



# Assessment Report

*Assessment of the Relevance, Quality and Utility of Agricultural Science and Technology Indicators (ASTI) Policy Data and Analyses for Phase II (2012-2014)*

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## Executive Summary

The ASTI initiative<sup>1</sup> is led by the International Food Policy Research Institute (IFPRI) in Washington DC. Its main role is to compile, analyse, and disseminate data on institutional developments, investments, and capacity in agricultural research and development (R&D) in low- and middle-income countries. The ASTI initiative is expected to assist R&D managers and policymakers in improving policy formulation and decision-making at country, regional, and international levels by providing accurate and timely information.

The aim of this assessment is to understand the relevance, quality and utility of the policy data and analyses that The Agricultural Science and Technology Indicators (ASTI) initiative generated from 2012 through July 2014 (BMGF Phase II). The principal goal was to review the role ASTI data has played in influencing policy decisions as well as impact in the context of its broader usage. In addition, the assessment sought to provide some suggestions on how ASTI can enhance and refine its impact moving forwards and be able to monitor and review this based on closer outreach with national policy makers in respective countries.

In the period of 2008 through 2011 the ASTI initiative focused on updating and expanding its primary datasets on public agricultural R&D for Sub-Saharan Africa and South Asia. Since 2012 ASTI embarked on a rigorous and ambitious expansion to scale up the generation and dissemination of data and analysis through collaboration with regional and national partners. In June, 2014 the Bill & Melinda Gates Foundation commissioned Agricultural Learning and Impacts Network (ALINe) at Firetail to undertake an independent and technical assessment of the quality, relevance and subsequent utility of the data and analytical documents generated between 2012 to the end of July 2014 through its website and through assessing the perceptive data from a series of key informants drawn from a wider stakeholder community.

The assessment was designed to answer two types of questions:

1. **Retrospective:** Has ASTI achieved its intended objectives and goals? Who uses ASTI data?
2. **Prospective:** What policy impact pathway(s) can be outlined for ASTI data and analyses? How can a next phase be modified to increase impact?

The report drew on desk research of ASTI materials, in-country data usage of ASTI publications and referenced materials from the website, and a survey of 34 ASTI information users across a wide range (international/donor, national and local) of stakeholders. The desk review was followed by an in-country partner's assessment on quality and relevance of ASTI products between 2012-2014. Phone interviews or an online survey was targeted to key institutional representatives and key informants identified as the core beneficiaries and partners of ASTI/IFPRI.

The key objectives under the second Phase of funding were to; (i) Establish an institutional data system at regular intervals, (ii) Intensify the dissemination of data and outputs and (iii) Expand analysis beyond descriptions of national and regional R&D capacity and investment trends.

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<sup>1</sup> More detail on the ASTI initiative is in Appendix 1

## *Has ASTI achieved its intended objectives and goals? Who uses the ASTI data?*

- 1. The analysis undertaken in this study identifies clearly that the ASTI initiative has made tremendous and positive progress in meeting all its objectives in terms of providing a very valued and high quality service.**

Using Google Analytics, evidence suggests that 206 countries accessed the ASTI website between 2011 to end of April 2014. Of the 40 country report factsheets, 33 were uploaded successfully<sup>2</sup> and are being utilized. Continued work is underway to upload data sets of South Asian countries (Bangladesh, India, Nepal, Pakistan and Sri Lanka).

Accessing ASTI data through the website is a very effective channel. Those countries accessing the website most often were from North America, Asia and Australia followed by countries in East Africa. There were fewer visits from other countries in Sub-Saharan Africa. This may be due to a lower level of access to reliable Internet as suggested by some key informants who were interviewed. Between 2012 and 2014 there has been an overall increase in web traffic coupled with an increasing number of sessions, hits per page (more apparent on the English website, lower numbers on the French site) and more average time per visit providing evidence that demand for ASTI data and analysis is clearly increasing. Using Google Analytics to understand where visitors are geographically, institutionally and benchmarking this as the initiative progresses will be interesting and valuable in terms of identifying any evolution in the users of the data and testing whether the content is meeting their needs over time.

Conversely, there have been a modest number of new publications (5) in 2013 captured by this study (and a further number identified after this study was completed by September 2014). However, the ASTI data and publications have been used and referenced in important policy fora such as the G8, G20 and World Bank.

Internationally ASTI data was used in external publications, on-line reports, academic journals focused on examining national capacity in R&D, analyzing food systems and indicators for agricultural growth.

Used nationally, ASTI data has been used in policy analysis (India), public sector strategic plans (Mozambique) and explicitly, in G8 and G20 fora in 2012. A widely held belief is that ASTI provides unbiased robust data, quality analyses, indexed publications and syntheses in an effective way.

Proportionately from the ASTI stakeholders surveyed, 44% were international, 32% were national and 24% regional stakeholders. All 100% accessed ASTI resources, databases (data tool, CGIAR centers data, CGIAR DIIVA project), country reports, data and other information for regional and global publications. The majority (90%) accessed this data through the website, direct access from ASTI or through partners, citations, workshops, conferences and seminars. A large majority (97%) are very pleased or pleased with the quality of the content and there was an overwhelming and wide appreciation of the value of the material being made available. **Of the suggestions captured from some of these stakeholders, more demand was articulated for national level indicators, university and private sector complementary statistics, information provision in hard copy form or CDs, and information and analyses in other languages to encourage wider accessibility and promotion of ASTI's work.**

- 2. The recently uploaded 2014 country factsheets provide a strategic benchmark of web analytics against which to measure whether there is increasing demand for ASTI publications (and data sets). Understanding the acquisition of information and the frequency of access will**

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<sup>2</sup> A further 30 country report factsheets were uploaded on August 14<sup>th</sup> after this report was finalized. This suggests that the challenges faced were likely to be routine administrative delays rather than significant gaps in the current implementation and roll out of this phase of the program.

**help guide the evolution (or adaptation) of content on the site (future ASTI products) that more effectively meet the needs of the user base.**

The majority (91%) of key informants interviewed perceived the messages within the analyses to be good (50%) or excellent (41%) and 9% moderate in quality.

Of the ASTI resources accessed, 54% of respondents used ASTI data as a major source for their policy documents. A proportion of respondents did not feel this category of products was relevant and instead used the data in policy negotiations, dialogues, informing their superiors in policy decision-making positions, informing multi-stakeholder partners, providing information for colleagues and for internal briefs, documents, reports and newsletters.

Of those individuals who did prepare policy documents 89% of them, disseminated them all, whilst only 11% did not and used instead other mechanisms such as website dissemination, physical dissemination, email and other methods. The audiences to which these products were disseminated were wide including NARS, Agricultural Ministries, Research Institutes, Private Sector, Universities, the FARA network, partners, clients and donors.

- 3. The findings further indicate that ASTI data is rich in quality and content – both for research and policy dialogue. Users were also keen to continue to have access and increase their access to ASTI materials and analyses and the referenced uses of it were diverse and wide.**

The stakeholders interviewed were already familiar with ASTI, and as such may not be ideally representative of the breadth of individuals and institutions necessary for positive change associated with policy reform in national, regional and continental processes in sub Saharan Africa and South Asia.

- 4. Ideally a systematic approach to understanding how broad the user base is would be recommended as part of the vision of the ASTI initiative mid to long term.**

*What policy impact pathway(s) can be outlined for ASTI data and analyses?  
How can a next phase be modified to increase impact?*

- 1. The assessment indicated that in future, ASTI has to build on establishing its authority and presence with emphasis on better quality relationships at the national level.** There are clear opportunities to systematically continue to raise awareness of the initiative through national forums, the media, and building capacity to use agricultural R&D indicators for research, advocacy, or policymaking. The engagement of partners as well as their unbiased access to high quality analysis and publications is only viable with committed national partners and is a key component of establishing a national and regional presence. Is ASTI fully satisfied that it knows how to engage and work with these partners equitably alongside the quality of its research output?
- 2. Some better and proactive engagement of the target audiences is necessary to allow audiences to appreciate (i) when new data will be available, (ii) allow questions or clarifications to be raised promptly and (iii) for specific deployment and communications plans to be tailored to national policy focal points. Perhaps some proactive communications publicizing regular opportunities to use new data and sharing examples of how it has been used to create impact would be helpful.** Many of the stakeholders interviewed were not able to provide accurate estimates for their access of the data or the frequency of that access and could not necessarily provide the average website usage statistics. Most were monthly to every six months with the largest single group accessing the information every 2-3 months. In terms of the experience of navigation, 87% ranked their experience through navigating the website good to very good and a minority (6%) of respondents ranked it mediocre.

5. The suggestions offered included some improvement and guidance on the layout within the web page for better clarity and simplicity, a short cut to the ASTI data tool, more information on the demand of the data rather than just supply and a clearly articulated desire for greater interaction/dialogue through the website. A number suggested customized data sets, improved website interrogation (search) facility, more private sector data and an increasing speed in downloading from the current platform (although acknowledgement was made that this could be due to local bandwidth constraints).
3. A very important observation is that ASTI is highly competent in the provision of data through its website but could increase its impact with a clear and measurable outreach strategy. The outreach strategy should be constructed based on participatory processes with users and an impartial understanding of their needs.
6. ASTI outputs should have a clear set of impact pathways (and inherent assumptions) for raising the awareness, dissemination and use of ASTI outputs and the best partners individual and institutional to work on this with.
7. Connecting closely with the importance of research as a pipeline of improved varietal material and human capacity development as a critical and necessary component will be helpful. The recent 2014 Malabo Declaration by African Union Heads of State referenced this relationship in seeking to improve Agricultural output and its relationship with improved Nutrition on the continent through the next 10 years of the implementation of the CAADP framework and its associated financial commitments.
8. Finally, the issue of sustainability of the ASTI initiative, whether or not governments (or indeed others) should or would financially support ASTI data and publications to allow them access to accurate and meaningful statistics will need to be assessed separately. There are 'willingness to pay' methodologies that could be pursued in understanding this as a long-term proposition.

It is important for ASTI to combine the high quality information provision, and the investment in the quality relationships required to sustain and create the local ownership to guarantee ASTI a place at the global public goods table well into the long term.

### *Major Recommendations*

- A. Improving the dissemination and reach to National and Regional Policy Agencies and ensuring their ability to interrogate and engage with the data more effectively.
- B. Illustrating how ASTI Data and Information is being used particularly at National and Regional Levels by different organizations and the pathways that lead to real impacts.
- C. Refining the way in which Data can be demand driven, interactive and expanding the scope of the analysis, and interpretation.

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<sup>3</sup> This table is missing 2014 publications including 30 country factsheets that were published after the study concluded on August 14, 2014.

- Chapter 5 of the IFPRI Global Food Policy Report <http://www.asti.cgiar.org/publications/africa-south-of-the-sahara>

- Chapter in gender Book <http://www.asti.cgiar.org/publications/enhancing-female-participation>

- 2 chapters in the E-Atlas <http://www.asti.cgiar.org/publications/africa-south-of-the-sahara>

## About IFPRI

The International Food Policy Research Institute (IFPRI) was established in 1975 to identify and analyze alternative national and international strategies and policies for meeting food needs of the developing world on a sustainable basis, with particular emphasis on low-income countries and on the poorer groups in those countries. While the research effort is geared to the precise objective of contributing to the reduction of hunger and malnutrition, the factors involved are many and wide-ranging, requiring analysis of underlying processes and extending beyond a narrowly defined food sector. The Institute's research program reflects worldwide collaboration with governments and private and public institutions interested in increasing food production and improving the equity of its distribution. Research results are disseminated to policymakers, opinion formers, administrators, policy analysts, researchers, and others concerned with national and international food and agricultural policy. IFPRI is also a member of the CGIAR Consortium.

## About ASTI

The Agricultural Science and Technology Indicators (ASTI) initiative compiles, analyzes, and publishes primary data on institutional developments, investments, and human resources in agricultural R&D in low- and middle-income countries. The ASTI initiative is managed by the International Food Policy Research Institute (IFPRI) and involves collaborative alliances with many national and regional R&D agencies, as well as international institutions. The initiative is widely recognized as the most authoritative source of information on the support for and structure of agricultural R&D worldwide.

ASTI has limited itself to measuring inputs into agricultural R&D, but is currently piloting the collection of output/performance indicators. ASTI groups 'performers' of agricultural R&D into two sector categories (public sector and private sector) and five institutional categories (government, higher education, non-profit, business, public enterprises). The level of data disaggregation also varies according to the indicators. The ASTI initiative, currently, compiles data from about 75 developing countries in Sub-Saharan Africa (SSA), South Asia (SA), Latin America and the Caribbean (LAC), as well as West Asia and North Africa (WANA) through institutional survey rounds, which capture primary data of hundreds of agencies involved in agricultural R&D. Time-series data are collected for three main indicators: research spending by cost category, research funding sources, and researcher staff by degree. Benchmark data is collected for other indicators such as researcher staff by gender, age, support staff, and research focus by commodity and theme.



## Glossary of MEL terms

Term	Definition
Evaluation	The process of determining the worth or significance of an activity, policy or program. An assessment, as systematic and objective as possible, of a planned, on-going, or completed intervention. It may be conducted by project stakeholders (self-evaluation or internal evaluation) or be conducted by an external evaluator (independent evaluation, intended to ensure greater objectivity).
Impacts	Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended. Impact may also be used as being analogous to 'goal'.
Impact evaluation	Assesses the changes that can be attributed to a particular intervention both intended and unintended. Impact evaluation is structured to answer the question "how would outcomes such as participants' well-being have changed if the intervention had not been undertaken?" and involves analysis of the counterfactual, which is a comparison between what actually happened and what would have happened in the absence of the intervention. Impact evaluations also seek to answer cause-and-effect questions and to identify changes in outcome that are directly attributable to a program.
Indicator	Quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor.
Intervention	An instrument for partner (donor and non-donor) support aimed to promote development.
Monitoring	A continuing function that uses systematic collection and analysis of data on specified indicators to provide management and the main stakeholders, of an on-going development intervention, with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds.
Objective	Intended impact/effect contributing to physical, financial, institutional, social, environmental, or other benefits to a society, community, or group of people via one or more interventions.
Outcome	The likely or achieved short-term and medium-term results of an intervention's outputs or simply put 'changes as a result of what has been done'
Outputs	The products, capital goods and services delivered by a development intervention to direct beneficiaries or simply 'what is done'
Stakeholders	Agencies, organisations, groups or individuals who have a direct or indirect interest in the development intervention or its evaluation.

## Acronyms and Abbreviations

<b>AgGDP</b>	Agricultural gross domestic product
<b>ALINe</b>	Agriculture Learning and Impacts Network
<b>ASTI</b>	Agricultural Science and Technology Indicators
<b>BMGF</b>	Bill & Melinda Gates Foundation
<b>CAADP</b>	Comprehensive Africa Agricultural Development Program
<b>CGIAR</b>	Consultative Group on International Agricultural Research
<b>FAO</b>	Food and Agricultural Organization of the United Nations
<b>IFAD</b>	International Fund for Agricultural Development
<b>IFPRI</b>	International Food Policy Research Institute
<b>IICA</b>	Inter-American Institute for Cooperation on Agriculture
<b>MEL</b>	Monitoring Evaluation and Learning
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>PPP</b>	Purchasing power parity
<b>R&amp;D</b>	Research and development
<b>SSA</b>	Sub-Saharan Africa
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>WFP</b>	United Nations World Food Programme
<b>WTO</b>	World Trade Organization
<b>ISNAR</b>	International Service for National Agricultural Research
<b>SPIA</b>	Standing Panel on Impact Assessment
<b>FAOSTAT</b>	Food and Agricultural Organization Statistics

## 1 Introduction

The Agricultural Science and Technology Indicators (ASTI) initiative<sup>4</sup> is led by the International Food Policy Research Institute (IFPRI) and compiles, analyses, and disseminates data on institutional developments, investments, and capacity in agricultural research and development (R&D) in low- and middle-income countries with the objectives of assisting R&D managers and policymakers in improved policy formulation and decision-making at country, regional, and international levels. The origin of ASTI traces back to 1981 when the former International Service for National Agricultural Research (ISNAR) initiated its "Indicator Series" project, which combined primary survey data with best available data from secondary sources for most countries in the world. In 2001, through funding from the CGIAR, the project became a joint venture by ISNAR and IFPRI and was renamed ASTI. In 2011, the BMGF Agricultural Policies initiative provided a \$3.8m grant to continue a second phase of funding to the ASTI initiative under IFPRI<sup>5</sup>. This fund was under the development of national policies and systems for improving smallholder farmers' access to improved agricultural input products and technologies and stable output market opportunities in Sub-Saharan Africa and South Asia.

During 2008–2011 (Phase I), the ASTI initiative focused on updating and expanding its primary datasets on public agricultural R&D for Sub-Saharan Africa and South Asia and making essential improvements to the initiative's communication and dissemination strategies. These achievements have enabled ASTI to embark on a process of transformation from a program of ad hoc data collection towards a sustainable system of more frequent data compilation and analysis. Completing this transformation, ASTI set the three additional objectives listed below to accomplish Phase II:

### 1. Establishing an institutionalized data collection system at regular intervals.

An institutionalized data collection system will facilitate more decentralized and frequent collection, synthesis, and analysis of data through a set of national and regional focal points, thereby promoting ownership of the datasets by national partners, stimulating further advocacy and analysis, and securing the continuity of data collection activities. This objective includes the development of a web-based decentralized database and monitoring survey system.

### 2. Intensifying the dissemination of data and outputs.

The steps including these aspects are laid out below:

- i. The main aspect under this heading is the development of a more user-friendly series of country factsheets and country webpages (the release date is September);
- ii. Upgrading the ASTI website to a platform that provides access to other relevant databases on agricultural and food S&T indicators; and
- iii. Closer integration of ASTI data into key regional processes such as the monitoring & evaluation (M&E) program of the Comprehensive Africa Agricultural Development Program (CAADP) Pillar IV.

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<sup>4</sup> More description on ASTI initiative is in Appendix 1.

<sup>5</sup> The Foundation's priority geographies are: Ghana, Nigeria, Burkina Faso, Mali, Ethiopia, Tanzania, Uganda, Bangladesh, and the Indian states of Bihar, Odisha and Uttar Pradesh.

### 3. Expanding analysis beyond the descriptive examination of national and regional agricultural R&D capacity and investment trends conducted to date.

The intensification of analysis is to be achieved by developing capacity within ASTI; sourcing a network of external analysts; and organizing a series of workshops, seminars, and conferences.

## 2 Evaluative Assessment

### 2.1 Purpose of the Assessment

In order to consider a potential transition of the ASTI Initiative to a further phase of funding support, in June 2014, BMGF commissioned Firetail, to undertake a technical assessment of the relevance, quality and utility of the policy data and analyses that ASTI has been generating within the phase II period of funding – 2012 through 2014.

### 2.2 Evaluation questions

The scope of work provided research, evidence and insights to two sets of questions:

1. **Retrospectively:** *Has ASTI achieved its intended objectives and goals? Who uses ASTI data?*

The main focus is the assessment of ASTI performance on the intended objectives and goals outlined in the Phase II proposal; including the extent to which ASTI analyses is being used by governments and other stakeholders as inputs into national policy dialogues and reform processes.

2. **Prospectively:** *What policy impact pathway(s) can be outlined for ASTI data and analyses? How can a next phase of funding support enhance and increase impact?*

The main focus here was to elucidate any policy impact pathway(s) that were found for ASTI data and analyses? In addition, questions were asked how a further phase of funding support could be structured in such a way for maximal impact?

## 3 Assessment Methodology

The findings and recommendations contained in this report were derived from three phases of activity:

1. Desk review: in-country data, ASTI publications and referenced materials assessment.
2. Analysis reporting and discussion with ASTI team on the web statistics.
3. Telephone interviews with ASTI stakeholders / partners<sup>6</sup>.

A more detailed assessment of design and methodological approach is summarized in Table 1 below:

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<sup>6</sup> Wherever possible telephone interviews were undertaken, but where stakeholders were unavailable for interview an equivalent online survey was offered as an alternative.

**Table 1: Summary of methodological approaches to each objective against the intended goals**

Objectives	Evaluation questions	Evaluation approach/tool	Contributions (Audience)
<p><b>Objective 1:</b> Establishing an institutionalized data collection system at regular intervals.</p>	<p>Did the activities or objectives achieve the overall goal intended?</p> <ul style="list-style-type: none"> <li>How frequently were collected data analysed and synthesized by the national and regional focal points?</li> </ul>	<ul style="list-style-type: none"> <li>Desktop review of existence of data, data access and number of partners involved<sup>7</sup> as well as who uses the ASTI data<sup>8</sup>.</li> <li>Assessment of web traffic to assess the popularity and accessibility of the data.</li> </ul>	<ul style="list-style-type: none"> <li>ASTI partners: Policy institutions (consumers of ASTI data and publications)</li> <li>ASTI team</li> <li>Individual researchers</li> </ul>
<p><b>Objective 2:</b> Intensifying the dissemination of data and outputs.</p>	<ul style="list-style-type: none"> <li>Was biennial series of the State of Agricultural R&amp;D in Sub-Saharan Africa established?</li> <li>What is the state and effectiveness of the web-based decentralized database system?</li> <li>Is there a monitoring system on the web-based decentralized database system?</li> <li>How many data set categories were disseminated within the project period of phase II 2012-2014?</li> <li>How many outputs (analysed and synthesized data) were disseminated within the project period?</li> <li>Was ASTI website platform upgraded to access other database?</li> <li>How many external databases are accessible and how effective is it?</li> </ul>	<ul style="list-style-type: none"> <li>Desktop review of existence of data, data access and number of partners involved<sup>9</sup>.</li> <li>Questionnaire survey of partners' engagement in dissemination of outputs.</li> <li>Assessment of web access to external data by other partners (FAO among others).</li> </ul>	<ul style="list-style-type: none"> <li>ASTI partners: Policy institutions (consumers of ASTI data and publications)</li> <li>ASTI team</li> <li>Individual researchers</li> </ul>
<p><b>Objective 3:</b> Expanding analysis beyond the descriptive examination of national and regional agricultural R&amp;D capacity and investment trends conducted to date.</p>	<ul style="list-style-type: none"> <li>How many datasets on agricultural R&amp;D capacity and investment trends were analysed and uploaded during Phase II?</li> </ul>	<ul style="list-style-type: none"> <li>Interviews with ASTI partners, interviews with ASTI Advisory Committee/team among others.</li> <li>Qualitative assessments of different global Key Informants through discussion with ASTI Steering Committee, internal and external staff.</li> </ul>	<ul style="list-style-type: none"> <li>ASTI partners, ASTI Advisory Committee/team among others</li> </ul>

<sup>7</sup> Survey of ASTI partners, interviews with ASTI Advisory Committee/team among others. Qualitative assessments will be compiled of different global Key Informants through discussion with ASTI Steering Committee, internal and external staff and these will be systematically presented.

<sup>8</sup> Evaluation points will be established for identifying key audiences and uses of ASTI data, including the extent to which ASTI analyses are actually being used by Governments and other stakeholders as inputs into national policy dialogues and reform processes.

<sup>9</sup> Ibid.

Prior to the stakeholders interview, a number of documents were reviewed. This included documentation related to ASTI data, publication, and publication references in conferences and by institutions as well as individual scientists across the globe. In total, over 50 documents were reviewed.

The desk review was followed by an in-country partner/stakeholder assessment of the quality and relevance of ASTI products – especially, within the period 2012 to 2014, with a view to improve the performance of ASTI in subsequent phases. One-on-one phone telephone interviews targeted key institutions, representatives and key informants provided by the ASTI team, among the core beneficiaries and partners of ASTI/IFPRI. Among these informants were partners, including international and national partners, and representatives from CGIAR centres including ILRI, CYMMYT, and CIAT among others.

### **3.1 Limitations of the methodological approaches adopted**

The primary outputs from ASTI are the country data sets and publications, which are now published on the website: <http://www.asti.cgiar.org/>. The desktop evaluation approach where only a portion of selected ASTI outputs and countries were assessed, only reviewed the value of ASTI within this period to a limited degree.

Due to the tight timeframe available for this work, the list of ASTI stakeholders/partners targeted for interview was kindly provided by the ASTI team. The list did not therefore represent a random or independent sample of ASTI stakeholders, and there was some potential for sampling bias. In particular, many of the national stakeholders interviewed were ASTI national ‘focal points’ as opposed to national level policy makers per se – the assessment of ASTI resource use by national level policy makers was therefore mainly indirect.

Given the short window available for interviews, stakeholders who were unavailable for a telephone interview were given the option of completing an online survey in order to help increase overall response rate. This led to a mixed method stakeholder assessment using telephone interviews (23 participants) and an equivalent online survey (11 participants). With a total sample size of 34 participants, the interview/survey results only provide a qualitative assessment of the ASTI resources based on the feedback of a selected sample of ASTI stakeholders / partners.

Noting that comprehensive documentation is required to conduct a more in-depth evaluation, the assessment was limited to reviewing the performance of ASTI against the three objectives outlined in the phase II proposal.

## 4 Findings

The main products of ASTI are:

- **Data and graphics:** ASTI data tool, CGIAR Centres Data, CGIAR DIIVA project.
- **Country data:** synthesized country outputs (e.g. factsheets, briefs, country notes); agencies and coverage information; country profile information (including links to other relevant data sources); as well as access to country information through the ASTI interactive data tool.
- **Publications:** including global, regional and general publications and more country specific publications, and focusing on various areas of agricultural R&D investment and capacity development.

With a long-term goal to significantly influence policy decisions globally, ASTI is poised to play a central role in empowering research communities at individual and institutional level.

By 2014, the information on the ASTI website is primarily provided in English and French. The English version of the website is most comprehensive. The French section mainly consists of publications and data of interest to francophone countries ([www.asti.cgiar.org/fr](http://www.asti.cgiar.org/fr)). For particular countries, reports are provided in the country's language (examples: Brazil reports<sup>10</sup> are in English/Spanish/Portuguese, Mozambique reports<sup>11</sup> are in English/Portuguese, and Sudanese reports<sup>12</sup> are in English/Arabic). The specific languages are not yet fully enforced. Apart from the English version, all other language versions of the website are under continuous update and construction.

Given that policy change is usually observable in the long term, it is difficult to measure the value of ASTI in phase II (2012-2014) since it implies identifying policy changes that the data may have influenced either directly or indirectly. However, a significant number of the activities have outputs that can easily be assessed against the indicated objectives in the Phase II proposal. These include but are not limited to the number of completed datasets, country fact sheets, regional synthesis reports, and other publications that were disseminated in the period of 2012 to 2014.

### 4.1 Web Statistics

ASTI closely monitors the number of visitors to its website and what resources they access – by region. The dissemination of ASTI publications has also been captured. Additionally, ASTI has reported a close watch on ASTI coverage in the media and by partner institutions.

The assessment analysed web traffic from Google Analytics from January 2011 to the end of April 2014 (BMGF Phase II grant). In Table 3, it can be seen that a total of 206 countries globally have had access to ASTI website from 2011 to date. In Table 2, sampled Sub-Saharan African countries received an increasing volume of website traffic, with many countries reporting an increased number of sessions as well as an increase in the average time visitors spend researching the website. The access by different countries is illustrated in Figures 1-4 in select countries. When visitors return later – whether it is the same day, the following day, or the following month the web statistician records this as a new session. On average, over 80% new sessions have been reported (Table 2). This

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<sup>10</sup> <http://www.asti.cgiar.org/brazil>.

<sup>11</sup> <http://www.asti.cgiar.org/mozambique>.

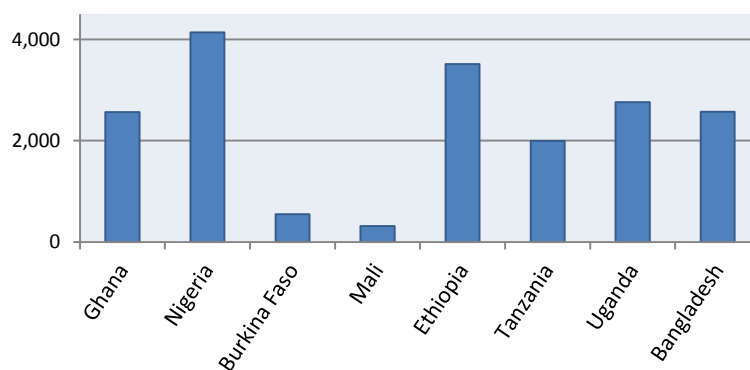
<sup>12</sup> <http://www.asti.cgiar.org/sudan>.

means that majority of ASTI data and publication users, are increasing with time, and are projected to increase to 90% in the long run.

**Table 2:** Average sessions that countries take on ASTI website- selected countries<sup>13</sup>

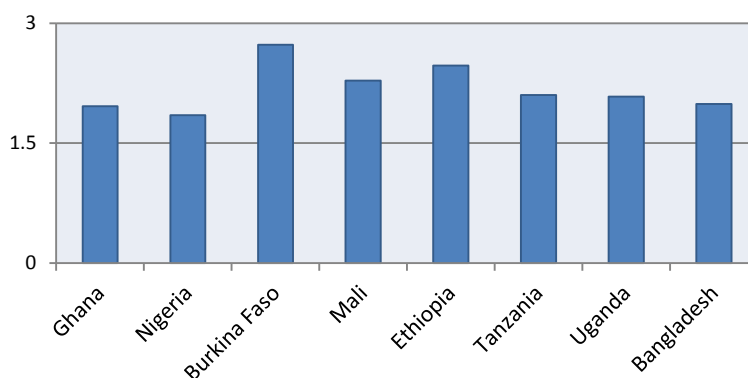
Country	Sessions	Pages / Session	Avg. Session Duration	% New Sessions	Bounce Rate
Ghana	2,563	1.96	152.87	77%	66%
Nigeria	4,137	1.85	150.64	85%	69%
Burkina Faso	545	2.73	226.61	84%	61%
Mali	310	2.28	175.68	83%	48%
Ethiopia	3,512	2.47	166.29	82%	56%
Tanzania	1,992	2.10	128.88	87%	61%
Uganda	2,760	2.08	151.27	84%	58%
Bangladesh	2,567	1.99	116.66	85%	61%

#### Total Sessions, Selected Countries



**Figure 1:** Total sessions that countries take on ASTI website- selected countries

#### Average Pages per Sessions, Selected Countries

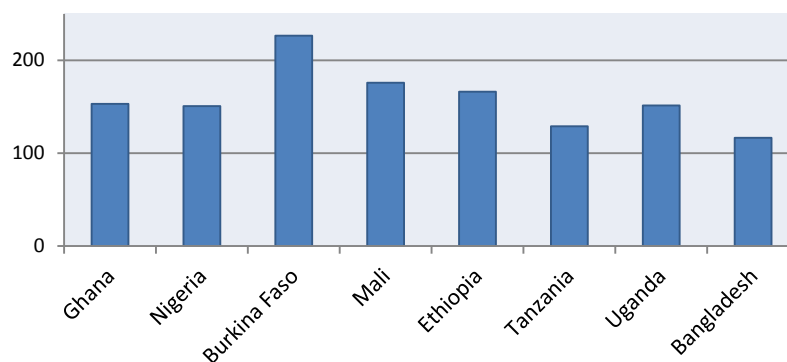


<sup>13</sup> A session is a unique visit by a particular user to the website at a particular time. A session might entail viewing one or many pages, graphics, PDFs, etc. When a visitor comes back later - the same day, next day, and next month that is a new session.



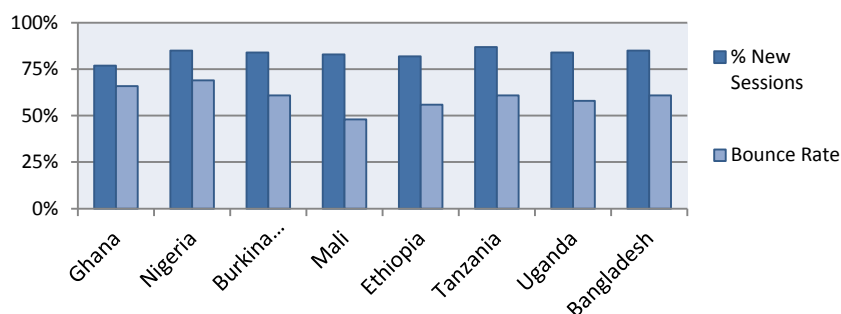
**Figure 2:** Average pages per sessions that countries take on ASTI website- selected countries

**Average Session Duration, Selected Countries**



**Figure 3:** Average session duration that countries take on ASTI website- selected countries

**Percentage of New Sessions and Bounce Rates, Selected Countries**



**Figure 4:** Percentage of new sessions and bounce rate for ASTI website- selected countries

**Table 3:** All countries sampled

All countries (sampled), N=206	Sessions	Pages / Session	Avg. Session Duration	% New Sessions	Bounce Rate <sup>14</sup>
Average	770	2.36	151	84%	58%

<sup>14</sup> Bounce rate: Can be defined as a single interaction with your website followed by an exit.

<b>Minimum</b>	1.00	1.00	0.00	22%	0%
<b>Maximum</b>	20,615	6.93	937	100%	100%

Globally, the number of visits to the website by individuals has been increasing over the period. Table 2, summarises the how long users from a selection of different countries spend on the website. Web site traffic with an average of 84% new sessions (Table 3), leads to the expectation that many ASTI website users across the globe return for new sessions – and repeat their access to information from the website.

**Table 4:** Web traffic - Agricultural R&D Agencies directory

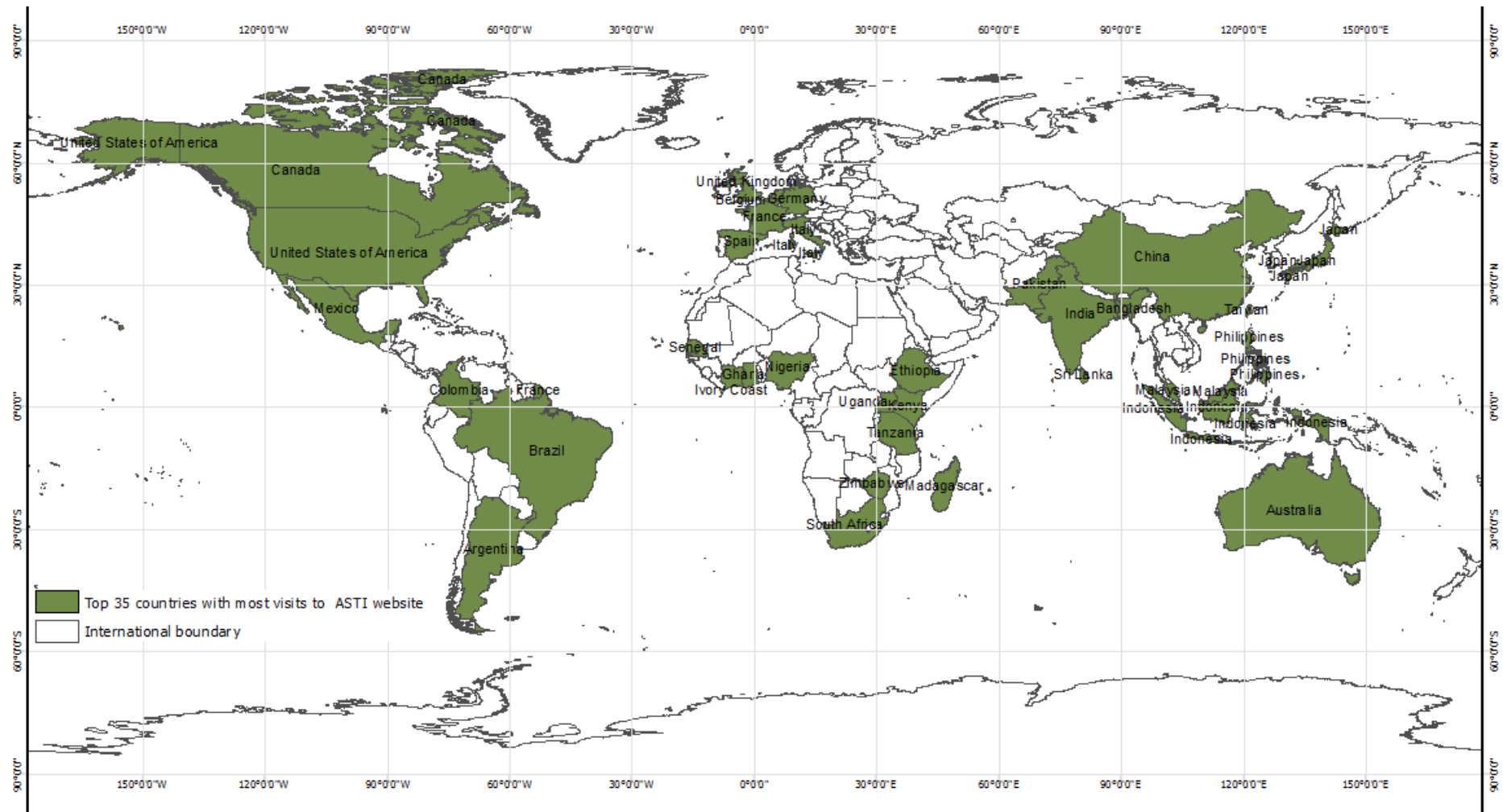
<b>Additional note</b>	<b>Page views</b>	<b>Unique Page views<sup>15</sup></b>	<b>Avg. Time on Page<sup>16</sup></b>	<b>Bounce Rate</b>	<b>% Exit</b>
<b>(Addresses beginning with /node Agricultural R&amp;D Agencies directory)</b>	88,509	71,519	148.33	63%	63%
<b>Homepage</b>	31,103	24,155	97.79	35%	34%
<b>Publications</b>	24,673	17,892	118.26	47%	25%
<b>ASTI Data tool</b>	22,800	17,120	157.74	60%	39%
<b>Country pages</b>	19,041	11,068	34.26	24%	8%
<b>Publications</b>	13,211	9,152	29.65	68%	16%
<b>About ASTI section</b>	9,975	7,014	58.81	42%	17%
<b>French website</b>	9,057	5,893	78.02	64%	27%

Table 4 above gives a further summary of ASTI website traffic, providing more information on page views, unique page views, average time on page, bounce rate and exit percentage for a number of key pages on the ASTI website. This should itself present a benchmark to see if the institutions accessing the information are the same or are evolving as the ASTI following grows over a subsequent phase.

<sup>15</sup> Unique views: This is understood as user sessions per page, with each session potentially representing multiple views of the page but a minimum of one view per session.

<sup>16</sup> Time on Page: default is 30mins – duration that a browser spends on the website.

Figure 5: Top 35 countries with most access to ASTI website



## 4.2 Publications

This section reviews ASTI publications from its webpage as well as any publications using ASTI data within the period of phase II (2012-2014).

Between January 2012 and May 2014, ASTI only published five overview publications on its website - <http://www.asti.cgiar.org/publications/overview-publications>. The list below displays the basic information within these publications. These five publications are the basis for the review of desktop research as they were published since the beginning of the Phase II support.

**Table 5:** List of ASTI publications in Phase II<sup>17</sup>

No	Focus area	Publication (year & title)
1	SSA	(2012). "Ch.5 Agricultural R&D in Africa: Investment, human capacity and policy constraints" in Improving Agricultural Knowledge and Innovation Systems: OECD Conference Proceedings.
2	SSA	(June 2012). Agricultural R&D: Investing in Africa's Future –Analysing Trends, Challenges, and Opportunities —.
3	South Asia	(September, 2012). Public Agricultural R&D in South Asia: Greater Government Commitment, Yet Underinvestment Persist.
4	Global	(October, 2012). ASTI Global Assessment of Agricultural R&D Spending: Developing countries accelerate investment.
5	Asia-Pacific	(July 2013). Benchmarking Agricultural Research Indicators Across Asia-Pacific.

As Table 5 shows, these papers cover a wide range of geographical focus areas as set by Objective 2. For these areas, the publications provide data and information analysed from the following common points:

- (i) Public investment spending (general trends, R&D spending intensity ratio<sup>18</sup> and volatility<sup>19</sup>)
- (ii) Private sector involvement in agricultural R&D
- (iii) Funding sources of public agricultural R&D
- (iv) Public agricultural R&D staff (capacity and qualifications, female staff involvement, and age group).

The assessment discovered that many users search ASTI using 'Agricultural R&D Agencies' as the key words.

In terms of the degree of ASTI data and analysis usage by external publications, online desk research confirmed that information from ASTI is referenced in a number of research publications, reports, and academic journals. The institutions that have used ASTI data in their publications and analysis are diverse. They include international organizations, governments, national research centres, universities, research consortiums, and multinational fora.

<sup>17</sup> This table is missing 2014 publications including 30 country factsheets that were published after the study concluded on August 14, 2014.

- Chapter 5 of the IFPRI Global Food Policy Report <http://www.asti.cgiar.org/publications/africa-south-of-the-sahara>

- Chapter in gender Book <http://www.asti.cgiar.org/publications/enhancing-female-participation>

- 2 chapters in the E-Atlas <http://www.asti.cgiar.org/publications/africa-south-of-the-sahara>

<sup>18</sup> The term refers to the portion of agricultural R&D spending against agricultural GDP (AgGDP) as an indicator of a 'country's agricultural R&D commitment' (Flaherty *et al.* 2013, 5).

<sup>19</sup> Shifts in agricultural R&D spending levels. When the publications mention volatility "coefficient", it refers to quantification calculated by ASTI for 85 countries between the 2001-2008 period (Flaherty *et al.* 2013, 7). Values above 0.20 indicate relatively high volatility.

ASTI information is used for a variety of purposes to examine national capacity in R&D, analysing food systems, and developing indicators for agricultural productivity growth. At the national level, for example, the data is used for policy analysis in India and also informs government's strategic plans for the agricultural sector in Mozambique. At international level, ASTI data has also been used to influence international fora such as G20. It is useful to note that G20 and G8 fora, in 2012 explicitly recognized the value of ASTI and emphasized continued support to ensure donor investment and national food security. More detailed description on ASTI information reference by the different publications is provided in Appendix 2.

#### **4.3 Establishing an institutionalized data collection system at regular intervals**

An institutionalized data collection system is envisaged to facilitate more decentralized and frequent collection, synthesis, and analysis of data through a set of national and regional focal points. This is intended to promote ownership of the datasets by national partners, stimulating further advocacy and analysis, and securing the continuity of data collection activities. This objective will include the development of a web-based decentralized database and monitoring survey system.

During the period of Phase II (2012-2014), ASTI has provided the analysed data and publications on its website platform as well as responding to specific user enquiries directly. The general public and partnering institutions had unbiased access to quality data, indexed publications and synthesized data and during the Phase II funded period (2012-2014), ASTI has progressively engaged its partners towards achieving institutionalized data collection systems.

Of particular note is the fact that, since 2013, ASTI data are also hosted on FAOSTAT, a platform that will enable more users and partners to utilize the data. In the Phase II project period, most new data, publications, and other country outputs are to be released on the ASTI website during June-August 2014. This will include a more interactive set of country pages with improved data download tools, benchmarking tools and graphing tools.

Notably, as one of the fundamental constraints, a decentralized data collection system can only be viable with increased and continuous commitment from national partners to coordinate the survey rounds effectively.

#### **4.4 Intensifying the dissemination of data and outputs**

This main outputs outlined under this objective were: establishing a biennial series of the State of Agricultural R&D in Sub-Saharan Africa; upgrading the ASTI website to a platform that provides access to other relevant databases on agricultural and food S&T indicators; and closer integration of ASTI data into key regional processes such as the monitoring & evaluation (M&E) program of the Comprehensive Africa Agricultural Development Program (CAADP) Pillar IV.

Based on ASTI publication records during the period of BMGF support under Phase II, the three key objectives were realized. ASTI successfully provided the publications which cover the intended geographical areas (sub-Saharan Africa, South Asia, and global trends) as mentioned earlier. However, there are 33 country entries on the website with new upload pending at this time even though ASTI plans to complete Country Factsheets for a full set of 40 sub-Saharan African countries. The number of Country Factsheet publications for South Asian countries (Bangladesh, India, Nepal, Pakistan, and Sri Lanka) was originally set at 4. Work in India has been delayed due to bureaucracy; Bangladesh, Nepal, and Pakistan will be published later in 2014. The observations on Country Factsheets suggest that uploading all the data sets is slightly behind schedule prompting questions

related to whether this some bottleneck analysis may be necessary to pinpoint opportunities to improve the efficiency of the pipeline to data sheet deployment.

#### 4.5 Expanding analysis beyond the descriptive examination of national and regional agricultural R&D capacity and investment trends conducted to date.

The intensification of analysis is to be achieved by developing capacity within ASTI; sourcing a network of external analysts; and organizing a series of workshops, seminars, and conferences.

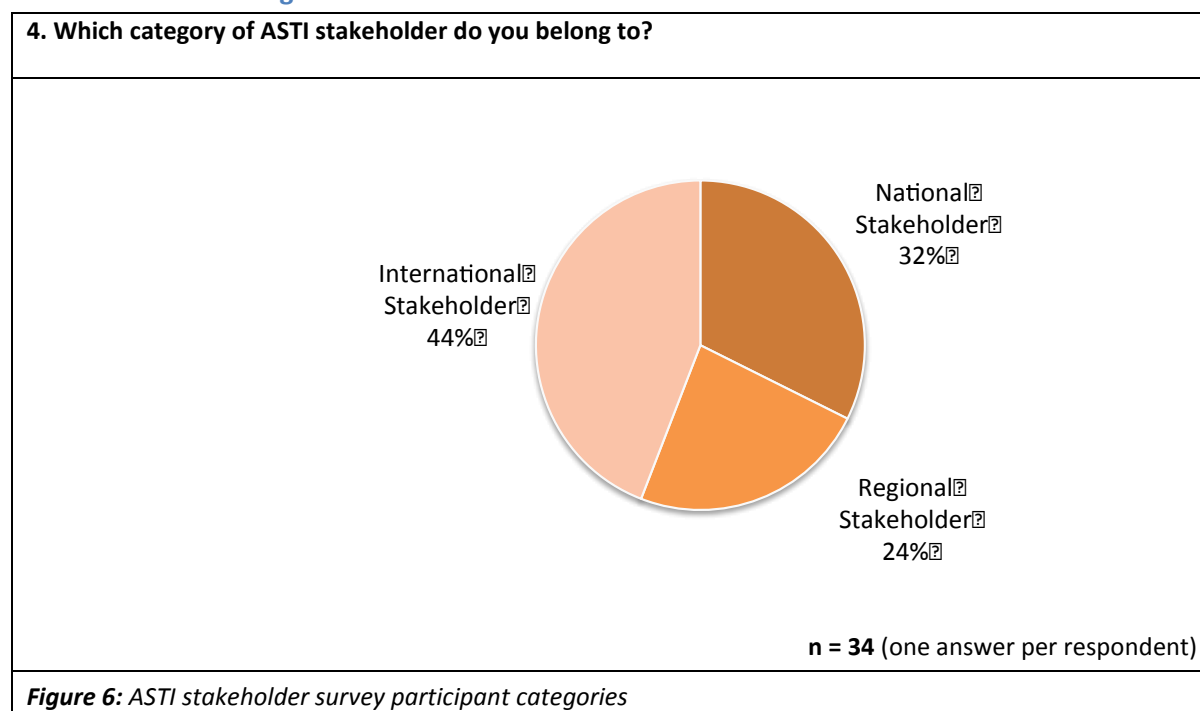
#### 4.6 Stakeholder Survey

During the third week of June a series of varied ASTI stakeholders were interviewed to gain their feedback on the ASTI data sets, policy papers, other publications and their use of the data therein. A copy of the questionnaire used to guide the conversations is included in Appendix 4.

In total 34 ASTI Stakeholders participated in the survey, 23 via telephone interview and 11 via an online survey link. Wherever possible telephone interviews were undertaken, but where stakeholders were unavailable for interview the online survey was offered as an alternative.

The following charts illustrate the results of a selection of the ASTI stakeholder survey questions, and represent a selection of the total of 18 questions. The question number is included at the beginning of the question title.

#### ASTI Stakeholder Categories

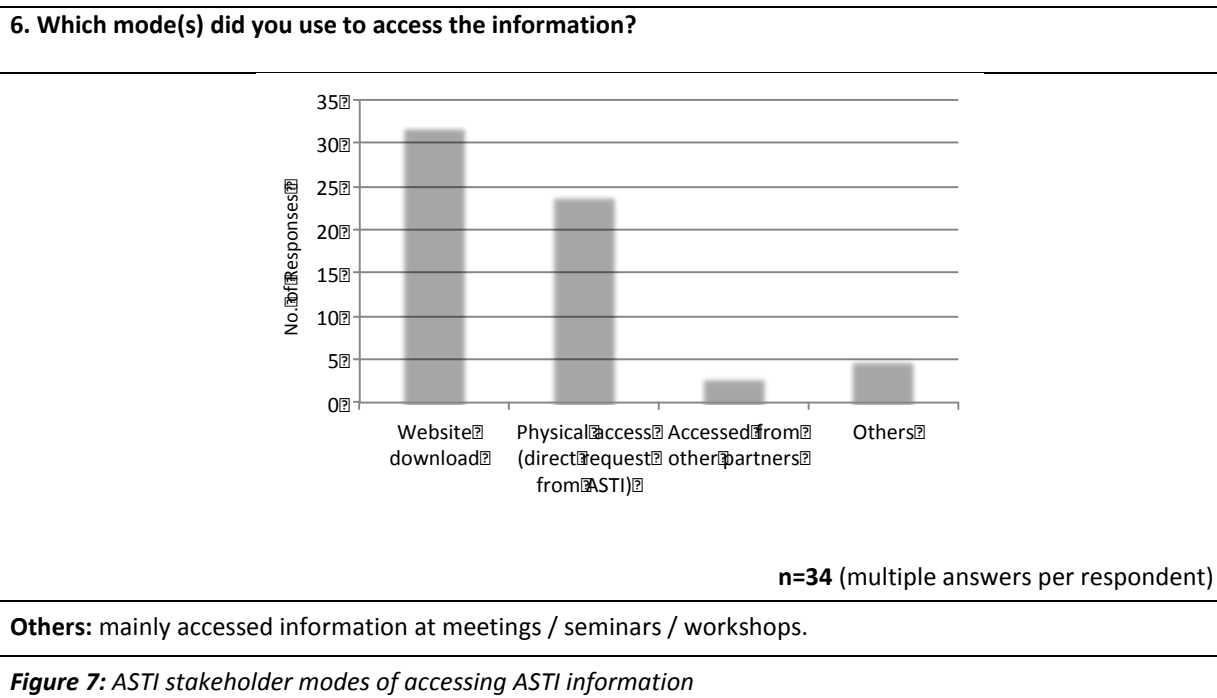


The ASTI survey participants consisted of a mix of international (44%), regional (24%) and national (32%) level stakeholders, with international stakeholders making up the largest participant group (44%). See Figure 6 above.

Between 2011 and 2014, all (100%) of those questioned accessed ASTI resources, including some or all of: the ASTI databases (ASTI data tool, CGIAR centres data, CGIAR DIIVA project), country outputs (reports, data, other information); and regional, global and analytical publications.

The most frequent mode of accessing the ASTI information was via the website, with other modes of access including: physical access (direct request from ASTI); access through other partners / citations of ASTI data; and access at workshops, seminars and conferences. See figure 7 below.

### ASTI Stakeholder Modes of Accessing ASTI Information



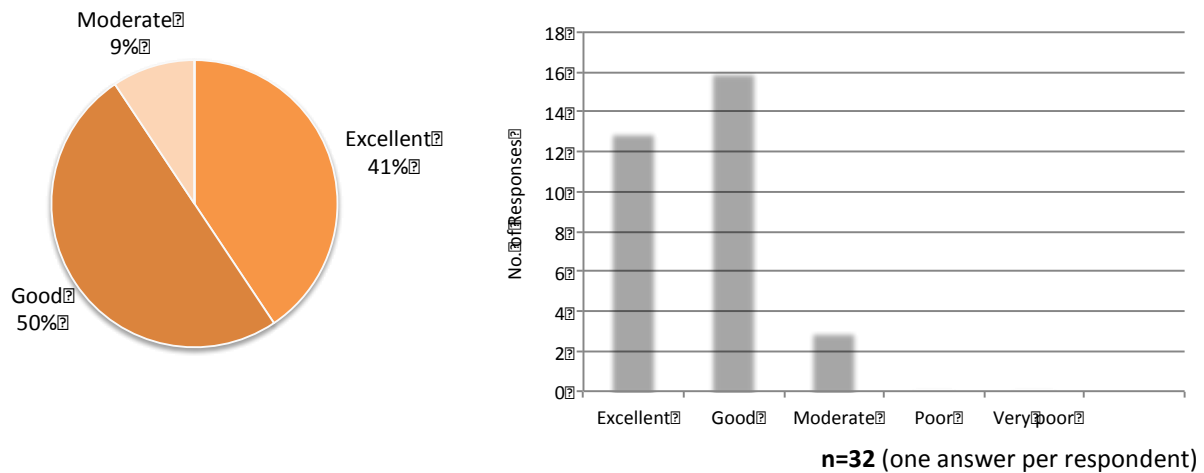
Of those questioned 97% had the opinion that the data was satisfactory in content and value and only 3% suggested that it was not satisfactory. Suggested improvements mentioned at this stage included:

- Continued work to keep renewing the data to keep it as up to date as possible (though there was wide stakeholder appreciation of the work required).
- On-going work at national level to incorporate indicators of national significance.
- Incorporation of university-level statistics.
- Continuation of efforts to aid access in areas of low Internet connectivity e.g. via hard copy data, making CDs available on request.
- Continued work to ensure that language is not a barrier to data access.
- Beyond simply hosting the DIIVA datasets increasing efforts to promote this information and its value.

The vast majority the surveyed stakeholders (91%) felt the messaging and packaging of ASTI information / analysis / publications was either 'good' (50%) or 'excellent' (41%) with the remainder (9%) classing it as 'moderate'. Notably, no respondents considered the messaging and packaging of ASTI resources to be either 'poor' or 'very poor'. See figure 8 below.

## ASTI Stakeholder Views on the Messaging and Packaging of ASTI Resources

### 8. Overall, how would you rate the messaging and packaging of the information / analysis / publications?

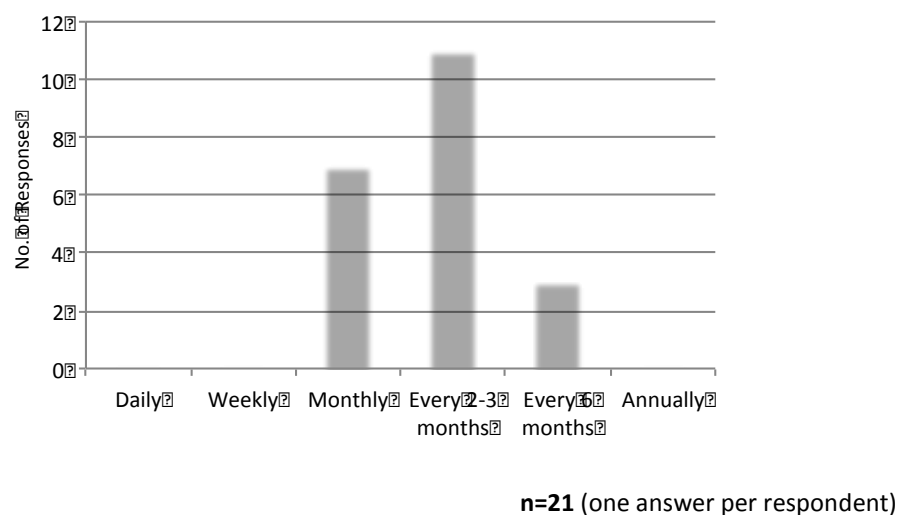


**Figure 8:** ASTI stakeholder views of the messaging and packaging of ASTI resources

### ASTI Website Access Frequency by ASTI Stakeholders

The majority of surveyed stakeholders reported that they access ASTI data at variable frequency rather than on a routine and predictable basis. This was influenced by the varied focus of their work. As a consequence of this highly variable access frequency, several respondents found it difficult to provide the 'average website access frequency' and several (13) missed this question. Of the 21 respondents who did estimate their website access frequency, this ranged from monthly (7) to once every 6 months (3) with the largest group of respondents reporting access every 2-3 months (11). See figure 9 below.

### 9. If you access the information via the website, on average how often do you visit the ASTI website?



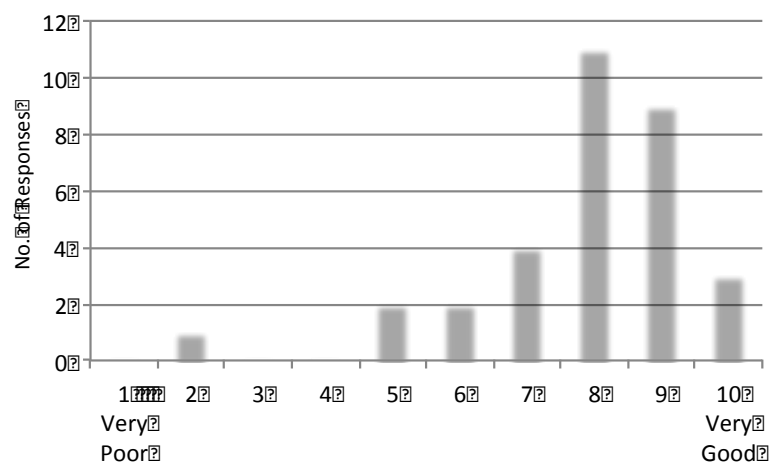
**Other comments:** 25 respondents made other comments relating to website access frequency, many highlighting that they access the data on a variable but as needed basis.

**Figure 9:** ASTI website access frequency by ASTI stakeholders



## ASTI Stakeholder Experiences of Navigating through the ASTI Website

### 10. How would you rate your experience of navigating through the ASTI website to retrieve information?



n=32 (one answer per respondent)

**Figure 10:** ASTI stakeholder experiences of navigating through the ASTI website

On a scale of 1 to 10, where 1 was 'very poor' and 10 was 'very good', nearly 85% (27 of 32) of respondents ranked their experience of navigating through the ASTI website (See Figure 10) to retrieve data between 7-10 and over 70% (23 of 32) ranked their experience between 8-10. It was also flagged that the website has improved over time. Only 5 respondents ranked their experience as 6 or less and only one gave a ranking of below 4 (ranking it at 2). See figure 6 above.

Although the vast majority responses were positive, there were a number of suggestions on how navigating the website might be improved. Suggestions included:

- Given the wealth of available information, presenting the overall document suite more clearly would be helpful (e.g. using a pane at the side of the website) this should provide clarity on the hierarchy of information e.g. the difference in detail between country factsheets, notes and briefs.
- Providing a short cut to the ASTI data tool.
- Making the website less 'sterile' by providing more information on the 'demand side' and showing greater connectivity with users e.g. including user dialogue; showing how the data is being used at country level.
- Improved capacity for creating customised datasets (one user reported gathering data from several pages of the website and then using this to build their own spreadsheets).
- Improved website interrogation capability (one user reported that it can be easier to interrogate the website via Google e.g. searching on ASTI and the data you need).
- Making private sector data more accessible.
- Improved download speed – 3 users commented that the website download speed is slow (though this was recognised to be influenced by local internet connectivity).

When the question was posed “Have you accessed the ASTI policy documents or policy research papers and information as major source in any of your policy document(s)?”, just over half of the respondents 54.5% suggested they accessed the ASTI documents as a major source in their policy documents.

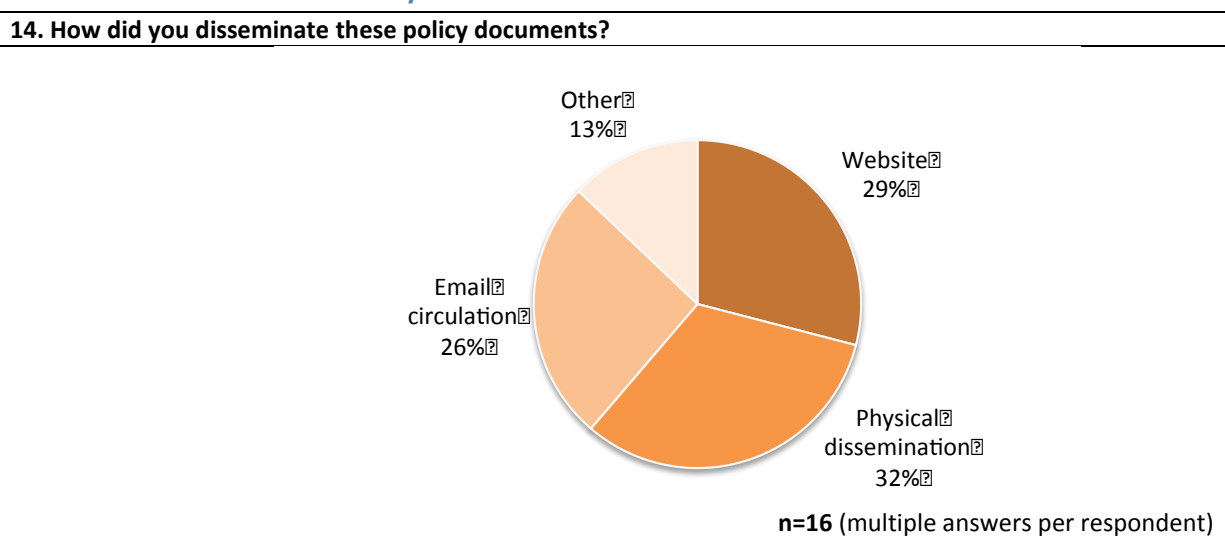
However, 45.5% declined the notion of having used the information and data in policy documents, many because they did not see this as a particular focus of their roles opting instead to use the information in internal reports (national NARI) negotiations (Regional Body), for strategic capacity building (Policy Research Institute of a NARI), opting to access it when needed rather than using it systematically to understand trends or compile reports (Donor, Continental Agency, Independent researcher, CGIAR, International University).

Many of those that did not use the ASTI data to inform policy documents directly referred to other positive uses of the data such as:

- Use in policy dialogue at events rather than in the form of documents.
- Use by other parties to inform policy e.g. superiors, partners, network contacts.
- Use for internal advocacy / information sharing with colleagues / partners / stakeholders.
- Use of ASTI data within other document types e.g. internal briefs / memos / reports; research papers; newsletters; lecture notes.

Of those respondents who did use ASTI data as a source for their policy documents, two thirds provided an estimate of the number of documents that utilised ASTI data between 2011 and 2014. The estimates ranged between 2 and 10 documents and averaged 4 documents. 88.9% (16) of the respondents who used ASTI data to inform their policy documents disseminated these policy documents compared to 11.1% (2) who did not do so. Of those who disseminated their documents, many disseminated all of the documents produced. For those policy documents that were disseminated, a range of methods were used including: physical dissemination (32%); website dissemination (29%); email circulation (26%) and other methods (13%). Other methods included: oral policy briefs, sending to specific contacts and dissemination at conferences (some respondents also used the other category to comment further on the above modes of dissemination). See figure 11 below.

#### ASTI Stakeholder Modes of Policy Document Dissemination



**Other included:** Oral policy briefs, sending to specific contacts and dissemination at conferences (as well as further comment on the use of the above methods).

**Figure 11:** ASTI stakeholder modes of policy document dissemination

For those policy documents that were disseminated, ASTI stakeholders reported targeting a wide range of audiences including: policy makers; Agricultural Ministries; NARS; research institutes and universities; private sector stakeholders; leaders within the CGIAR system; FARA stakeholders; colleagues; partners; clients and donors.

### **Broad Recommendations**

Overall, the stakeholder feedback received was very positive, and many respondents also highlighted improvements over time. However, the vast majority of the surveyed stakeholders also recommended opportunities to further improve ASTI during the next phase. Appendix 5 illustrates the extent of the suggestions on multiple topics. Common suggestions fell into three broad categories:

#### **D. Improving the dissemination and reach to National and Regional Policy Agencies and ensuring their ability to interrogate and engage with the data more effectively.**

- Creating an official schedule of when information will be released and including a newsletter update to flag any new developments.
- Providing a simple guide for users, creating an open data platform, working with CGIAR Consortium's Open Access initiative.
- Further promotion and increased dissemination of ASTI data, especially so that policy makers and decision makers are using and understanding it (AUC, NEPAD)
- Building and institutionalising partner / stakeholder capacity to collect and utilise the information e.g. increasing national capacity on data collection, processing, analysis and use.
- Providing additional policy recommendations.

#### **E. Illustrating how ASTI Data and Information is being used particularly at National and Regional Levels by different organizations and the pathways that lead to real impacts.**

- Showing the broader impact of ASTI's work by providing examples of how the data is used, how it has built capacity and the impact of the data.
- Publicising and organizing events to gain attention on the use of the data and dialogue with decision makers.

#### **F. Refining the way in which Data can be demand driven, interactive and expanding the scope of the analysis, and interpretation.**

- Disaggregation of the National Agricultural Research Systems data.
- Expanding the scope of the data: including agricultural extension data, increased indicators (especially on output, outcomes, and impact), more gender disaggregated data, increased frequency, more private sector derived data.
- Moving into a more interactive phase - making the data more demand driven, by understanding what users want and how the data is used, especially at the national level.
- Including more assessment, analysis or interpretation of data (e.g. FAOSTAT does some more analysis of data).
- Providing information in various formats (e.g. visual formats that require less reading),

Views expressed by stakeholders varied in their priority. Many recognised that ASTI data is difficult to gather, and that trade-offs would be likely in what the ASTI team could realistically achieve. For example:

- If the frequency of data collection is increased this should not be at the expense of coverage.
- There would need to be some consideration of the best use of the ASTI team resources - e.g. in the extent to which they should provide further analysis or outsource this.

## 5 Reporting on Specific Objectives under Phase II funding

### 5.1 Looking back: Has ASTI achieved its intended objectives and goals?

The main focus of assessing the ASTI performance has been on the objectives and goals outlined in Phase II proposal; including the extent to which ASTI analyses are actually being used by governments, and other stakeholders as inputs into national policy dialogues and reform processes.

ASTI has clearly contributed to the objective of expanding analysis and dissemination to different stakeholders through evidence of web statistics, publications cited and stakeholder feedback on the use. While data analysis and publications had not been fully disseminated and website access still poses an issue in some countries, the majority of users of ASTI publications and data for phase I and II have expressed strong satisfaction in ASTI data and publications as well as the improvements in quality and accessibility over time. By August 2014 a further 30 country data sheets were published for SSA which is encouraging. However, an assessment of the hits on the website associated with the uploading of these documents is a valuable on-going investment in understanding the level of success that ASTI has directly influenced to date. Utilizing this information as a benchmark for the next phase of its work, is recommended moving forwards.

Based on the global, regional, and general publications statistics, a total of 33 publications have been updated on the ASTI website for public access since its foundation (<http://www.asti.cgiar.org/publications/overview-publications>). Out of 33 publications, 20 were published between 2011 and 2013. There appears to be only one publication – “*Benchmarking Agricultural Research Indicators Across Asia-Pacific*”, updated in 2013 (<http://www.asti.cgiar.org/publications/asia-pacific-regional-synthesis>). This document has detailed analysis on the trends of agricultural R&D spending as a share of agricultural output in Asia-Pacific in comparison to other regions of the developing world.

In the year 2014, ASTI hosted the DIIVA database and outputs. The published DIIVA documents include: *Impact assessment of agricultural research, institutional innovation, and technology adoption; Measuring the Effectiveness of Crop Improvement Research in Sub-Saharan Africa from the Perspective of Varietal Output, Adoption, and Change: 20 Crops, 30 Countries, and 1150 Cultivars in Farmers’ Fields and Case-studies on the impact of germplasm collection, conservation, characterization and evaluation (GCCCE) in the CGIAR – that was published in 2013* (<http://impact.cgiar.org/outcomes/diiva>).

The first output DIIVA paper was presented in a joint ASTI/IFPRI – FARA conference in Accra Ghana in December 2011. As an example of a specific uptake pathway, there has been a tremendous effort to reach out to key policy organs and individuals by ASTI in an attempt to involve stakeholders in using ASTI data and publications as inputs into national policy dialogues and reform processes.

The DIIVA database and outputs while not officially linked to ASTI itself has helped to socialise with other audiences ASTI related publications and data sheets providing additional relevance to their work. Strategic alliances of this nature suggest that ASTI can broaden its audience significantly. A summary of the DIIVA partner publications is presented in Table 6 below that have drawn particular attention.

**Table 6:** Summary of ex-post impact assessments by CGIAR Centres, CRPs and SPIA

<i>Year of Publication</i>	<i>Title of the document</i>
<b>2014</b>	<ol style="list-style-type: none"> <li>1. <i>Impact assessment of agricultural research, institutional innovation, and technology adoption: Introduction to the special section</i></li> <li>2. <i>Measuring the Effectiveness of Crop Improvement Research in Sub-Saharan Africa from the Perspective of Varietal Output, Adoption, and Change: 20 Crops, 30 Countries, and 1150 Cultivars in Farmers' Fields</i></li> <li>3. <i>Measuring the Effectiveness of Crop Improvement Research in Sub-Saharan Africa from the Perspective of Varietal Output, Adoption, and Change: 20 Crops, 30 Countries, and 1150 Cultivars in Farmers' Fields.</i></li> </ol>
<b>2013</b>	<ol style="list-style-type: none"> <li>4. <i>Case-studies on the impact of germplasm collection, conservation, characterization and evaluation (GCCCE) in the CGIAR</i></li> </ol>
<b>2012</b>	<ol style="list-style-type: none"> <li>1. <i>Does crop improvement reduce agricultural expansion?</i></li> <li>2. <i>Environmental impacts of agricultural research: an overview</i></li> <li>3. <i>Environmental impacts of agricultural research: concepts and tools to strengthen the evidence base</i></li> <li>4. <i>Ex-post environmental impact assessment: lessons from four CGIAR case studies</i></li> </ol>
<b>2011</b>	<ol style="list-style-type: none"> <li>A. <i>Recent advances in impact analysis methods for ex-post impact assessments of agricultural technology: options for the CGIAR</i></li> </ol>

Furthermore, the CGIAR DIIVA project, encompassing a consolidated database of crop varietal releases, adoption and research capacity in Africa south of the Sahara, has enabled an important avenue for ASTI data which is heavily referenced. With the ASTI data, the DIIVA publications will include three impact assessment studies of how adoption of improved varieties has affected productivity in a sub-set of these countries as well as a 20-chapter book, to be co-published by the CGIAR Consortium and CABI – expected in print and simultaneously on-line in open access on the ASTI site in 2014. This represents an important additional resource for stakeholders within Africa that explicitly integrates, expands the use and translates ASTI data into tangible outputs by which Ministries of Agriculture and National Systems are currently measuring their performance. Drawing the attention of policy makers to the relationship between capacity building and delivering R&D outputs significantly draw attention to investing in building adequate capacity for a sustainable pipeline of technologies by which they can illustrate their worth.

Furthermore, this review has shown that establishing a link with FAOSTAT has expanded the coverage of ASTI dissemination and increased recognition of ASTI in the agricultural R&D related fields. This should be continued by increasing the number of official linkages with other organisations and institutes with strong thematic connections to agriculture and agricultural R&D in common.

## 5.2 Looking back: Who uses ASTI data and publications?

Desk research identified users in the categories of governments (e.g. India, Mozambique, U.S.A), international research institutes (e.g. IFPRI, CGIAR Consortium), international organisations (e.g. FAO, UNCTAD, IFAD, OECD, WTO), development banks (e.g. World Bank, InterAmerican Development Bank), and a variety of researchers. Details on the nature of their publications and usage of ASTI information is provided in Appendix 2.

According to website statistics across the period of 2012 – 2014, over 200 countries ‘pulled’ ASTI data and analyses. The significant number of page views and clicks on the website is an indicator of significant user engagement with the website.

## 5.3 Looking forward: What policy impact pathway(s) can be outlined for ASTI data and analyses?

Based on surveys conducted and desktop analysis, the ASTI website stands out as the main pathway of data and analysis dissemination. Through the ASTI website, users have provided positive feedback on the most direct channel for accessing ASTI information. While embedding two-way communication or feedback system may be difficult to develop, it is likely to help ASTI to learn about the users as well as their needs in real time. From this viewpoint, it could be useful to review the effectiveness and efficiency of the current twitter system as well as Africa Development Bank website user subscription systems among other top research institutions as examples of two way dialogue channels.

Various types of ASTI publications in print media have also been cited as the most significant documents used. Users noted that ASTI’s regional and country-specific publications were published at regular intervals, even though larger portion were accessible via the website compared to online ‘emailing list’ exchange. Uploading all intended Country Factsheets should be not only achieved as scheduled but also considered as a way to strengthen future partnership of data provision with target countries.

## 5.4 How can a next phase be modified to increase impact?

ASTI initiative has progressively grown since its implementation in early 2011. The quantity of data and analyses has been significant across the globe – currently, users from over 200 countries have accessed the ASTI website.

Overall, the stakeholder feedback received was very positive, and many respondents also highlighted improvements over time. However, the vast majority of the surveyed stakeholders also recommended opportunities to further improve ASTI during the next phase.

### **A. Improving the dissemination and reach to National and Regional Policy Agencies and ensuring their ability to interrogate and engage with the data more effectively.**

- Creating an official schedule of when information will be released and including a newsletter update to flag any new developments.
- Providing more robust and contextualized data analysis, ASTI should blend both qualitative and quantitative data so as to provide more depth to the picture that quantitative data is painting.
- Building out institutional partners capacities to collect data, process and use it and making the data more demand driven.

- Providing additional policy recommendations.

**B. Illustrating how ASTI Data and Information is being used particularly at National and Regional Levels by different organizations and the pathways that lead to real impacts.**

- Highlighting reflections on the website of demand not just supply of data and illustrating how the data and its access is helping to build not only policy influence but capacity through impact of the data.
- Publicising and organizing events to gain attention on the use of the data and dialogue with decision makers.

**C. Refining the way in which Data can be demand driven, interactive and expanding the scope of the analysis, and interpretation.**

- Disaggregation of the National Agricultural Research Systems data.
- Expanding the scope of the data: including agricultural extension data, increased indicators (especially on output, outcomes, and impact), more gender disaggregated data, increased frequency, more private sector derived data.
- Moving into a more interactive phase - making the data more demand driven, by understanding what users want and how the data is used, especially at the national level.
- Including more assessment, analysis or interpretation of data (e.g. FAOSTAT does some more analysis of data).
- Providing information in various formats (e.g. visual formats that require less reading).

## 6 Conclusions

This report includes a technical assessment of the relevance, quality and utility of the policy data and analytical documents that ASTI has been generating (within the BMGF funded Phase II grant) from 2012 and 2014. Various components of ASTI products were reviewed to understand better which ASTI analyses are useful with different stakeholders as inputs into national policy dialogues and reform processes. Recommendations that were captured from stakeholders suggested that more information should be available in a timely manner. Furthermore, some insights are offered into the impact pathway(s) that are appropriate for ASTI data and publications in view of improving the initiatives performance in the next phase to increase impact. The following conclusions were drawn from the assessment:

1. ASTI data is relevant in quality and content and in high demand. All of the surveyed users of ASTI data for use in policy documentation or as secondary references – acknowledged the rich and valuable content of ASTI data. The majority of the users who access the data and publications via ASTI website expressed that ASTI publications were diverse in context hence valuable in drafting technical policy documents for informed decisions.
2. The main backbone of the ASTI initiative is to influence policy change across Africa, especially Agricultural R&D in Africa. However, given that policy change is observable, it is difficult to conclusively measure the value of ASTI during the second Phase of BMGF support (2012-2014) since it implies identifying policy changes that the data may have influenced either directly or indirectly. However, a significant number of the activities have outputs that can easily be assessed against the indicated objectives in Phase II proposal.
3. The extent to which ASTI's Agricultural R&D data and analyses are used in making informed decisions not only in Africa, but, across the globe is very important. Based on the web traffic identifying those who access ASTI data and publications, it is clear that a significant number of countries have accessed ASTI data and publications. However, the English version of the website is most comprehensive with the French section mainly consisting of publications and data of interest to francophone countries. Other countries that are non-English speakers such as Brazil, Mozambique and Arabic countries still have limited in-depth content available for their use.
4. One of the key objectives as part of the ASTI initiative (Phase II) was to enforce an institutionalized data collection system aimed at decentralizing data collection, synthesis, and analyses through set of credible national and regional focal points. It was expected in the long run, contextualized country data and analyses would promote ownership as well as active engagement of regional and national partners to positively impact policy decisions. It was recommendable to note that since 2013, ASTI data is hosted on FAOSTAT, a platform that does enable more users and partners to utilize the data. It is worth noting that progressive realization of this milestone strongly depends on increased commitment from partner institutions and their ability to continuously collect and collate contextual data.
5. The Agricultural Science and Technology Indicators (ASTI) initiative has provided an effective platform for the most comprehensive source of agricultural research statistics for low- and middle-income countries. ASTI (as part of the second phase) has demonstrated the ability to intensify its influence in terms of Data and publication utilization by governments, regional and national stakeholders in informing policy dialogues. ASTI analyses were critical components of government's strategic plans for the agricultural sector in Mozambique and India. ASTI data is heavily referenced in CGIAR DIIVA project consolidating database of crop varietal releases, adoption and research capacity in Africa south of the Sahara. G20 and G8 fora in 2012 explicitly recognized the value of ASTI and emphasized continued support to ensure donor investment and national food security. This is a positive feedback for phase II



indicating additional platforms for ASTI products as inputs into national policy dialogues and reform processes.

In summary, the assessment revealed that at an increasing scale, users of ASTI data and analyses on investment in agricultural research and development (R&D) is critical for making decisions that are aimed at developing policies on agricultural productivity. The surveyed users- who are mainly from partners and key decision makers acknowledged that indicators on the size and scope of R&D capacity and investments provide proxy of performance, inputs, and measurements that can be benchmarked across the continent. ASTI data and analyses have provided an effective platform that allows policy makers to track countries agricultural research and development (R&D) progress over time. The findings and outputs of ASTI's work have had important policy relevance at national, regional, and international level. Therefore, ASTI data and analyses have emerged to be widely recognized as the most authoritative source of information on the support for and structure of agricultural R&D worldwide.

In considering the way forwards, ASTI may benefit from a bottleneck analysis to identify where weaknesses can be addressed so that any materials and datasets can be uploaded as quickly as possible. This latter point may require dissection of the support in different capacities to appeal to national policy actors and more dissection of country specific indicators. ASTI may benefit from better identifying active policy makers at local levels and prioritising their exposure to data and information – perhaps by providing up front notice of when they can expect data to be provided and finally, there may be some small need to refine the user experiences of users of their web pages and web site. These may all play to ASTI's strengths in the upcoming years where the expenditure from national budgets to research and the development of human capital will be instrumentally important in agriculture-led GDP growth.

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## Appendices

### Appendix 1: ASTI initiative

Table 7 below presents the basic description of ASTI initiative.

**Table 7:** Description of the ASTI initiative.

<p>Lifespan and Scope of Initiative</p>	<p>The project was active at an ad hoc level from 1981 to 2001 at ISNAR, and IFPRI from mid 1990s onwards.</p> <p>First phase: 2001-08 when ASTI was officially established, but funding was ad-hoc.</p> <p>Second phase: 2008-11; with substantial level of funding through BMGF: 2008–2011.</p> <p>Current phase of the initiative is between 2012 and 2014 and which focuses on the three expansion areas indicated above. ASTI’s funding base is now more than twice the level of funding during the previous phase.</p>
<p>Scope/Level of Disaggregation</p>	<p>Focuses on inputs into agricultural R&amp;D rather than expanding to include output or outcome indicators, although it is piloting the latter in a number of countries.</p> <p>ASTI uses internationally accepted definitions and data collection procedures developed by OECD and UNESCO.</p> <p>Level of disaggregation varies according to the indicators. e.g.:</p> <p>Professional research staff -- By degree level (PhD, MSc, and BSc), gender, age.</p> <p>Research focus by subsector -- Includes crops, livestock, forestry, fisheries, postharvest, natural resources, socioeconomics, government, non-profit, higher education, and private sector; also thematic focus.</p> <p>Research expenditures by: salaries, operational costs, and capital costs, government and non-profit.</p> <p>Funding sources by: Government, (multilateral and bilateral) donors, producers and marketing boards, public and private enterprises, own income, other.</p> <p>Research support staff.</p>

	Number of students enrolled and graduated
Sector(s)	<p>Agriculture sector.</p> <p>Its definition of agricultural research includes research on crops, livestock, forestry, fisheries, natural resources, the socioeconomic aspects of primary agricultural production and also research concerning the on-farm storage and processing of agricultural products but excludes off-farm storage and processing, commonly referred to as postharvest or food-processing research.</p>
Economic Classification (e.g., Recurrent/Capital)	<p>It collects three categories of detailed cost data from government and non-profit agencies:</p> <p>Salaries</p> <p>Operating and program expenditures</p> <p>Capital expenditures</p>
Administrative Classification	It tracks relevant data on five institutional categories: government, higher education, non-profit, business, and public enterprises.
Non-Expenditures Covered	ASTI generates a wide range of non-expenditure data including research staff, research focus, and funding sources disaggregated at different levels and categories as well as qualitative information on institutional developments.
Geographic Coverage	All developing countries.
No. of Countries	<p>A total of 87 countries: 40 countries in Sub-Saharan Africa; 26 countries in Latin America and Caribbean; 8 countries in the Middle East and North Africa; and 13 countries in Asia–Pacific.</p> <p>The Foundation’s priority geographies are: Ghana, Nigeria, Burkina Faso, Mali, Ethiopia, Tanzania, Uganda, Bangladesh, and the Indian states of Bihar, Odisha and Uttar Pradesh</p>
Regions Covered	Sub-Saharan Africa (SSA), the Asia–Pacific (APC), Latin America and the Caribbean (LAC), and the West Asia and North Africa (WANA).



Levels (within @ ctry) (nat'al, Prov., Districts)	It collects and organizes/reports data at different institutional categories at the national level (although the data is built from surveying individual research centres located at the sub national level).
Main Variables and Indicators Covered (include few examples)	<p>Professional research staff -- By degree level (PhD, MSc, and BSc), gender, age</p> <p>Research focus by subsector -- Includes crops, livestock, forestry, fisheries, postharvest, natural resources, socioeconomics, government, non-profit, higher education, and private sector; thematic focus</p> <p>Research expenditures by: salaries, operational costs, and capital costs, government and non-profit.</p> <p>Funding sources by: Government, (multilateral and bilateral) donors, producers and marketing boards, public and private enterprises, own income, other.</p> <p>Research support staff</p> <p>Number of students enrolled and graduated</p>
Calculation of Main Variables/Indicators	<p>The national survey rounds have, in general, have four sections:</p> <p>Institutional details. This section requests basic information such as address, affiliation, and organizational structure;</p> <p>Human resource information. Questions here relate to the number of researchers and technicians employed, degree levels, the proportion of time that various staff spends on research, the age distribution of research staff, the number of women researchers, and support staff by various categories.</p> <p>Financial information. This section requests details on research expenditures by cost category and sources of funding.</p> <p>Research focus. The survey forms request details on the commodity, thematic and program focus of the research conducted,</p> <p>It is piloting a section on output indicators in a number of countries, the WANA survey includes a section on water management and irrigation research. ASTI is also conducting in-depth assessments in 6 West African countries and Nepal, which include a wide number of additional qualitative and quantitative indicators</p>
Unit(s) (local currency,	Agricultural R&D spending are presented in million 2005 PPP\$, in 2005 US\$, and 2005 local currency units, current local

current/constant prices, %)	<p>currency units.</p> <p>Research staffs -- by different sectors and classifications -- in full-time equivalence (FTEs).</p>
Original Sources of Data for database (may vary according to variable)	<p>It conducts institutional survey rounds in close collaboration with country level “focal points,” most of are located in national agricultural research institutes. It collects primary data at the agency level, involving hundreds of agencies.</p> <p>It has developed three different survey forms: one for government agencies and non-profit institutions; one for higher education agencies; and one for the private sector. All forms have different sets of questions, with those for government agencies and non-profit institutions requesting the most detail. The more important indicators are collected for a number of subsequent years, while the remaining indicators cover one year only, mostly the year prior to the year in which the benchmark survey is conducted.</p> <p>Time-series data are collected for three main indicators: “research investments,” “research funding sources,” and “research staff totals.” The remaining indicators are collected for particular benchmark years for use in cross-country comparisons. Additional qualitative information is gathered during country visits through in-depth meetings with various agencies. These provide a fuller picture of developments in agricultural R&amp;D than could be generated with quantitative data alone.</p> <p>ASTI is transforming in such a way that it institutionalizes regular data collection via a network of national and regional focal points.</p>
Nature of Public Accessibility to the database or other key info	<p>ASTI data are publicly available from the ASTI website: <a href="http://www.asti.cgiar.org/data/">http://www.asti.cgiar.org/data/</a>.</p> <p>It is currently working on a more user-friendly online database and reporting tool</p>
Links to and collaboration with other relevant data initiatives	<p>ASTI’s approach to data collection and analysis relies on a “network” approach, establishing and cultivating partnerships at national, regional and international levels e.g., ASTI establishes “collaborative agreements” with national research centres (for 3 years);</p> <p>ASTI has established a strong and growing partnership with FAOSTAT, which has agreed to host ASTI’s dataset (to be launched in September, 2013), and other initiatives</p>

## Appendix 2: Illustration of ASTI data & analysis usage

No	Cited ASTI Data	Issued Date (YYYYMM)	Author(s)	Institution(s)	Title	Note
1	Not accessible	201405	Beintema, N.	IFPRI, FAO	"Ch. 16 Enhancing Female Participation in Agricultural Research and Development: Rationale and Evidence", in <i>Gender in Agriculture: Closing the Knowledge Gap</i>	The study about the trends in women's participation in agricultural R&D (more detailed analysis of SSA) by the head of the ASTI initiative.
	<b>URL</b>	<a href="http://link.springer.com/chapter/10.1007/978-94-017-8616-4_16">http://link.springer.com/chapter/10.1007/978-94-017-8616-4_16</a> <a href="http://www.ifpri.org/publication/gender-agriculture">http://www.ifpri.org/publication/gender-agriculture</a>				
2	FTE researchers (public) per million agriculturally engaged population & AgGDP (2013, originally cited by IFPRI)	201405	Babu, S. C., & Blom, S.	IFPRI	Strengthening Capacity for Resilient Food Systems	By adopting ASTI data, the authors create a typology table based on a country's capacity to create, manage, and utilize human resources for a resilient food system.
	<b>URL</b>	<a href="http://www.ifpri.org/publication/strengthening-capacity-resilient-food-systems">http://www.ifpri.org/publication/strengthening-capacity-resilient-food-systems</a>				
3	Online DB (research spending, Jun/2012)	201310	Chadha, G. K., Ramasundaram, P., & Sendhil, R.	India: National Centre for Agricultural Economics and Policy Research	Is Third World agricultural R&D slipping into a technological orphanage?	The study is a part of the sub-project 'Visioning, Policy Analysis and Gender (V-PAGE)' under the <u>National Agricultural Innovation Project</u> and operated in the National Centre for Agricultural Economics and Policy Research.
	<b>URL</b>	<a href="http://web.a.ebscohost.com/abstract?direct=true&amp;profile=ehost&amp;scope=site&amp;authType=crawler&amp;jrn=00113891&amp;AN=91517086&amp;h=%2fExeuJdd2hbAT2kHy1UHn9KpIPeDQFtgP04Z5N8JXdKUic2htgfYN2vLfxrcGb%2bygFiKlw2f7XC9mw94W0Zw%3d%3d&amp;cr=l">http://web.a.ebscohost.com/abstract?direct=true&amp;profile=ehost&amp;scope=site&amp;authType=crawler&amp;jrn=00113891&amp;AN=91517086&amp;h=%2fExeuJdd2hbAT2kHy1UHn9KpIPeDQFtgP04Z5N8JXdKUic2htgfYN2vLfxrcGb%2bygFiKlw2f7XC9mw94W0Zw%3d%3d&amp;cr=l</a> <a href="http://www.currentscience.ac.in/Volumes/105/07/0908.pdf">http://www.currentscience.ac.in/Volumes/105/07/0908.pdf</a>				
4	Not accessible	201309	Boyer, J. S., Byr	Drought Research	The U.S. drought of 2012 in perspective: A call to action	The impact of the 2012 drought in the US (world's largest exporter of major grain and oilseed crops) on the international grain markets is addressed. Drought Research Council is a team of university and industry experts in the fields of drought and agronomic research representing both public and private sectors.
	<b>URL</b>	<a href="http://www.sciencedirect.com/science/article/pii/S2211912413000370">http://www.sciencedirect.com/science/article/pii/S2211912413000370</a>				

No	Cited ASTI Data	Issued Date (YYYYMM)	Author(s)	Institution(s)	Title	Note
5	Investment trends in terms of PPP, and analysis from [Country Note] by Mwala & Gisselquist (2012)	201309	Smale, M., Simpungwe, E., Birol, E., De Groot, H., & Mutale, R.	African Association of Agricultural Economists	The Changing Structure of the Maize Seed Industry in Zambia: Prospects for Orange Maize	The authors cited the investment trends (PPP) of Zambia from ASTI publication (Flaherty, K. and N. Mwala. 2010. Zambia: Recent Developments in Agricultural Research. Country Note, July. Agricultural Science and Technology Indicators (ASTI). Rome.). They also directly quote the analysis from another ASTI publication (Mwala, M. and D. Gisselquist. 2012. Zambia: Private Agricultural Research and Innovation. Country Note. June. Agricultural Science and Technology Indicators (ASTI). Rome.).
	<b>URL</b>	<a href="http://ageconsearch.umn.edu/handle/161476">http://ageconsearch.umn.edu/handle/161476</a> <a href="http://ageconsearch.umn.edu/bitstream/161476/2/Melinda%20Smale.%20Eliab%20Simpungwe.%20Ekin%20Birol.%20Hugo%20De%20Groot.%20.pdf">http://ageconsearch.umn.edu/bitstream/161476/2/Melinda%20Smale.%20Eliab%20Simpungwe.%20Ekin%20Birol.%20Hugo%20De%20Groot.%20.pdf</a>				
6	Result (AgGDP) from unpublished survey in 2012	201307	Uaiene, R., Pitoro, R., & Massingue, J.	Mozambique: Ministry of Agriculture	Investment in Research and Extension: An imperative to increase agricultural productivity	A 4-page paper on the analysis of the current situation of agricultural research and extension for PEDSA (government's strategic plan for the development of the agricultural sector for the period 2011 to 2020). The study was supported by USAID-Mapub.
	<b>URL</b>	<a href="http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.409.7725&amp;rank=1">http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.409.7725&amp;rank=1</a>				
7	Not accessible	201306	Pardey, P. G., J.M. Alston, & C. Chan-Kang	U. Minnesota, U. California	Public agricultural R&D over the past half century: an emerging new world order	An article which positions investments in public agricultural R&D as an indicator of the prospects for agricultural productivity growth. The study was funded by U. Minnesota, U. California, and the Giannini Foundation of Agricultural Economics.
	<b>URL</b>	<a href="http://onlinelibrary.wiley.com/doi/10.1111/agec.12055/abstract">http://onlinelibrary.wiley.com/doi/10.1111/agec.12055/abstract</a>				
8	Online DB (# of agricultural research staff & agricultural investment)	201209	Labintan, A. C., & Ding, S.	China: Zhongnan University of Economics and Law	An assessment of agricultural productivity and major driving factors in the republic of Benin	One of the findings of the study is that government effectiveness had a negative effect on productivity while agricultural research, extension and country openness do not have any significant effect.
	<b>URL</b>	<a href="http://www.ajol.info/index.php/ejesm/article/view/82351">http://www.ajol.info/index.php/ejesm/article/view/82351</a>				
9	Total global food & agricultural R&D spending in 2000 (ASTI Background Note in 2008)	201206	Fuglie, K., Heisey, P., King, J., & Schimmelpfennig, D.	USA: US Department of Agriculture	Private Industry Investing Heavily, and Globally, in Research To Improve Agricultural Productivity	The study concentrates on the agricultural R&D spending trends and globalisation of R&D facilities of the private sector.
	<b>URL</b>	<a href="http://www.ers.usda.gov/amber-waves/2012-june/private-industry.aspx#.U4c5KDhOVdg">http://www.ers.usda.gov/amber-waves/2012-june/private-industry.aspx#.U4c5KDhOVdg</a> <a href="http://162.79.45.209/media/784021/PrivateIndustry.pdf">http://162.79.45.209/media/784021/PrivateIndustry.pdf</a>				

No	Cited ASTI Data	Issued Date (YYYYMM)	Author(s)	Institution(s)	Title	Note
10	Public R&D investment spending trends (global, online DB in 2008), comparison on R&D investment spending between public and private sector, and Chinese R&D spending trends between 2001-2008	201206	G20	Bioversity, CGIAR Consortium, FAO, IFAD, IFPRI, IICA, OECD, UNCTAD, Coordination team of UN High Level Task Force on the Food Security Crisis, WFP, World Bank, and WTO	Sustainable Agricultural Productivity Growth and Bridging the Gap for Small-Family Farms: Interagency report to the Mexican G20 Presidency	This report cites ASTI data and analysis from database, ASTI Background Note (Beintema & Stads 2008), and ASTI Country Note (Chen, Flaherty, & Zhang 2012). Moreover, the support for ASTI initiative by G20 governments is mentioned as a condition to achieve one of the ten recommendations for way forward.
	<b>URL</b>	<a href="http://www.oecd.org/agriculture/agricultural-policies/sustainableagriculturalproductivitygrowthandbridgingthegapforsmall-familyfarms.htm">http://www.oecd.org/agriculture/agricultural-policies/sustainableagriculturalproductivitygrowthandbridgingthegapforsmall-familyfarms.htm</a>				
11	Not accessible	201205	G8	USA: US Department of State	G8-Commitment on Health and Food Security: Action, approach, and results	This accountability report does not cite ASTI data/analysis. However, it emphasises the importance of continuous support for ASTI to ensure donor investments and national food securities in developing countries.
	<b>URL</b>	<a href="http://www.state.gov/documents/organization/189889.pdf">http://www.state.gov/documents/organization/189889.pdf</a>				
12	Not accessible	201202	Maredia, M. K.,	N/A	Review and analysis of documented patterns of agricultural research impacts in Southeast Asia	The study argues that the past investments in agricultural research in the region have been productive, and that 86% of documented benefits derived from rice improvement research. It also mentions a declining trend in total documented net benefits from agricultural research in recent years.
	<b>URL</b>	<a href="http://www.sciencedirect.com/science/article/pii/S0308521X11001612">http://www.sciencedirect.com/science/article/pii/S0308521X11001612</a>				
13	R&D investment spending (PPP) from 2009	201001	WB, FAO, IFAD, UNCTAD	WB, FAO, IFAD, UNCTAD	Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources: Extended version	The note makes a brief argument, based on the ASTI analysis in 2009, that the dull growth in the agricultural productivity in Africa (particularly in rural areas) is seen as a result of small R&D investment as compared to Asia-Pacific and Latin American countries.
	<b>URL</b>	<a href="http://siteresources.worldbank.org/INTARD/214574-1111138388661/22453364/Principles_Abridged.pdf">http://siteresources.worldbank.org/INTARD/214574-1111138388661/22453364/Principles_Abridged.pdf</a>				
14	Online DB (Oct/2008)	2012XX	Fuglie, K. O.	CAB International	"Ch. 16 Productivity Growth and Technology Capital in the Global Agricultural Economy" in <i>Productivity Growth in Agriculture: An international perspective</i>	One of the two main objectives of the chapter addresses the examination of the correlation between 'national capacities in research and extension with long-run agricultural productivity growth'. The author is from the US Department of Agriculture. CAB International is a not-for-profit scientific research, publishing and international development organization based in the UK.
	<b>URL</b>	<a href="http://books.google.co.uk/books?hl=ja&amp;lr=&amp;id=N0Z2DMUq1kkC&amp;oi=fnd&amp;pg=PA335&amp;dq=ASTI+Agricultural+Science+and+Technology+Indicators&amp;ots=koMZXCJexd&amp;sig=Jd6VK8bRZ4su0vfm1Z6mPrEjkw&amp;redir_esc=y#v=onepage&amp;q=ASTI%20Agricultural%20Science%20and%20Technology%20Indicators&amp;f=false">http://books.google.co.uk/books?hl=ja&amp;lr=&amp;id=N0Z2DMUq1kkC&amp;oi=fnd&amp;pg=PA335&amp;dq=ASTI+Agricultural+Science+and+Technology+Indicators&amp;ots=koMZXCJexd&amp;sig=Jd6VK8bRZ4su0vfm1Z6mPrEjkw&amp;redir_esc=y#v=onepage&amp;q=ASTI%20Agricultural%20Science%20and%20Technology%20Indicators&amp;f=false</a>				

No	Cited ASTI Data	Issued Date (YYYYMM)	Author(s)	Institution(s)	Title	Note
15	Public agricultural R&D expenditures by region (ASTI DB, 2012)	2012XX	FAO	FAO	The State of Food and Agriculture 2012: Investing in agriculture for a better future	Together with SPEED dataset, ASTI DB is introduced as a resource to identify domestic public investment through provision of public agricultural R&D expenditures. The report also describes the comprehensive functions of ASTI. ASTI publication of Background Note (Beintema & Stads 2008) is mentioned to explain that the target of 1% of AgGDP on R&D investment is context dependent and requires careful consideration.
	<b>URL</b>	<a href="http://www.fao.org/publications/sofa/2012/en/">http://www.fao.org/publications/sofa/2012/en/</a>				

\* All URLs are accessible as of 29 May, 2014.

\* "Not accessible" for <Cited ASTI Data> column indicates that the research could not reach the contents of the materials due to the lack of access to online academic journal database.

## Appendix 3: List ASTI Stakeholders Interviewed

Name	Organization	
<b>International</b>		
David	Nielson	World Bank
Eija	Pehu	World Bank
Kerri	Wright Platais	World Bank
Mark	Holderness	GFAR
Harry	Palmier	GFAR
Amy	Heyman	FAO
Fabio	Grita	FAO
Nikita	Eriksen-Hamel	CIDA
Jeff	Hill	USAID
Cesar	Falconi	IDB
Keith	Fuglie	USDA-ERS
Piers	Bocock	CGIAR
Michael	Morris	CGIAR
Enrica	Porcari	CGIAR
Anne- Marie	Izac	CGIAR
James	Stevenson	CGIAR
Carl	Pray	Research Community
George	Norton	Research Community
Julian	Alston	Research Community
Derek	Byerlee	Research Community
<b>Regional</b>		
Irene	Annor-Frempong	FARA
Boaz	Keizire	AU
Maurica	Lorka	AU
Luke	Mumba	NEPAD
Aggrey	Ambali	NEPAD
Michael	Waithaka	ASARECA
Joseph	Methu	ASARECA
Vincent	Mama	CORAF
Mbene	Dieye Faye	CORAF
Ekwamu	Adipala	RUFORUM
Agnes	Akwang	RUFORUM
Wanjiru	Kamau-Rutenberg	AWARD
Marco	Noordeloos	AWARD
<b>National</b>		
Allagbe	Cougou Marcellin	Benin
George	Essegbey	Ghana
Roland	Asare	Ghana
Famoi	Beavogui	Guinea
Lawrence	Mose	Kenya

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<b>Antoinieta</b>	Nhamusso	Mozambique
<b>Aliyu Sabi</b>	Abdullahi	Nigeria
<b>Louis</b>	Sene	Senegal
<b>John</b>	Momo	Sierra Leone
<b>Deo Gratia</b>	Lwezaura	Tanzania
<b>Adabe</b>	Kokou Edoh	Togo
<b>Dan</b>	Kitone	Uganda

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## Appendix 4: Questionnaire

### ASTI Stakeholders Questionnaire

**Objective 2: To establish the extent to which the ASTI data is utilized by government and other stakeholders as inputs into the national policy dialogue and reform process, or are in receipt of presentations/seminars of the presented data.**

- 1) Which category of ASTI stakeholders do you belong to?
- 2) Have you accessed ASTI data from 2011 to 2014? (Yes/No) \_\_\_\_\_
- 3) If yes, which data did you access? (Please narrate to explain which data was used and which analysis was used)
- 4) Which mode did you access the data?
  - a. Website download (Yes/No) \_\_\_\_\_
  - b. Physical access (direct request to ASTI) (Yes/No) \_\_\_\_\_
  - c. Accessed from other partners (*Please name the partner*)
  - d. Others (*Please specify*)
- 5) In your opinion, was the actual data you accessed satisfactory in content and value? (Yes/No) \_\_\_\_\_
- 6) How would you rate the messaging and packaging of that data/analysis? (Useful satisfactory/Unsatisfactory? Why?)
- 7) If you access the data via website, how often do you visit the ASTI website? \_\_\_\_\_
- 8) How can you rate your experience navigating through ASTI website to retrieve the data? (*Using scale of 1 to 10, where 1 is worst and 10 is best; please rate your experience navigating through ASTI website to retrieve the data*) \_\_\_\_\_
- 9) Have you accessed the ASTI policy documents or policy research papers and information as major source in any of your policy document(s)? (Yes/No) \_\_\_\_\_
- 10) If yes, please provide number of published policy materials that utilized ASTI data in the period 2011 to 2014.
- 11) Did you disseminate these policy documents? (Yes/No) \_\_\_\_\_
- 12) If yes, which mode of dissemination did you use?
  - a. Website
  - b. Physical dissemination via workshop, seminars among others/networks
  - c. Email circulation
- 13) Whom did you target in dissemination? (*please list the recipients*)
- 14) How many of the policy documents have been disseminated? (*please list the documents by category*) \_\_\_\_\_

Based on your experience with ASTI data, what would be your main recommendations in improving the initiative for next phase?

## Appendix 5: ASTI stakeholders' recommendations

Page 5, Q17. Based on your experience with ASTI data / resources, what would be your main recommendations for improving the initiative for the next phase?

1	1. Could ASTI consider ensuring that those who need the data most are reached? Those who really need to know because they can make key decisions about their National research systems and universities obviously do not access the website. Another way of engaging them is necessary. 2. Can the analysis go beyond documenting the status of capacity to predicting the economic impacts?	Jun 18, 2014 10:32 PM
2	There is an urgent need to institutionalize the data collection and analysis with very strong technical support by ASTI	Jun 18, 2014 8:22 PM
3	Training for ASTI national focal point on data collection and analysis,	Jun 18, 2014 9:53 AM
4	Find a way to work with the CGIAR Consortium's Open Access initiative (We'd love to work with you).	Jun 17, 2014 10:45 PM
5	Complete data collection and reg. updates More analytical work with the data to do more assessment of interpretation of data - correlation with Ag sector (investment and changes in output) (changes in policy determine path of investment more successful in one area than another) (what input, rate of return).	Jun 17, 2014 8:23 PM
6	The updating has been good and there has been a lot of improvement, but it will be important to do more to get the countries to use the information. Understanding more about how the data is being used at present would be also be helpful - people might want to do some analysis - what do they want to do with it? It would be good to see more engagement at a national level, to see countries demanding data and making requests to the ASTI team. Connectivity is still a bit of a problem and it can be troublesome downloading data. ASTI used to provide CDs, but it is difficult to know how much they are used so better not to return to this. CDs should just be available on demand.	Jun 17, 2014 6:46 PM
7	Databases are never perfect from the beginning - so these things get improved with time. Some kind of interpretation of 'dos and don'ts' with the data for stakeholders would be helpful. It would be good to see ASTI doing more, sharing the data more and improving adoption. However, in doing more it is always important to remember that stakeholders are not as familiar as us, so capacity building is also important. Also, increasing their collaborations in the future.	Jun 17, 2014 5:43 PM
8	Dissemination workshop and Policy dialogue with policy makers in the respective countries should form part of the next phase. This is the only way to bring about change in agricultural R&D	Jun 17, 2014 4:33 PM
9	It needs to move towards more on the ground partnerships and policy dialogue. It needs to become more demand driven and with more of a 'pull mechanism'. There should be more emphasis on how the data is gathered and used e.g. really understanding how much policy makers use the data. It would also be great to see it become more accessible, including linkages to other resources/databases. The next phase needs to be a much more interactive phase.	Jun 17, 2014 4:12 PM
10	More analysis and policy recommendations	Jun 17, 2014 3:38 PM
11	1) Apart from just the use of the information, they need to create the national capacity on the processing and analysis of the data as well. 2) They also need to make the data more part of their national data - it needs to be more	Jun 17, 2014 11:25 AM

	<p>integrated. It is very difficult data to collect so it is important to avoid duplication and use the data more. 3) The dissemination of the information also has to be improved, but using the internet is not enough because of weak internet connectivity. So there is a need to find other ways to make stakeholders and beneficiaries more aware of the ASTI information. 4) They also need to develop more of a feedback cycle from national beneficiaries / stakeholders to better understand if the information is useful to them. Would like to arrange a stakeholder workshop to disseminate the most recent data and seek feedback, but because the national research network is so vast it can be very expensive to bring people together.</p>	
12	Should work very closely, especially in Africa, work with ASTII initiative at NEPAD. Can help with definition and concepts - can't collect data without proper definitions, could bring bias to work. Well understood and internationally accepted framework exists.	Jun 17, 2014 10:28 AM
13	Continue disseminate information and reports targeting decision makers at continental level. Target regular briefings to AUC and NEPAD	Jun 17, 2014 5:18 AM
14	3 main recommendations relating to: 1) results, 2) dissemination and 3) broader impact. RESULTS: It would be interesting to try to find a way to capture ASTI's work e.g. by providing anecdotal examples or information about how the data has been used by partners to make decisions - knows that the ASTI team already have examples of this. DISSEMINATION: It would be great if the website could give a clear sense of the document suite and hierarchy. What are the different documents available? How do they relate / what is the hierarchy? Could there also be some examples of how they are being used by partners? BROADER IMPACT: Demonstrate how a country is sustaining the data set - the longer term mission is more about the fact that it is developing. Show that it is more than just a dataset but also about capacity and impact.	Jun 16, 2014 3:06 PM
15	Would like to see much more gender disaggregated data as it is so hugely important to have that - knows it is difficult but it is very helpful. It would also be helpful if ASTI was more open about the category codes used in the datasets so that a common coding could be used by other stakeholders. For example, if the ASTI coding was accessible he would design his own databases around their coding systems, as he knows that a lot of thought goes into this. The team is very accommodating and he can always ask them - but it would be good to make this more openly available.	Jun 16, 2014 12:51 PM
16	The main recommendation would be to increase the disaggregation of the NARS (National Agricultural Research Systems) data to provide data at university level, since the tool used for collecting the data does not currently isolate the universities. In addition, it would be good to expand the coverage of NARS.	Jun 16, 2014 11:34 AM
17	He would like to see them expand the coverage to include agricultural extension. It would also be good to expand what they are doing in ag. education. The frequency is reasonable (and it is hard to gather this information). It would be more important to broaden the coverage than increase the frequency. The issue of broadening out what they cover is a pretty big one.	Jun 13, 2014 6:17 PM
18	He is a strong supporter of keeping ASTI going as it is the only source for that type of information. His suggested improvements are: more work on assembling data on agricultural extension since this is a big gap, though also a big job; more analysis of the data would probably be of benefit; ASTI	Jun 13, 2014 5:00 PM

	should probably have a newsletter flagging what is new.	
19	The data and information collected by ASTI are so relevant that they can impact some decision making	Jun 13, 2014 3:05 PM
20	He would recommend an increase in the indicators to cover more indicators. They also need the information for their own use. Collecting the data more frequently would also be good.	Jun 13, 2014 2:43 PM
21	He would recommend that because SLARI works with Ministries that they should involve aligned Ministries, e.g. Ministry of Finance as well as the Ministry of Agriculture. Also the communications unit, so that they can help to disseminate the findings and more people can come to know and use the ASTI data. Given the issues with accessing data via the internet, they should burn as many CDs as possible to be distributed to stakeholders. Important to focus on supporting the formation of policies that will get government on their toes in terms of investing in human resources etc.	Jun 13, 2014 2:05 PM
22	Two main recommendations relating to: 1) How we collect the data and 2) What kind of output ASTI is delivering. 1) The questionnaires gathering the data can sometimes be difficult to understand - they are translated from English to French and sometimes you lose some of the meaning. Thankfully they do give notes too. The questions are also sometimes very difficult to respond to - sometimes they request confidential data that people would prefer not to share. Sometimes people also find the surveys very long. 2) There could do more analysis before delivering the data e.g. try to get to the level of FAOSTAT. Would recommend improving the outputs by increasing ASTI staff so that it can generate automatic tables and figures as FAOSTAT. It would also be good to find other indicators - e.g. number of technologies, seed varieties, yields on fields of farmers using new technologies. Also, targeting the policy makers more directly with the ASTI information, reports and other indicators would be helpful to increase awareness/use of the data. In situations where a budget needs to be defended, ASTI data can helpful to make a case - but ASTI needs to reach policymakers more directly to get them access.	Jun 13, 2014 1:39 PM
23	Will provide a very 'IT centric' answer. ASTI should prepare for open access in terms of data, such that the ASTI tools could be used with data from different repositories, as well as exposing the data housed in ASTI in open access formats. This would mean that ASTI becomes an open access compliant data repository tool. All of the CGIAR centres are now under this policy. There is a 5 year timeframe for implementation but ASTI could be at the forefront and should become fully compliant with the policy. This means that someone from the ASTI team should sit on the open access task force.	Jun 13, 2014 1:25 PM
24	Cover more grants/institutions/organisations Adding onto data sources Extend categories (not only focus on research institutions, extend to NGOs which are active in transfer of knowledge and technology to farmers (end users) Look at what end users are doing to ensure that what research institutes are doing reaches the end users Expansion of scope of work Increase funding would be useful so that more could be done	Jun 13, 2014 10:54 AM
25	Difficult because of ASTI's size, helps to have reports fairly frequently, challenging to update Seems to update by region, 3-4 years before they update a region More updates of public sector R+D - frequency If they could extend to private - but this is secondary ----- Core competency of regular provision of data on public sector research expenditure and number of	Jun 12, 2014 7:37 PM
	scientist would not want to lose ___ Valuable organisation, hopes support continues, also policy directors in developing countries he speaks with support this.	
26	Some of the toughest information is still getting a handle on private data - but when you begin to link some of the ASTI material on	Jun 12, 2014 5:58 PM

	<p>people capacity and investment with the performance of the sector it is very useful. There will be an increasing call for accountability - including within the private sector - so if ASTI could play a role in making private sector data available that would be positive. There are a probably also a couple of areas where translating indicator data into more composite sets of indicator data would be useful.</p>	
27	<p>First of all, he thinks that the website is great. The main focus should be to keep the coverage there. The key thing is to keep the frequency of coverage up - this is expensive to do, but the more frequently the better. There is not a lot of flexibility for increasing the level of detail for existing countries - this sort of data is challenging to gather - so better to stick to regularly providing the existing level of detail. He has not systematically reviewed the country coverage recently but thinks that there is now a good range of coverage. Is glad that there is another evaluation happening to keep ASTI in front of the donors - it is essentially a public good. He has been really impressed by the ASTI team. If you make suggestions they will take on those suggestions. They have been operating on a relative shoe string for some time, but they still do a lot.</p>	Jun 12, 2014 4:03 PM
28	<p>Include other variables than input (impact, output). Develop more input/output/outcome/impact indicators. Put a link to the ASTI website on the Tanzania ministry website.</p>	Jun 12, 2014 3:02 PM
29	<p>Speaking from the perspective of the FAO Statistics Division (disseminates ASTI data) it would be useful to have a schedule for receiving information from the ASTI team on a regular basis, rather than having to solicit it - so making the process more official and frequent. Also, it would of course be good to expand the number of countries covered by ASTI - though realises the implications of doing so. Have not looked at it recently so not sure of the current status, but it would be good to have metadata available.</p>	Jun 12, 2014 1:45 PM
30	<p>ASTI certainly plays a very useful role in providing a lot of data that other organisations can access and use for their own analysis, and thinks that this does happen. Is aware that there was a critique that a lot of data was generated but that there was not enough analysis - how much value was ASTI adding to the interpretation and packaging side of it? For example, the analysis of issues relating to country performance. So whether providing more analysis might be useful? However, this would need to be skills / resources permitting and it may be that it is not consistent with their comparative advantage. With regards to the DIIVA dataset, which is important data for agricultural policy. It is important that African policy makers have data and real knowledge of where any country is, to provide a frame of reference / stronger start for policy making. There is a cluster of people / policy makers across Africa and international centres that should understand the DIIVA data. Though promotion is partly their responsibility, help from ASTI would be great. He very much values the ASTI team interactions - they are a very good, friendly, cooperative team to deal with.</p>	Jun 12, 2014 12:12 PM
31	<p>Question 11 - Access to data as a major source in your own papers: Not yet but we are in the process of using information collected in west African countries as inputs for a regional agricultural research policy Question 12: I would suggest ASTI to focus more on qualitative data that are necessary to explain most of the quantitative data More details to support why quantitative data is the way it is.</p>	Jun 12, 2014 11:35 AM
32	<p>Develop a few research output indicators for the national agricultural Jun 11, 2014 6:55 PM research system, such as 1) Number of new crop</p>	

varieties released 2) Number of scientific publications in journals and other media 3) Number of patents obtained Extend data collection to include spending and FTE's on public-sector agricultural extension.

