

CARENSA Field Trip

30/1/2003-5/2/2003

South Africa

Undertaken by

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And

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A) Presentation of CARENSA project to the 13th Meeting of the SADC Technical committee on Sugar, Johannesburg, South Africa, 31st January, 2003

Aim:

- To explain the origin, objectives and work programme of the CARENSA network.
- To seek feedback on draft industry survey.

Both Lindsay Jolly and Helen Watson contributed to a 30 minute presentation on the CARENSA network. (Text and slides available on request).

Representatives from all sugar producing SADC countries were in attendance, but not all delegations included representatives of the private milling sector.

Although each official delegation had received the day before the soft copy of the CARENSA brochure the hard copy edition was eagerly taken. Delegates also called for a copy of the slide presentation to be made available to them.

There was limited discussion at the meeting as many delegations were beginning to depart to catch flights and so on. Even so, (and this became clear during a luncheon immediately following the meeting), there appeared to be a generally favourable attitude to the CARENSA network. There was no direct feedback on the draft factory/milling survey, although there was a general sense that milling and sugar industry peak bodies would encourage their members to participate in the survey.

Although the specific aim of garnering support for the industry survey and more specifically to receive detailed feedback on the draft survey was not met in full, attending the meeting and giving the presentation has undoubtedly ensured CARENSA remains on the sugar industry landscape of the SADC region. Furthermore, we can work to maximize the worth of the initiative by ensuring quick follow up action, by contacting participants and seeking their input/views on the survey and on the issue of bioenergy in general in the country and the region. In short, lets capitalize on the apparent good-will to CARENSA at the meeting.

B) Visit to the South African Sugar Industry, Durban. 3rd & 4th February 2003

Aims:

- To ensure sugar industry is fully aware of the CARENSA network.
- To seek opinion regarding the stumbling blocs to exploiting the bioenergy opportunity in South Africa, as well as the possible contribution of CARENSA to assist in overcoming those barriers.
- To garner support for the CARENSA industry survey.

The itinerary (attached in annex) provided the opportunity to meet with representatives of:

- the canegrowers association;
- the two largest sugar milling companies in south Africa (and southern Africa) – Tongaat Hullet and Illovo Sugar;
- South African Sugar Association;
- South African Experiment Station; and
- Sugar Milling Research Institute.

1. General comments

On balance, this was a timely and instructive trip. Not only did we take further critical steps towards firmly putting CARENSA on the map in the sugarcane and sugar industry of South Africa, but we also have ensured the opportunity remains for CARENSA to facilitate movement towards realization of the bioenergy opportunity. We must ensure however that our next focal point of the network – the upcoming workshop- maintains (and in some instances improves) the level of interest and momentum.

2. The factory /milling survey

Both Illovo Sugar and Tongaat Hullet saw little merit in completing the survey as drafted, pointing to the availability of much of the data through the monthly and annual “Laboratory Report of Southern African Sugar Factories” compiled by the **Sugar Milling Research Institute (SMRI)**. The millers claimed that we could get all of those reports from the SMRI website (www.smri.org) but it emerged that online downloading was only for registered members of the institute. Consequently we approached **Dr Brian Purchase**, Director of SMRI to gain access to the data. He confirmed again that much of the data was indeed compiled by his institution, apart from the environmental data. Data concerning factory equipment are also compiled by SMRI (in a publication entitled “South African Sugar Factory Plant Installations”), which we were allowed to sight at both Illovo Sugar and Tongaat, as well as at the SMRI, but in all instances we were unable to procure a copy reflecting its restricted classification. Furthermore, the Canegrowers Association first drew the SMRI data to our attention and provided us with a sample. Of interest is that Dr Helen Watson’s PhD student, Sabata, has collated much of the laboratory report data from hardcopy sources at the SMRI library in preparing his PhD proposal on the Viability of Sugar Cane Ethanol Development in Southern Africa.

I did indicate to Illovo and Tongaat that they might expect further liaison with CARENSA about the survey. The contact points for further liaison are:

- Mick Greenfield, Technical Director, Tongaat_Hulett Sugar Limited, Mick.Greenfield@huletts.co.za (phone +27 31 5601451);
- Mr Dave Coates, General Manager, Technical Services, dcoates@illovo.co.za (phone +27 31 508 4397).
- Dr Brian Purchase, Executive director, SMRI bpurchase@smri.org (phone +27 31 2731301)

Dr Purchase seemed skeptical about the level of detail in the draft survey needed to conduct the benchmarking exercise. Furthermore there appears to be some sensitivity to a Mauritius institution conducting the analysis: perhaps a perception that Mauritius stands to gain considerably from having access to this level of information about its southern African neighbours. In any case, our discussions with Brian Purchase confirmed the availability of the data in hard copy from annual proceedings of the South African Sugar Technologists Association. The issue now is how best to source that data, either by UM directly approaching SMRI or through another means, such as the student Sabata, under Dr Watson’s supervision. Several mills outside of South Africa are included in the survey reflecting Illovo’s and Tongaat’s ownership of milling capacity in neighbouring countries.

As far as the survey goes for other SADC countries, we will have to pursue opinions via e-mail and telephone to relevant people in the milling sector. Of importance though is that all SADC countries seem to have adopted the SMRI performance indicators, which should make the survey easier to conduct.

But to reiterate, the overwhelming sense from our discussions is that much of the data sought in the present draft of the milling survey has been collated by the SMRI and that millers would not view favourably having to recompile that data for us.

3. Views on the possible contribution of CARENSA

Illovo Sugar, Tongaat Hullet and the Canegrowers Association seemed open-minded about the potential worth of CARENSA to them. They obviously have a keen interest in the bioenergy opportunity and had little hesitation in discussing with us the stumbling blocs and building blocs to capitalizing on bioenergy.

From a Canegrowers perspective, they have a strong interest in boosting the value of fiber in cane through cogeneration and should the cogeneration opportunity be realized, then this would raise a need to review the cane payment formula to ensure growers gained a fair share of the increased value of fiber in cane. The Association has also independently conducted a review of the ethanol option, with a feasibility study conducted mid-2000 of which we were given the executive summary.

Clearly, both Illovo and Tongaat have done their homework and have confidential feasibility studies concerning cogeneration and ethanol. What was most interesting was their opinion that **CARENSA** could best aid them by acting as a “**facilitator**” for industry to gain a voice in **government policy** formulation on renewable energy. The milling companies see government policy as a key entry barrier to the bioenergy field, citing the example of the state power utility SEKOM only offering 3-4 cents kWh when they need 11-13 cents/kWh. The government appears to be warming to cogeneration a little however, only just recently agreeing to the concept of “wheeling” whereby sugar mills can use transmission lines (at a cost) to export power to other sugar mills. Millers also have a very good handle on the potential cogeneration capacity, perhaps as much as 1200 MW with installation of best boiler technology and highly efficient turbines. There is also substantial cogeneration capacity in Swaziland with two mills expanding significantly in the next few years. At the same time however, the potential cogeneration capacity from the cane sugar sector is small compared to renewable energy from the timber/paper industry (as much as 12,000 MW).

Millers are also well aware of the Prototype Carbon Fund and have already examined how carbon credits would impact the commercial viability of cogeneration – adding at most only 3-5 percent to the bottom line (in terms of revenue?). Carbon credits are being paid to a company extracting biogas from municipal dumps (Helen is that correct?).

The SMRI also bought to our attention a study they had undertaken on cogeneration potential around 1999, of which I have a copy, but as yet have not had the opportunity to peruse.

Concerning ethanol, millers await government showing a significant and long-term policy commitment via a mandate to blend with gasoline. Presently, fermentation ethanol is taxed heavily to maintain the viability of SASOL synthetic ethanol made from coal and gas. In short, there is a need to engage much more strongly in the network those government stakeholders driving the nation’s energy policy and specifically renewable energy policy. Indeed, there is probably a need to begin making contacts now! Not only with government but with the key players in the energy sector as well. I have a contact name for SEKOM for instance.

4. The Views of the South African Sugar Association

Of some concern and disappointment is that SASA and SASEX expressed at best luke-warm or at worst indifference to CARENSA and the work of UND on the agriculture and harvesting side. The new director of SASEX (Frikkie Botha), was not happy with Dr Watson's desire to focus further work on smallholders (a key gap in the literature review) and instead wanted CARENSA to remain squarely focused on public domain hard facts rather than potentially upset sensitivities on the smallholder front. This was in contrast to the Canegrowers Association who welcomed the focus and indeed pointed out to Dr Watson that extension officers would be meeting here in Durban in a few weeks time, thereby affording a perfect opportunity for discussion and fact-finding.

Trix Trickam, Executive Director of SASA was skeptical of the relevance of CARENSA to his organisation, particularly in light of their mandated focus on sucrose. He argued that SASA would continue to have no interest in ethanol until asked to investigate the matter by millers. [this was an interesting comment in light of the fact that there was a SASA Ethanol Committee in existence in the recent past – I'm trying to establish it's purpose). He added that millers had already warned SASA off the cogeneration issue, as this was uniquely a milling sector issue. He also expressed reservations about providing data to CARENSA when the European Commission is funding it, especially at a time of sensitive trade negotiations under the Doha Development Round of the WTO. In short, there is obviously a sensitivity or dynamic here that we are not fully aware of, but I intend, once back in London, to begin to better understand this via a unilateral approach to David Willers, SASA's overseas representative. Despite the indifference of SASA/SASEX however, there is sufficient enthusiasm from Millers and the Canegrowers Association for CARENSA for it not to particularly matter for the moment. Our challenge is to win them over in coming months by adopting a sensible strategy – we can discuss that unilaterally and I'm sure Dr Watson has views as well.

5. Other issues

I think there is a need to consider the need for a broader "industry survey", one that captures the opinions and perceptions of all relevant stakeholders: not just those in agriculture and the factory/milling sector, but government stakeholders in energy, environmental and rural development; as well as private players in the energy sector and motor vehicle manufacturing sector (ethanol use impacts motor performance).

New technology: ethanol from cellulose is a quickly developing novel technology on the cusp of becoming commercial viable. Perhaps there is potential to ensure that the southern African sugar sector conducts the groundwork to ensure they are leaders in adopting the technology: perhaps a novel way in which to make CARENSA even more interesting to millers?

Meeting Notes

1. Jack Wixley, Executive Director and Adrian Wynne, Technical Liaison Manager, South African Cane Growers Association

- Growers' primary focus is to gain a greater share in the value of fiber (which presently belongs to the mill but for which growers receive an imputed value for the calorific value of bagasse as a boiler fuel).
- Gaining a greater share of present and potential future value of fiber means changing the fixed revenue sharing formula between miller and grower. The present formula was fixed in 1994 with a planned "10 year" review about to get underway.
- CARENSA has potentially significant role if it can establish a reputation as a credible and independent facilitator to ensure all stakeholders can present their perspectives to the bioenergy from cane debate. CARENSA could undertake a facilitator role, especially in influencing the government to adopt the "right" policies for ethanol and cogeneration. There is a strong need for the sugar industry to involve/engage government stakeholders. Appropriate interface would be with the Minerals and Energies Affairs department of Department of Trade and Industry.
- Regarding the draft industry survey, SMRI/SASTA "milling stats" will answer many of the questions (copy of relevant stats sighted and a sample copy provided).
- Cane growers in mid-2000 updated a consultancy report investigating the commercial viability of ethanol production. Executive Summary of the report was provided. Noted that synthetic ethanol from coal was half the cost of ethanol from cane (note: this seems to go against what millers argue – that government imposes significant excise on ethanol from cane to ensure no undercutting of SASOL synthetic ethanol).
- The government of South Africa is now considering the ethanol option under an environmental paradigm whereas in the past it had confined its scope to savings in foreign exchange.
- Brought to our attention a project designed to test small power generation for rural households based on cane trash and tops (H. Watson has details).

2. Mick Greenfield, Technical Director, Tongaat Hulett's Sugar Ltd

- Regarding cogeneration issue, he referred to a government "white paper" on future energy policy (Dr Watson says she has a copy).
- Highlighted the difference between price offered by ESKOM at 3.5 cents/kWh as against their costs of 11-13 cents kWh.
- Highlighted the Australian situation where millers can sell into a deregulated wholesale market at times of peak demand when prices are at their highest.
- Tongaat has 3 mills capable of exporting to the grid.
- Have considered possibility of bringing trash from fields to the mill for power generation.
- Focused on issue of "wheeling", should ESKOM begin to allow the practice, or if proved economic, moving bagasse between mills, possibly in pelletised form.
- Noted all bagasse is presently burnt, but not efficiently. Presently generating 60-65 percent steam on cane, whereas could achieve 40 percent. Installed cogeneration capacity is 220 MW but could easily double with better boilers and more efficient turbines, but only at significant capital cost.
- Argued in order to further cogeneration it was important to begin dialogue with the National Electricity Regulator, not ESKOM.

- Concerning ethanol, a key stumbling block is a very high tax applied by government to ensure parity between fermentation alcohol and synthetic ethanol from coal and gas (SASOL).
- Concerning feedstocks for ethanol, the company has long term supply contracts with PCM (pure cane molasses) company, and so would only begin to have molasses available for feedstock in small volumes.
- Concerning the industry survey, he showed us a recent SMRI publication, which he claimed contained much of the information being sought. He asserted this was public domain information readily available from the SMRI web-site (this later was proven not to be the case however).
- All millers are fully aware of the bio energy opportunity, but the key matter was to achieve viability.

3. Dr Brian Purchase, Executive Director, Sugar Milling Research Institute

- After looking through the draft survey, Dr Purchase was skeptical of the need for such detailed information. We need to fully justify the data request.
- He also intimated that Mauritius stood to gain considerably by having access to detailed information of this type, especially as they were presently going through a restructuring/consolidation phase in their industry.
- Pointed to availability of relevant annual data in the SASTA proceedings of their annual Congress, and therefore he had little interest in re-compiling the data for CARENSA. Monthly data is only available to SMRI members via the website www.wmri.org
- Noted all SADC countries had adopted the SMRI milling performance benchmarking parameters.
- Concerning cogeneration Dr Purchase highlighted the practice of Wheeling in India, and saw a need for a similar possibility in South Africa.
- He also referred us to a paper authored by A Wienese, Sugar Milling Institute in 1999, entitled co-generation in the South African Sugar Industry.
- A general and superficial discussion ensued regarding cogeneration.

4. Dennis Tomlinson, Corporate finance Manager and David Coates, General Manager, Technical Services, Illovo Sugar Ltd

- Illovo is eager to tap into the policy consultation process.
- Highlighted press release in which it was only just reported that the government has approved “wheeling” concept. Tomlinson highlighted the absence of wheeling as a key barrier to entry into cogeneration.
- Noted the ESKOM was moving to a small number of regional distributors which should also facilitate cogeneration.
- At same time he noted that the SAPP (Southern African Power Producers) was steadily progressing, integrating the transmission network of southern Africa, with seemingly no involvement of bioenergy, possibly working against cogeneration.
- Noted a feasibility study for cogeneration in Swaziland by Duke Power (consultancy firm). Expansions at two mills over coming few years would boost cogeneration potential there.
- Cogeneration capacity: 300 MW at present, which could be boosted to 600 MW with high pressure boilers and more efficient turbines. Combined cycle power generation could boost that further to 1200 MW (but with a large capital outlay). Noted that the timber sector had far greater cogeneration capacity at around 10-13 MW.
- Carbon credits (via Prototype carbon fund) would improve bottom line by 1-3 percent only.

- Regarding Ethanol: a key barrier to entry is the tariff or excise structure on ethanol as a fuel. SASOL synthetic ethanol was impossible to compete with once these imposts were applied.
- Illovo can produce fermentation ethanol from molasses for 20 cents/litre.
- Argued that oil companies would not readily welcome an ethanol/bagasse blend.
- Noted concept of Gel fuel – ethanol with a polymer – new plant in Malawi with the involvement of Praj (Indian company).
- Noted that the employment benefits from renewable energy are enormous.
- Noted disposal of vinasse from ethanol has an issue. Their intention was to convert/condense into concentrated molasses solids.
- Sighted SMRI plant and machinery survey.
- Confirmed availability of much of the benchmarking data in the draft version of the industry survey as available from the SMRI.
- In terms of benchmarking, noted that steam% cane was presently around 52 percent but that this could be lowered to as much as 35-38 percent efficiency with appropriate capital investment in new technology.

5. Trix Trikam, SASA Executive Director together with Frikkie Botha, Director and Carolyn Baker, Scientific Liaison Manager, SASA Experiment Station.

See comments in main body of the report.

ANNEX: schedule

**VISIT TO THE SOUTH AFRICAN SUGAR INDUSTRY
MONDAY, 3 FEBRUARY**

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| 08:30 | Meet with Jack Wixley, Executive Director, and Adrian Wynne, Technical Liaison Manager, SA Canegrowers Association (SACGA). |
| 11:00 | Meet with Mick Greenfield, Technical Director, Tongaat Hulett's Sugar |
| 15:00 | Meet with Dr Brian Purchase, Executive Director, Sugar Milling Research Institute |

TUESDAY, 4 FEBRUARY

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| 09:00 | Meet with Dennis Tomlinson, Corporate Finance Manager and David Coates, General Manager, technical services, Illovo Sugar Ltd. |
| 12:30 | Lunch with SASA External Affairs representatives. |
| 14:00 | Meet with Trix Trikam, SASA Executive Director and Frikkie Botha, Director, SASA Experiment Station (SASEX). |