

### **CASE STUDY—Cashew Sector:**

## The African Cashew Alliance—Cracking Cashew's Potential



"Increasing local processing capacity (for cashews) would create tens of thousands of jobs, produce hundreds of millions of dollars in revenue and increase incomes for poor rural farmers."

- USAID West Africa Trade Hub

#### **DECEMBER 2014**

This publication was produced for review by the United States Agency for International Development. It was prepared by The Pragma Corporation under the MSTAS Contract.

Prepared for the United States Agency for International Development, USAID Contract Number AID-OAA-M-13-00012
USAID Africa Bureau Office of Sustainable Development—Management Support and Technical Analysis Services (MSTAS) Project
The Pragma Corporation Principal Contact: Charles Richter I 16 East Broad Street Falls Church, Virginia 22046
The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

### **C**ontents

INTRODUCTION	3
CHALLENGES AND CONSTRAINTS	4
CASHEW ALLIANCE AND WEST AFRICA TRADE HUB INITIATIVES	6
ACA AND WEST AFRICA TRADE HUB RESULTS	9
REFERENCES	П

#### INTRODUCTION

The African Cashew Alliance (ACA), a public-private partnership established in 2005 with support from the West Africa Trade Hub, is an association of international businesses with over 200 members around the world dedicated to promoting a globally competitive African cashew industry that benefits

the value chain – from farmer to consumer. The first national cashew meeting was held in Nigeria in July 2007. The African Cashew Alliance aims to bring together cashew stakeholders to develop a common vision and capitalize on the sector's potential for economic growth and employment, by creating national committees, including representatives from throughout the value chain—producers, processors, traders, and international buyers.<sup>2</sup>

It organizes country-level meetings in cashew-producing countries to promote sharing of best practices and information, maintains an active membership program that supports linkages throughout the value chain and across borders, and promotes cashews internationally at trade and industry events to increase cashew consumption and sourcing directly from Africa.

The ACA is working to enable additional processing capacity of 100,000 tons by 2015 in various areas. Since this would require large investments, the industry aims to have 75-100 new small factories

opened up and an additional 275 peeling machines installed. This would create thousands of jobs and offer market for raw cashew nut (RCN), including in areas where some nuts currently rot away for lack of buyers.<sup>3</sup>

Cashew is an important emerging sector of Africa's overall economy, providing income for about 10 million people on the continent. In West Africa alone, cashew provides annual revenues of about \$900 million and supports 6 million households in 11 countries.<sup>4</sup> It has the ability to reduce poverty, increase education levels, and boost health by generating income, creating jobs, and supporting Africa in its diversification of exports. Between 2.4 million and 2.8 million metric tons of raw cashew nuts are harvested globally each year; approximately 35% to 40% of the world's crop is grown in Africa by roughly 2 million rural farmers.<sup>5</sup> In 2014, Africa yielded a crop of one million tons of raw cashew nut, with a value of \$975 million.<sup>6</sup> Ivory Coast accounted for 45% of this total, making it the world's second largest cashew producer (after India).<sup>7</sup> Processing within Africa is still relatively low, but has grown

# ACA International Buyers and Members:

- Kraft Foods
- Intersnack
- Usibras Ghana
- Andalucia Nuts, Inc.
- Blaxton Corporation
- Cashew International, Inc.
- Costco
- International Marketing Systems Ltd.
- Metals Solutions, Ltd.
- Olam International

<sup>4</sup> West Africa Trade Hub (WATH) and African Partners Network (APN), "Value Chain Assessment Report: Cashew," May 2014, 9.

<sup>&</sup>lt;sup>1</sup> A list of all members can be found here: <a href="http://africancashewalliance.com/en/about-us/member-profiles">http://africancashewalliance.com/en/about-us/member-profiles</a>

<sup>&</sup>lt;sup>2</sup> http://www.watradehub.com/sites/default/files/23-08-2011%20Public%20Ledger.pdf http://www.watradehub.com/sites/default/files/resourcefiles/aug09/african20cashew20alliance20and20the20paris20delaration20principles2001090820jw.pdf

<sup>&</sup>lt;sup>3</sup> ACA Website.

<sup>&</sup>lt;sup>5</sup> http://www.africancashewalliance.com/sites/default/files/documents/aca-annual-report-2012\_1.pdf and WATH and APN, "Value Chain Assessment Report: Cashew," May 2014, 9.

<sup>&</sup>lt;sup>6</sup> WATH and APN, "Value Chain Assessment Report: Cashew," May 2014, 6.

<sup>&</sup>lt;sup>7</sup> WATH and APN, "Value Chain Assessment Report: Cashew," May 2014, 14.

substantially in recent years: from 35,000MT in 2006 to 114,600 MT in 2012. In fact, a new facility with the processing capacity of 35,000 metric tons was being built in Ghana in 2014.8 Existing processing units in West Africa employ 14,700 people; 11,500 (78%) of which are women.9

A rise in levels of in-country processing would have far-reaching benefits for the continent, specifically West Africa, where in-country processing is the lowest, at  $10\%^{10}$  (versus 20% in East Africa). Although processing has expanded in recent years, still only 5-12% of the African crop is actually processed in Africa. Conversely, 100% of the Indian, Vietnamese, and Brazilian crop is processed in-country. This presents an opportunity for African producers to increase their capacity to process in country, increase the value of their product, and therefore increase total export value, or at the very least attract foreign investment via new processing firms, which will support job growth and income generation.

It is estimated that a 25% increase in RCN processing within Africa would generate more than US\$100 million in household income, improving the lives of many families in rural areas. <sup>12</sup> By processing the crop in Africa, cashews will see a value-added of 35%, and generate 250,000 new jobs, 1,000 new businesses, and US\$150 million per annum in added value. <sup>13</sup> Processing just 200,000 metric tons (of an estimated one million tons harvested) would create 76, 000 new jobs (38 jobs per metric ton of cashew processed); add US\$70 million in value (US\$300-400 per metric ton); empower women (90% of cashew factory workers are women); and generate US\$26 million in wages annually (workers collectively would take home US\$90,000 daily). This would also expand the economy and promote growth in other businesses indirectly involved in the processing, such as transport, packaging companies, equipment workshops, restaurants, etc. <sup>14</sup>

#### **CHALLENGES AND CONSTRAINTS**

The cashew industry, while lucrative for many African countries, still encounters challenges at each stage in the value-chain—from growing and harvesting to processing and exporting. Access to finance is a critical barrier for most producers; but a lack of buyers, non-existent market information systems, competition with other countries who harvest and process in-country, and the labor intensive harvesting techniques also serve to severely constrain processing and export levels. In addition, cashew farmers in Africa are inadequately organized, which significantly weakens their bargaining position. The ACA was founded to cohesively respond to these constraints.

An average processing plant employs no less than 200 workers, but without the ability to secure financing, expanding production becomes extremely difficult. Access to finance is perhaps the single most important impediment limiting the producer's ability to process cashews in country instead of exporting them abroad —to India, Vietnam, or Brazil—for processing and re-export. This in turn reduces the value added content of the product, reduces the number of available jobs, and limits

<sup>&</sup>lt;sup>8</sup> WATH and APN, "Value Chain Assessment Report: Cashew," May 2014, 16.

<sup>9</sup> WATH and APN, "Value Chain Assessment Report: Cashew," May 2014, 11.

<sup>&</sup>lt;sup>10</sup> WATH and APN, "Value Chain Assessment Report: Cashew," May 2014, 10.

<sup>11</sup> Estimates vary based on year and data source

<sup>12</sup> http://africancashewalliance.com/en/about-us

<sup>&</sup>lt;sup>13</sup> These estimates are based on the 650,000 MT of RCN exported by Africa in 2007. http://agoa.info/images/documents/5127/The%20African%20Cashew%20Initiative-ACI.pdf

<sup>14</sup> http://www.watradehub.com/activities/tradewinds/may I 0/fulfilling-potential-african-cashew-industry

opportunities for African growers. Working capital, trade finance and investment capital needs remain largely unmet, as most financial institutions are still unfamiliar with the cashew processing industry and many processors lack the capacity to develop bankable loan applications.<sup>15</sup>

However, the situation is gradually improving. A recent ACA report indicated that African processing capacity had increased to 130,000 metric tons as of December 2013.<sup>16</sup> Ghana is processing 50% of all the nuts it produces. There is, however, significant variation among countries and regions in Africa. As a whole, West Africa, where 80% of the continent's cashew nuts are grown, processes only 10% of its cashew output, while East Africa processes approximately 20%. Finance for both processing and raw-material purchases, is a major hindrance, and interest rates for loans can reach as high as 30%. This has led to the dominance of foreign processing firms such as Olam and Rajkumar.<sup>17</sup>

Much of the raw cashews produced in West Africa, historically, have been exported to India (and Vietnam) for processing/further refinement into a value-added product. However, India is currently increasing its own RCN production levels, reducing the need for cashews from some West African nations who are dependent on the product, like Guinea Bissau. Competition from other cashew exporters, with a higher capacity for processing could impede West African export growth if economies of scale and processing efficiencies are not harnessed.

Cashew processing is still a labor-intensive activity, providing employment for approximately 380 people per 1,000 metric ton (MT). If Africa's entire 642,000 MT of 2006 annual cashew production was processed locally, this would create at least 245,000 new direct jobs in mainly rural areas, and many more ancillary jobs supporting the factories (packaging, transporting, equipment maintenance, services, etc). A local processing industry also could play a role in stabilizing farm gate prices for cashew farmers, as well as incentivizing them to improve product quality and yields in order to receive better prices.<sup>18</sup>

Shelling the raw nuts by hand reduces the risk for broken nuts, but the nuts release a caustic liquid and not all workers are able to afford the rubber gloves needed to ward off the resulting burns. Shelling by hand also reduces overall production levels, but produces a higher-quality product. Producers shelling by hand only get paid for their output of unbroken nuts, not by the hour, which presents another challenge – do you shell by hand, risking burns and lower total output, with a lower risk for broken nuts, or do you invest in machinery, which could break nuts, but reduce the risk to the workers, and increase total output (depending on the quantity of unbroken nuts)?

<sup>15</sup> http://www.africancashewalliance.com/en/services/access-finance

<sup>&</sup>lt;sup>16</sup> ACA, "Strategic Plan, 2014-15."

<sup>17</sup> http://www.theguardian.com/global-development/2013/nov/25/ghana-cashew-nut-farmers-profit

<sup>18</sup> http://www.anacardium.info/IMG/pdf/ACA Annual report.pdf

# CASHEW ALLIANCE AND WEST AFRICA TRADE HUB INITIATIVES

Why is cashew important to West Africa?

USAID's West Africa Trade Hub has been instrumental in providing support to the ACA since inception, helping cashew producers and exporters to increase access to finance, take advantage of growing international demand, and increase their presence in international markets. This in turn has helped expand employment, which facilitates higher incomes for women (and subsequently for families). Cashew, like Shea, represents a significant income stream for women in West Africa. It is an industry dominated by female workers and provides a small but steady income for women to support their families and provide for their children's education. This yields multiple spillover effects on health, poverty, and education levels in the region.

WATH has been working to address the challenges faced by rural farmers and producers in West Africa since 2005, when it founded the ACA, providing intensive technical assistance and institution-building support. Its primary focus has been to improve access to finance for raw materials; and to assist cashew producers and key players in organizing effectively. This in turn has improved their ability to fetch higher prices, receive up-to-date market information, and secure financing to move to processing of RCN within Africa (in lieu of exporting to other producer countries). The initial focus of USAID support was on institutional partnership development and defining well-targeted competitiveness enhancement approaches. Since 2008, this has paid off in the form of significant deepening of cashew value chain investments/productivity and trade linkages. New processing facilities are opening yearly, in-country processing is increasing, and prices (aside from market fluctuations due to the European and U.S. recessions) have increased. Access to information has improved, connections to international buyers are being established, and the cashew industry in Africa is gaining credibility with the recently established ACA Quality Seal.

#### 2008-2013

With support from the ACA, as well as from Global Trading (a founding member of the ACA) and the Trade & Development Group, a cashew processing company in Tchaourou, Benin opened its doors in 2008. Today it employs 300 people who are producing about 300 metric tons of cashew kernels annually for export. A similar operation opened in Burkina Faso soon after. Ultimately processors in the region could employ tens of thousands of people – mostly women – and generate hundreds of millions of dollars in revenue.

To overcome the challenges faced in accessing competitive finance, the ACA has provided targeted technical assistance to the industry, including grant support from the USAID West Africa Trade Hub beginning in 2009. Currently ACA is providing access to finance services in Nigeria, Togo, Guinea Bissau, Senegal, and Gambia.

The ACA has brought the industry together to combine and effectively leverage resources, resulting in a \$25 million grant in 2009 from the Bill & Melinda Gates Foundation for the African Cashew Initiative

<sup>19</sup> http://www.watradehub.com/activities/tradewinds/may I 0/fulfilling-potential-african-cashew-industry

(ACI). With \$25 million in cash and in-kind contributions from the industry, this \$50 million endeavor will directly increase farmer incomes, increase processing capacity, and improve marketing of cashew in world markets.<sup>20</sup>

ACA's co-founder, the USAID West Africa Trade Hub, plays a strategic role in mobilizing resources for the cashew sector by providing business advisory services, facilitating public-private partnerships, and increasing financial access. Through the alliance between ACA and the USAID West Africa Trade Hub, an MOU was signed between ACA, the USAID West Africa Trade Hub, and ECOWAS Bank for Investment and Development (EBID). This enabled a Togolese processor to access on a competitive basis a \$2.4 million dollar loan from EBID. At the signing of the MOU in Togo, Roger Brou, Director of Business and Finance at the USAID West Africa Trade Hub said, "This agreement will open up access to medium-to long-term finance to cashew processors who need it...they can expand their operations, create badly needed jobs and bring more income into the regional economy."<sup>21</sup>

This financing deal marks a successful and ground-breaking public-private-partnership between the ACA and the USAID-West Africa Trade Hub. The impact of this loan will assist the Togolese processor in reaching its goal of expanding annual processing capacity, through project implementation at two facilities in Central Togo. The investment will also fund the installation of cashew nutshell unit and create over 600 jobs, primarily for women. At the core of the ACA and the USAID West Africa Trade Hub partnership is the promotion of regional trade and investment support for the cashew industry, which supports both job creation and poverty alleviation in West Africa.

"Like many companies that supply cashews to retailers in Europe and the US, Usibras used to buy raw nuts from West Africa and export them for processing. Now, however, the firm – in line with a growing trend – is building a \$25 million processing factory in Ghana, which will create up to 2,000 permanent jobs when it opens [in 2014]."<sup>22</sup> In 2008, the ACA introduced Usibras to the African market and it now exports raw cashew nuts from Benin, Burkina Faso, Cote d'Ivoire, and Ghana. The new facility in Ghana, located about 50 km east of Accra, will have a 35,000 metric ton processing capacity.<sup>23</sup> "In Brazil, my labor costs are higher," says Tarciso Falcao, the director of Usibras Ghana. "Ghana has the political and economic stability, and the infrastructure. I also see potential to develop processed cashews for the local African markets."<sup>24</sup>

Rajkumar Impex, a leading Indian cashew processor, is completing a factory in central Ghana. This facility will be one of the first fully mechanized processing plants in Africa and will process 50 tons of TCN per day and employ approximately 1,000 workers. It has been a major RCN buyer from Africa with its

<sup>&</sup>lt;sup>20</sup> http://www.watradehub.com/products/cashew

http://www.africancashewalliance.com/en/news-and-info/newsletter/aca-and-usaid-west-africa-trade-hub-collaboration-results-us24-million

http://www.theguardian.com/global-development/2013/nov/25/ghana-cashew-nut-farmers-profit

<sup>&</sup>lt;sup>23</sup> http://www.watradehub.com/activities/tradewinds/may I 3/african-cashew-alliance-seal-expands-new-processing-factory-prepares-ope and http://www.africancashewalliance.com/en/news-and-info/blog/brazilian-firm-set-large-scale-cashew-processing-facility-ghana

http://www.theguardian.com/global-development/2013/nov/25/ghana-cashew-nut-farmers-profit

partners trading eight to 10% of the world's cashews. Rajkumar is looking to expand its operations once the Ghanaian factory is operational, opening factories in Ivory Coast and Mozambique.<sup>25</sup>

The ACA officially launched a seal program in 2012 to promote food safety and labor standards, enhance transparency, and strengthen quality assurance in the cashew industry. The Program has been reviewed and approved by a former US Food and Drug Administration (FDA) officer and was found to be compliant with the US Food Safety Modernization Act. Six processors throughout West and East African have already been seal approved, with many more currently going through the ACA Quality and Sustainability Seal program. According to recent projections, the seal program alone would improve cashew related farmer income by 8%.<sup>26</sup>

Within the Memorandum of Understanding between Kraft, Intersnack, and the ACA that was signed in September 2011 at the ACA Conference, these two snack giants committed to implementing the ACA quality and sustainability seal to address top concerns for buyers and ensure compliance with international food safety, quality, and labor standards. In addition, each pledged \$50,000 in annual ACA contributions to support cashew processors in complying with seal requirements.

On April 26, 2013, USAID officially awarded the African Cashew Alliance (ACA) with a Global Development Alliance (GDA) grant. The

"Kraft is committed to purchasing high quality cashews and the ACA seal of approval helps us reach this goal."

Chris Nubern, Nut Purchasing
Director at Kraft Foods

two-year program, entitled "Leveraging Cashew Business for Poverty Reduction" is expected to result in additional income of \$10 million for rural communities and create 3,200 new jobs in the cashew industry. Its primary goal is to improve rural livelihoods by increasing the competitiveness of cashew processing in West Africa. Through technical assistance for small-scale and emerging cashew processors, as well as through the development of the ACA Quality and Sustainability Seal program, this grant will support more than 450,000 cashew farmers and their dependents in linking to the international market. This will facilitate the expansion of the Seal program, drive growth in the volume of raw cashew processed in the region, and improve market access for African stakeholders. The expected growth of the cashew processing industry in West Africa will generate at least \$150 million in sales, expanding incomes for rural communities and creating permanent jobs; while building a sustainable cashew sector."<sup>28</sup>

In September 2013, the 8th annual ACA World Cashew Festival and Expo was held in Accra, Ghana and welcomed over 350 cashew industry representatives. Participants included farmers, producers, processors, exporters, ACA partners, and international investors and buyers. They attended break-out sessions on a wide range of topics, from Farming Techniques to Processing Techniques and Technologies. Three different field trips throughout Ghana were orchestrated to visit cashew producing

<sup>&</sup>lt;sup>25</sup> http://www.watradehub.com/sites/default/files/23-08-2011%20Public%20Ledger.pdf

<sup>&</sup>lt;sup>26</sup> West Africa Trade Hub Final Report.

<sup>&</sup>lt;sup>27</sup> http://www.africancashewalliance.com/en/usaid-global-development-alliance-grant

<sup>&</sup>lt;sup>28</sup> http://www.africancashewalliance.com/en/usaid-global-development-alliance-grant

areas and exporter or processing plants in country.<sup>29</sup> The 2014 event was held in Accra in November. Over 400 attendees were expected and 350 B2B events were planned.<sup>30</sup>

#### ACA AND WEST AFRICA TRADE HUB RESULTS

In 2009, the USAID Trade Hub contracted with Dr. Daniel Bromley, professor of applied economics at the University of Wisconsin-Madison, to conduct a multiplier effect study in order to determine the impact on West Africa's economy of increasing exports from three sectors: cashew, shea, and handicrafts (baskets and wood products). The research on cashews was conducted specifically for cultivation in Ghana, where approximately 60,000 small farmers grow cashew on about 60,000 hectares. The study only includes data from cashews grown in Ghana and does not take into account those cashews that cross into Ghana from Cote D'Ivoire for processing. The study concluded that \$1,000 in additional farm sales of cashews creates 120 new jobs and \$1,430 in additional income for the local economy.<sup>31</sup>

The West Africa Trade Hub's competitiveness enhancement initiatives and targeted institutional support to the ACA have produced tangible results. Under the 2010 grant program, the ACA built the capacity of bankers to understand and effectively respond to the commercial potential of cashew processing. The ACA also identified key beneficiary targets among the cashew processors for further technical assistance. As a result an MOU was signed with ECOWAS Bank for Investment and Development (EBID) in December 2010 to make available more than US\$14 million for investments in cashew processing in West Africa.<sup>32</sup>

"Under the 2011 Trade Hub grant program, the ACA in cooperation with the USAID West Africa Trade Hub supported cashew processors to improve the efficiency and bankability of their operations and prepare bankable loan applications. In 2011, three cashew processors in Nigeria secured a total of \$1.3 million in loans for working capital and trade finance thanks to the joint collaboration of West Africa Trade Hub finance experts with the ACA business team. For 2012, ACA clients are targeting \$2.0 million in working capital and crop financing and \$1.5 in new investments and expansions financing through ACA technical support. As a result of these successes, ACA has received requests for technical assistance from several new investors aiming to set up cashew processing in Africa."<sup>33</sup>

During 2007-11, the ACA facilitated more than \$110 million in kernel and raw nut exports and \$58 million in new investments in cashew processing. This helped create more than 10,000 new jobs, mainly for women in rural parts of Africa. Funding for the ACA has also increased with heightened awareness of the competitive potential of the African cashew industry. Private sector cash contributions to the ACA's budget increased from \$9,500 in 2007 (9% of total) to \$377,000 in 2011 (37% of total).<sup>34</sup> In 2012,

9

<sup>&</sup>lt;sup>29</sup> http://www.africancashewalliance.com/en/aca-world-cashew-festival-and-expo-2013

https://www.upsides.com/event/aca-world-cashew-festival-and-expo-2014/

<sup>&</sup>lt;sup>31</sup>http://www.watradehub.com/sites/default/files/Multiplier%20Effects%20Study%20with%20annexes%2015.02.11.pdf

<sup>32</sup> http://www.africancashewalliance.com/en/news-and-info/newsletter/aca-and-usaid-west-africa-trade-hub-collaboration-results-us24-million

<sup>33</sup> http://www.africancashewalliance.com/en/services/access-finance

<sup>&</sup>lt;sup>34</sup> West Africa Trade Hub Final Report, 2012.

ACA facilitated \$24 million in new investments in cashew processing, and \$85 million in cashew kernel exports from Africa.<sup>35</sup>

The primary impediments to continued and accelerated industry expansion include inadequate access to competitive finance for both raw materials and for value-added processing, substandard factor productivity, competition with established processor countries, limited institutional cohesion among industry participants, and the limited number of buyers. However, with the support of the Cashew Alliance, partners, and the USAID West Africa Trade Hub, many of these impediments are being dismantled, and vibrant markets for exporting processed cashews are being established. The Alliance has allowed cashew processors to coordinate more effectively, which leads to higher prices, increased access to international markets, and a greater knowledge of best practices and market information. If relative prices remain competitive, the cashew industry in Africa should continue to expand, providing an effective mechanism to promote job creation and poverty alleviation. This has the capacity to spur both economic growth and human capital development, and to impact both health and education outcomes in African countries.

\_

<sup>35</sup> http://www.africancashewalliance.com/sites/default/files/documents/aca-annual-report-2012\_1.pdf

#### **REFERENCES**

Africa Cashew Alliance Annual Report 2006-2007, <a href="http://www.anacardium.info/IMG/pdf/ACA\_Annual\_report.pdf">http://www.anacardium.info/IMG/pdf/ACA\_Annual\_report.pdf</a>

African Cashew Alliance, Strategic Plan 2014-15

African Cashew Alliance Website

http://www.africancashewalliance.com/sites/default/files/documents/aca-annual-report-2012\_1.pdf

AGOA Info Website: <a href="http://agoa.info/images/documents/5127/The%20African%20Cashew%20Initiative-ACI.pdf">http://agoa.info/images/documents/5127/The%20African%20Cashew%20Initiative-ACI.pdf</a>

Hirsch, Afua, "Ghana's cashew nuts farmers struggle to profit from fruits of their labor," The Guardian, 25 November, 2013. <a href="http://www.theguardian.com/global-development/2013/nov/25/ghana-cashew-nut-farmers-profit">http://www.theguardian.com/global-development/2013/nov/25/ghana-cashew-nut-farmers-profit</a>

Trade Hub and African Partners Network. "Value Chain Assessment Report: Cashew Value Chain." Prepared for the Trade Hub and African Partners Network by Abt Associates Inc., Bethesda, MD, in collaboration with J.E. Austin Associates, Arlington, VA, May 2014.

West Africa Trade Hub Final Report, 2012.

West Africa Trade Hub, TradeWinds, "Fulfilling the Potential of the African Cashew Industry," May 2010.

West Africa Trade Hub Website: <a href="http://www.watradehub.com/sites/default/files/23-08-2011%20Public%20Ledger.pdf">http://www.watradehub.com/sites/default/files/23-08-2011%20Public%20Ledger.pdf</a> (last accessed November, 2013)