8	57	0

The websites are ranked from the highest based on those that had the highest user experience and development optimization by the standards set by Google. In this category, none of the websites performed exceptionally well. Africa RISING came in at third place with 64% on Desktop and 66% on mobile views tested. Leading in this test was the SIIL Project with a score of 87% on mobile and 72% on Desktop views. Unfortunately, due to limited test information, some of partner websites could not be accurately tested for a score.

A key feature of user experience that we sought for in the analysis was how the website responds to requests from devices of different sizes and layouts. Tested against computer browsers, tablet browsers, and mobile phone browsers, the responsiveness was inconsistent. The diagram below shows a disproportionally aligned website displays on mobile phones.

Despite the ability of the website to quickly return the requested resource, a huge factor in user experience enhancement, lack of proper visualization of the same content greatly frustrates the visitors to the website.



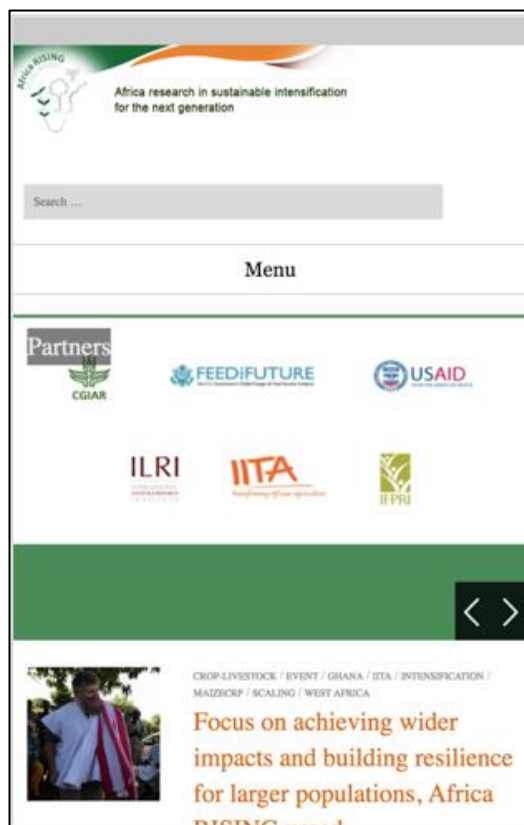


Figure 23. Africa RISING website on mobile view.

# Website optimization

## Search Engine Optimization (SEO)

SEO is a common acronym meaning Search Engine Optimization. This is largely known in the space of search engines whereby a site's metadata, descriptive information, can be used to rank, map, or direct traffic to the respective website. The Africa RISING website analysis on SEO performance showed the following top phrases:

- Africa RISING web Africa project (70.25%)
- Solar pump industry in Ethiopia (29.75%)

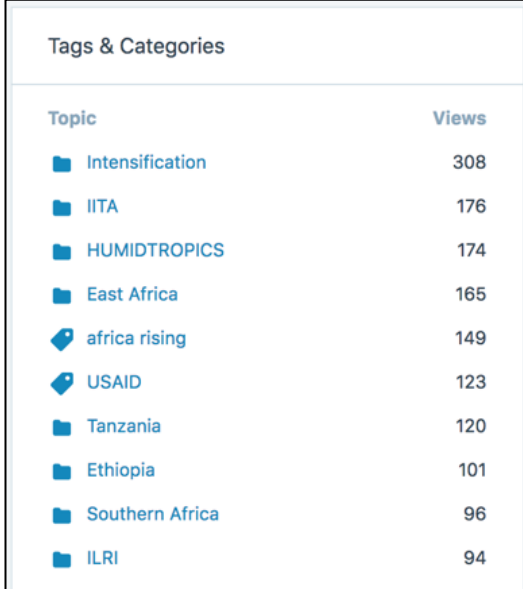
Other searches whose percentage could not be established included:

- Africa RISING Project
- Africa RISING Project Tanzania jobs
- Happy new year effect in Ethiopia

It is worth noting that due to the limited information available, an SEO rank could not be established. Therefore, there is need to increase the website metadata information and a strategic implementation of gathering backlinks from websites referring to the institutions; this will greatly improve the SEO score.

During web crawling, website tags and categories are used to help in both internal searches and external searches. Therefore, tags put in a post would determine how easily it is listed on searches based on the indexing tools available.

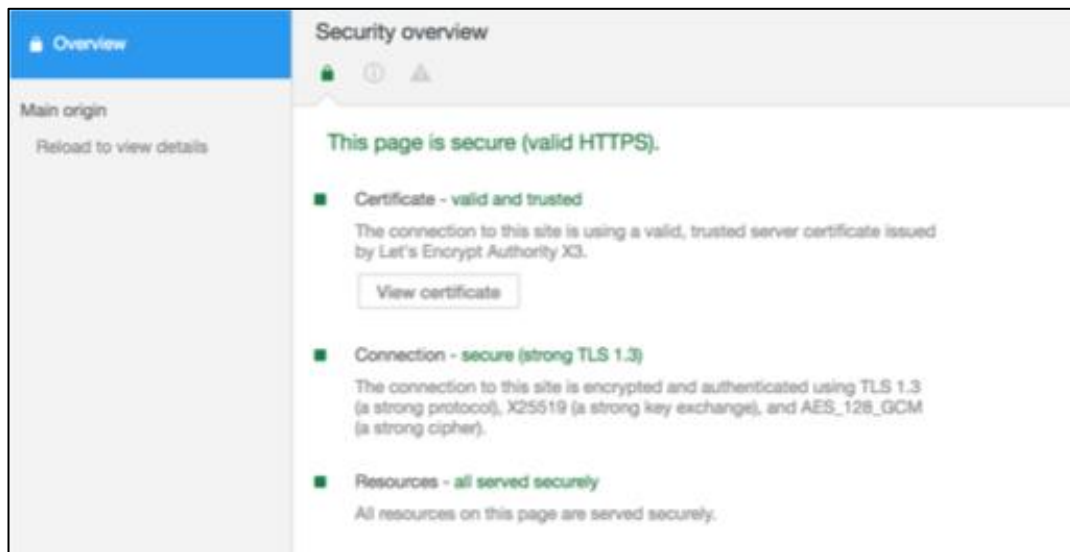
Figure 24 provides an overview of the tags and categories of the website posts.



Topic	Views
Intensification	308
IITA	176
HUMIDTROPICS	174
East Africa	165
africa rising	149
USAID	123
Tanzania	120
Ethiopia	101
Southern Africa	96
ILRI	94

**Figure 24.** Top content tags and categories on the website.

## Web security



**Figure 25.** Web security certificate status.

Figure 25 shows the security status of the website. With the ongoing threats of cyber-attacks, it is paramount to ensure user resources as well as the organization resources are secured. As demonstrated in the image, there exists a secured and encrypted data connection point between the rendering browser and the hosting server. This is a good measure to reduce threats of attack.

# Recommendations

## Technical recommendations

Key technical issues addressed in this research entailed checking technical factors that inhibit the full optimization of the website. These factors include: optimization of both images and developer files, site load time based on the size of items to render on the website, response time based on requests, and website responsiveness on different browsers and devices.

## Optimization and load speed

To improve the design and development of the site, the following recommendations are proposed:

- Reduce query string issues on the URL browsers.
- Use of Cookies & Cache, since the data is static.
- Make fewer HTTP requests.
- Use a Content Delivery Network (CDN).
- Add Expires headers.
- Avoid HTTP 404 errors.
- Avoid URL redirects.
- Reduce DNS lookups.
- Put CSS scripts at top of page renders.
- Put JavaScript scripts at bottom of page renders.
- Reduce the number of DOM elements.
- Minify JavaScript and CSS.

## User Experience (UX)

UX metrics is a common tool amongst web designers and software developers. These tools analyze the user experience of visitors on the websites and rate them based on key parameters such as load time, responsiveness, number of requests, and size of pages.

A quick scan of the Africa RISING site rated the UX of the site on mobile at 66% and that of the desktop view at 64%. This means that the general feel of the websites' user experience is low and a higher bounce rate, the number of visitors who navigate away from the website after only viewing a single page, is likely to be observed.

The following recommendations have been made for improvement:

- Eliminate render-blocking JavaScript and CSS.
- Optimization of images, CSS, and JavaScript codes.
- Reduce server response time.
- Prioritize visible content.
- Leverage browser caching since the site serves static content.
- Optimization by reducing the sizes of images on the site. A preferred size of below 200 KB is encouraged. Using image reduction tools can enable images of relatively high resolution to be attained with low file size.

## Newsletter recommendations

There has been a hardly any noticeable presence of newsletters sent out through the various communication teams within Africa RISING. When well presented, newsletters can form a huge percentage of traffic source, thus drawing more users into the system.

The following recommendations would greatly help the institution benefit from this feature:

- Integration of MailChimp or an equivalent mailing tool. MailChimp offers tons of services around email marketing with in-depth analysis on the conversations and bounce rates of sent emails. Using this channel, Africa RISING can use A | B testing models to check content that has more readership within the online community.
- Using MailChimp allows the communication team to sign subscribers to specific lists as opposed to the general subscription. This considered, it would be more appealing for Watermelon subscribers to get customized content on their crops than generic content from other crops, e.g., Cassava.
- Improvement in the design and content of the newsletters. With tons of data collected from research around IITA, it is possible to draw eye catching infographics that can be shared around the subscriber communities.
- Creation of semi-personalized information sent to the email recipients. For example, emails starting with: Dear “your name” have been observed to have a higher reach than generic references.

Once these considerations are made, it is advisable to continually document and monitor the reach generated from the various campaigns sent.

## Website recommendations

The consultant recommends the following changes to the institution’s homepage website:

- Use of aesthetically appealing colors that blend well with supporting images and the brand colors of the institution.
- Use of high resolution, communication-driven images, most of such images are shared on Flickr.
- Addition of backlinks to related organizations to the website.
- Development of an extensive search functionality on the website.
- Enforcing an even horizontal and vertical content structure development.
- Change of the top menu structures of the organization and reinforcing the need to place research and documentation at a higher level.
- Incentives, e.g., visibility and celebratory mentions for the researchers who post content regularly on the website.
- Responsiveness to allow readers to access this information on their mobile devices.
- Provide a clear sitemap for navigation on the website.
- Addition of google analytics on the websites to further track the paths visitors take on the website and tailor experiences for users.

## Conclusion

Addressing the challenges highlighted in this report requires an insightful connection between the communication and technical team of Africa RISING. This is because despite the relatively functional website, lack of concrete content and content organization turns away more visitors who seek research materials on the website. Therefore, it is important to consider the general, technical, and design recommendations provided herein and document all the standards of designs or technical engagements between the project website designers and the head of the communication team at Africa RISING.

# Glossary

<b>Bounce rate</b>	The percentage of visitors to a particular website who navigate away from the site after viewing only one page.
<b>Organic search</b>	Organic search results are the Web page listings that most closely match the user's search query based on relevance
<b>Page views</b>	An instance of an Internet user visiting a particular page on a website.
<b>Page visits</b>	Any time a visitor reaches your site from somewhere outside of your website domain.
<b>Conversions</b>	The conversion rate is the percentage of users who take a desired action.
<b>Code</b>	A computer programming software implementation.
<b>Backlinks</b>	An incoming hyperlink from one web page to another website.
<b>Requests</b>	A message sent between <u>objects</u> in Computing.
<b>Web Crawler</b>	An Internet bot that systematically browses the World Wide Web for web indexing