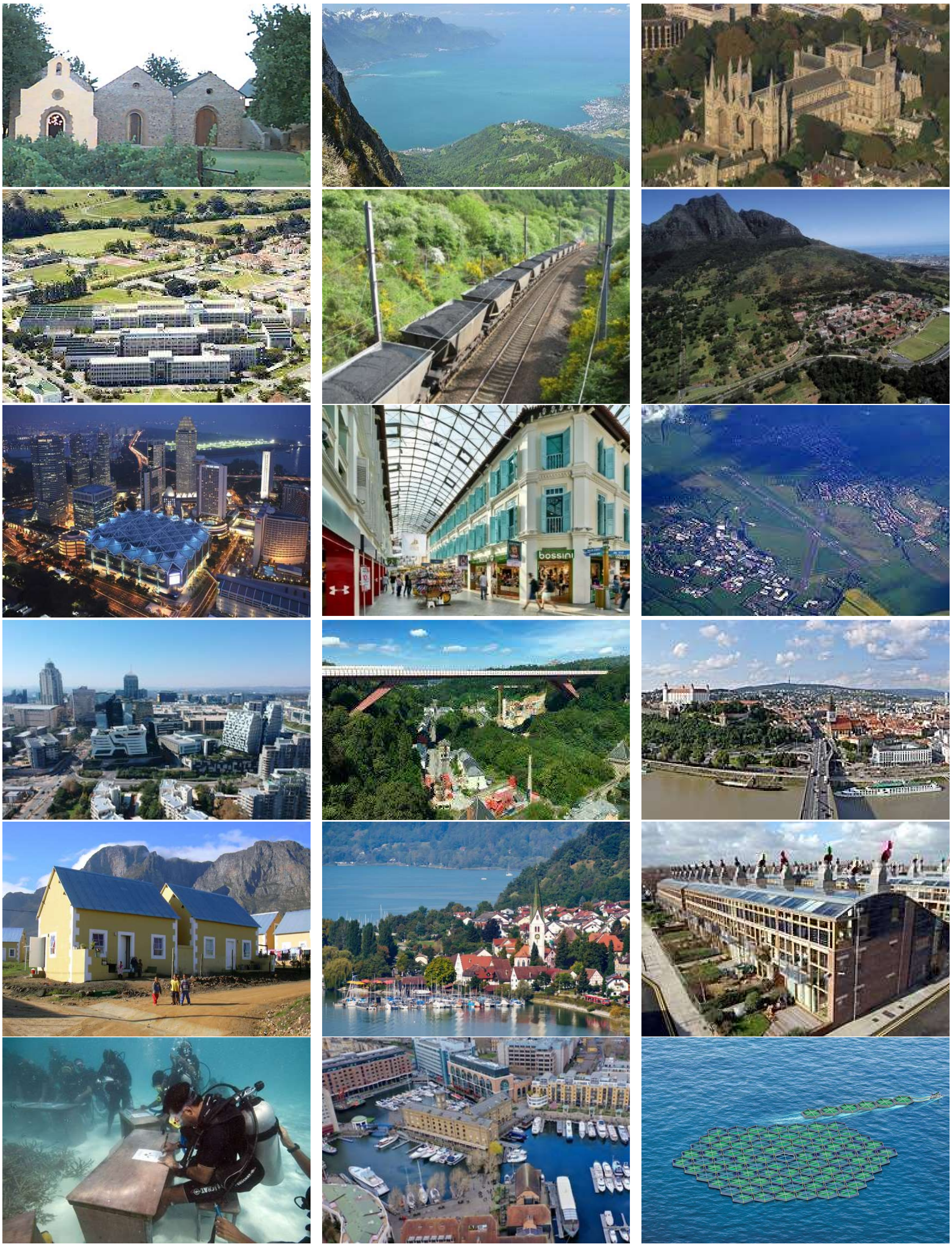

BLACKGOO TO BLOCKCHAIN

SUSTAINABILITY FINANCE IN PRACTICE - A JOURNEY OF DISCOVERY

Storm le Roux

BLACKGOO TO BLOCKCHAIN

Sustainability Finance in Practice

A Journey of Discovery

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CONTENTS

Regular visits to South Africa open new Sub Sahara opportunities.

New technology provides new tools with which to deliver climate neutrality and sustainability.

The two key objectives for the year were to follow up on documents submitted in late 2009 to the Maldives Government.

In addition, the launching of a promotion of airship capabilities in conjunction with Opportunity Peterborough.

The new year started briskly, mostly with reference to events during 2010 and in particular to the final stages of that year.

The year presented a number of interesting assignments, rather than significant events such as Gabon, the Maldives or the airship, as in previous years.

As a consultant your life is not always exciting and challenging. It can at times revert to the mundane and at times it is outright frustrating. I refer here specifically to actions of clients, at the time not fully equipped to take a strategic decision and going against the grain of the sensible.

These are times one has to remember that you are simply the adviser and the client, as typically the developer/sponsor, is the responsible party.

When you are convinced that you have provided your best advice, and the deliverables are tabled, and ignored, the best frustration alleviating route at times is to terminate your own appointment and walk away.

In 2013 we participated in a variety of consulting assignments, all largely managed from our office, resulting in a minimal amount of traveling.

Highlights from the list of assignments:

- *Agritropolis*
- *SROPTTC check list*
- *The 24/7 Eco Industrial Park*
- *QATAR IFA 2022 World Cup*
- *Q22 Agri Park Program*
- *Oregon Sustainability Center*
- *Ecodistricts*

PROLOGUE 1962 – 2001 – THE "FORMATIVE" YEARS

An earlier career is summarised across four distinct stages, being Start-up, Corporate, Venture Capital and Vineyard, each serving in a different way as preparation for the twenty Sustainability Finance years, as described in thirteen subsequent chapters.

"Take from the past that which is good and build upon that the future."(translation)

President Paul Kruger (President of Transvaal Republic)

This book describes a personal journey, undertaken to develop an understanding of sustainability and climate neutrality in practice, while conceptualising delivery solutions using sustainability finance.

Simultaneously it serves as a way to recognise and say a thank you to so many people I had the pleasure and privilege to cross paths with.

This book is not an autobiography, rather it serves as a commentary on events during my career and is aimed at linking experience to challenging sustainability issues, as and where applicable, during the process of introducing conceptual solutions, both from an operational and a transformational view.

It is especially with reference to the operational and transformational issues that digital transformation is introduced, leading to blockchain based solutions.

I have summarised the years in practice before the wine estate to illustrate that I believed I had the experience to even dare embark on the sustainability finance journey.

The book endeavours to build a bridge between experience gained and being a quasi-textbook. I did, however, stop short of making it a textbook by identifying, in the conclusion, the 20/Twenty framework.

This framework, although aged is not dated, and represents 20 highlights taken over the twenty year journey. It is planned to extend the list to further publication in future as well as serving as a strategy framework for our consulting practice.

This journey started in vineyards outside Paarl, in the Western Cape province of South Africa, when I discovered sections of our vineyards were dying, the cause diagnosed as the "blackgoo" virus.

A devasting moment in time, but unbeknown at the time, destined to take us on a special journey, the start of many challenging opportunities, for example:

- Into the financial heart of "the City" in London;
- To the early days of the Luxembourg funds-ecosystem;
- To fund management conferences in Barcelona, Monaco, Rome, Geneva, Lisbon, Brussels and Bratislava;
- To the rainforests of Gabon;
- To the inner sanctions of the China Development Bank in Beijing;
- To Namibia and one of the hottest spots for solar power generation;
- To the Maldives atolls and the President's office;
- Introducing bioregional planning structures in Namibia, Angola, Zambia and Ethiopia;

- Discovering the potential opportunity presented by blockchain applications and asset tokenisation;
- Promoting the linkage between law and sustainability;
- Fully appreciating the challenge and potential of digital transformation.

We will describe sustainability and climate change challenges and solutions, such as

- Sustainable communities and treasury trusts in conjunction with major revenue generators;
- Wine trading investment models;
- Carbon absorption certificates and rainforests;
- The potential role of VTOL (vertical take-off and landing) airships in delivering on sustainability;
- Philanthropy bonds designed for high net worth individuals,
- The developing country Economic Development Initiative;
- Producing a diesel equivalent from sea water;

Drawing from our experience, we will describe development opportunities, to mention a few, amongst others

- Biodiversity finance
- Delivering health services in remote areas of Africa
- The potential of Jatropha and bamboo
- The protection of small island states
- Aerospace technology applied to climate neutrality

In this story we will:

- Describe the development of the sustainability toolbox;
- Share the content of definitions and opinions on sustainability;
- Discuss our own developed sustainability guidelines, long before the UN SDGs appeared in 2015.

Having had the privilege of such an amazing journey, I certainly had the pleasure of meeting many interesting people and discovered many exciting "pockets of expertise".

During this journey I kept a daily log on experiences, visits and conceptual designs, allowing us now, after 11,500 + pages to draw on that experience and share with our readers, using the 20/Twenty framework, as a broad agenda.

In the first chapter, I will discuss how it all started and then in the following chapters, how it developed over the subsequent twenty years.

In the final chapter I summarised twenty highlights over twenty years and provide an indication of some of our plans for the road ahead.

But, how ready were we when the virus struck?

In hindsight, I can categorically state that I was fortunate to be somewhat prepared for the inevitable career change that followed.

Firstly, as I will explain in Chapter 1, given our previous planning on the Tuscany Village concept, it was logical that our future direction was going to be towards an understanding of applied sustainability.

In addition, however, to develop an understanding of the challenges of sustainability finance, we had to walk the walk, as our story will tell.

Secondly, again in hindsight it was clear that my previous career prior to the wonderful time at the wine estate, equipped me for the road ahead. Taking a system view, it is almost as if the various career stages, as will be described below, were designed to equip me for the challenging sustainability finance stage.

At the blackgoo moment I had thirty-two years professional experience and being 56 years in age, I was not ready to retire. On the contrary, I was ready to commence the next stage.

The formative stage – after leaving school I attended the Air Force Gymnasium and upon completion, went on to Stellenbosch University to study Electrical and Electronic Engineering. In those days it was a five-year course leading to two degrees, in pure sciences (majoring in maths and applied maths) and in engineering. In my second year, I was given the opportunity to apply for a South African Air Force (SAAF) bursary and hence becoming part of the Military Academy.

Stellenbosch, Western Cape Province, South Africa

The old engineering building, Stellenbosch University – now Visual Arts

In my final year at Stellenbosch two important events occurred, affecting the rest of my career:

My final year thesis was using a vacuum tube computer as the computing element across an analog-digital interface providing data collection from a high-speed wind tunnel. This experience provided an introduction to computers at bit level, demanding code writing in machine language. My supervisor, Gideon de Wet, a senior lecturer, provided me during this process with a first introduction to system thinking and system engineering, being invaluable at all stages of my career.

The thesis had its origin in a coffee-class late in the previous year, when I overheard the lecturer, Gideon de Wet, stating that the University received a “special” gift from Sanlam, an insurance company. The gift was in the form of a retired Burroughs vacuum tube electronic computer, reputedly the first one in South Africa. The problem, Gideon continued, was that the department did not have sufficient funds to employ students during the summer break to restore the machine. I suggested using some of us, being Air Force employees anyway. The SAAF and the Commanding Officer at the Military Academy approved the idea and me, suggesting the idea, and one of my colleagues, Martin Louw, were instructed to remain in Stellenbosch for the summer break.

Our first task was to sort out (usable or not) vacuum tubes before we could attempt the re-commissioning process. At the time I was “counting vacuum tubes in my sleep”, a real experience.

Unbelievable today, this machine had a main memory of 4,000 (4K) 32-bit words configured in magnetic strips around the drum. The real experience was learning to program in machine code (0’s and 1’s) – an useful experience later when using micro-processors.

More importantly, it taught me to approach problems from a holistic system level down to the bits and bytes (machine language), enabling identification of the components in the system. This greatly assisted me in later years when considering qualitative sustainability issues.

What is a “coffee-class”? This was an institution started by Professor Reitz, one of the four founding Professors at the launch of the Faculty in 1940. He was used to his cup of coffee at four o’clock in the afternoon in his previous role as City Engineer of Paarl. In that first year in the academic-world he was responsible for a lecture at that time, no problem, he simply invited his class to join him at a nearby restaurant for a lecture while enjoying his coffee. The main auditorium in the engineering faculty is named after him but I believe the coffee-class lived on. The institution changed in that in later years the students invited the lecturer.

I became president of the national engineering student body – South African Federation of University Engineering Students (SAFUES).

SAFUES was a national student body, founded in 1958, comprising the five (at the time) engineering faculties at the Universities of Cape Town, Stellenbosch, Natal (Durban), Pretoria and Witwatersrand (Johannesburg). A delegation of six students, representing their engineering societies from each Faculty, met for a week in July every year, rotating the venue each time. It was an excellent opportunity to build bridges between English-and Afrikaans speaking students through many social activities. It was an opportunity to review the previous year’s activities and plan for the year ahead. This was managed by an Executive Council, comprising a President and two Vice-Presidents, elected at the annual conference. This Council met post-conference every three months in Johannesburg along with the five individual society chairmen.

This privileged experience, to participate in the annual conferences and to eventually become President, provided an experience that no money could buy, augmented my formal education and stood me in good stead my entire career. It also converted me from an Afrikaans-speaker to a bi-lingual South African in a short time.

Upon graduation I was posted to a totally new development within the SAAF, being an underground tactical radar command and control centre. Being excited about the advanced technology being installed and at the same time looking forward, as per my contract, to becoming a career officer finishing hopefully somewhere from a Colonel upwards.

During March in the first year post graduation, I had to return to Stellenbosch to open a SAFUES Winter School, an annual event introducing school children to engineering as a career. I paid Gideon a visit and used the opportunity lamenting, without giving state secrets away, about being surrounded by advanced technology in my work environment but hardly being challenged at all.

He then dropped the invitation – "Would you like to return next year and take my place as a lecturer for nine months while I complete my Ph.D at Cambridge University?"

It is an indication of my somewhat impulsive nature but I agreed virtually on the spot to return to Stellenbosch about nine months later.

Before taking the locum position at Stellenbosch, I had the opportunity to travel to Europe in order to represent SAFUES at an international conference in Lisbon. Having now left the SAAF, I used the opportunity of being in Europe to visit Gideon in Cambridge where we spent a few late-night hours discussing the contents of the lectures at Stellenbosch but also being further introduced to system engineering.

It has always amazed me to discover during the journey ahead, the close parallel between system engineering and the future development of the sustainability toolbox.

Being a locum position, there was no promise of a permanent appointment and after nine months I handed back to Gideon and joined Hewlett Packard as a system engineer in their Cape Town office.

Hewlett Packard early stage mini-computer

HP had recently introduced their first mini-computers, primarily serving as controllers in larger control systems. The result, that in the relatively short period of three years, I was fortunate gaining, in a compacted manner, experience on three generations of computer technology, being vacuum tubes, discrete transistors and now semi-conductors. The HP period provided first-hand experience in identifying the gaps in the systems market and after two years I decided to set up my stall as a consultant on mini–computer based systems.

Gideon de Wet had by now left Stellenbosch, taking his talents to Pretoria and a senior position at the Armaments Corporation and my thank you goes to him for introducing me to the exciting domain of system engineering. He went on to become a highly respected Professor at the University of Pretoria and a specialist in Strategic Management of Technology.

I left HP and opened my office on the 27th Floor of the Trust Bank Centre on the Cape Town Foreshore.

Trust Bank Centre (now ABSA building), Foreshore, Cape Town

One of my first customers was dr. Charles Liebenberg, doyen of South African structural engineers. His practice was the leading bridge designers in South Africa and Charles invited me to design a suitable data processing and design system for their practice. My inclination was towards a stand-alone mini-computer based system, but the final result, after a tender process, was to take up an offer along with a number of other consulting engineers, for a share in a Univac mainframe computer, allowing a timeshare based system. A new company was formed, Scientific Cybernetics, in conjunction with Data Cybernetics, a data processing service, also situated in the Trust Bank Centre. As directors were Charles, me, dr. Rudy du Preez (a former MIT graduate and now Professor in Structural Engineering at Stellenbosch) and Calvin Fabig (Managing Director of Data Cybernetics) who originated the timeshare solution. As a rookie consultant, this was a wonderful experience to be associated with a group of talented individuals.

Engineering Faculty, University of Stellenbosch, the new facility opened in April 1974

About two weeks after I opened my office, I received a call from Christo Viljoen, one of my former lecturers at Stellenbosch University, now Professor and head of the department of Electrical Engineering, inviting me to return.

On disclosing my infant consulting practice, he agreed that I would be allowed to share that with my role as a lecturer. That is something that I am always grateful to him for because this arrangement, about a year later, enabled me to consider an invitation for a major (for me at the time) consulting assignment at the then South African Railways and Harbours (SAR&H).

What was required was three multi-computer systems, serving as a command-and-control system, controlling the movement of freight trains, travelling the 700 odd kilometres, from the coal mines up country to the export terminal at the coast, in order to meet the requirements of an export contract with Japan.

I spent three months designing the proposed system configuration and appointing suitable contractors.

Completing the consulting assignment I presented my recommendations to my client, Gert van der Veer. At the time he was the head of the Data Processing division of SAR&H and he later became Chief Executive of SAA (South African Airways) - in it's hey day. My recommendation was that a local start-up company should be appointed to undertake the system integration, using the opportunity to develop local capability and know-how. Gert supported this route despite causing considerable upset in the upper management ranks of SAR&H, being several years before import replacement became an issue. The recommendation worked and Perseus Computing developed into a major force in the SA computer industry.

On the last day of the consulting position, I was approached by the main contractor, offering me the role of project manager. They were willing to allow me to perform the task on a part time basis in Johannesburg two days every week, which required me to travel to Johannesburg twice a week from Stellenbosch. This attractive proposition allowed me to return to Stellenbosch and negotiate with Christo about the prospect. To his absolute credit, he and I immediately took off to meet with the University Principal aiming at formalising an arrangement. To my absolute surprise the latter considered the proposal a compliment to the University and immediately agreed to such an arrangement, given that my lectures could be rescheduled accordingly.

This wonderful opportunity was clearly one from where I could develop a broader consulting practice, it was expected to be a seven-year project. Part of the railway line still had to be constructed, carrying trains of up to seven kilometres long, winding through the beautiful hilly Natal midlands towards the coast.

Over the next ten years the practice developed into a leading systems house. I ignored dr. Charles Liebenberg's advice in the early consulting days, "try not to grow beyond five professionals, the optimum size for a happy business". Charles, the doyen of structural engineers in South Africa at one stage, ignored his own advice.

In regard to a career in Professional Consulting, Charles offered me two further pieces of advice:

Appear to be larger than you actually are;

Remember that you may never be super wealthy, but you will never go hungry.

I would like to add an additional piece of advice -– "As a professional consultant, develop one or more USPs (unique selling propositions) and combine them in your own unique ***toolbox***". In addition, it is good to remember that "if there is only a hammer in the toolbox, every problem appears as a pin".

As a result of user demand, the Univac computer ran out of steam and we had to migrate our users to their own stand-alone mini-computer systems.

I resigned from the University after a further year, as the weekly travelling between Cape Town and Johannesburg , in addition to lecturing responsibilities, became too demanding.

A special thank you to Christo for allowing me a special break. Christo went on to become Dean of Engineering and a Vice-Principal of the University and amongst many other achievements, the Chairman of the South African Broadcasting Corporation. He was also the originator of the Technology Park situated in the vineyards outside Stellenbosch.

A coal train on the way to export terminal at Richards Bay, Kwazulu-Natal, South Africa

The practice morphed into a private company, known as LRA and became involved in the development of computer–based armament systems. President Jimmy Carter, on becoming President in 1976, took a position against the apartheid policy of the South African government, and motivated the UN to pass a motion that “no member country will be allowed to sell arms to the SA government”. This led to the most challenging period of development for the high-tech industry in South Africa, requiring small companies like ours to take up the opportunity and technology challenges.

This era was so successful for exports from the South African related arms industry that ten years later the UN accepted a motion that “no member country will be allowed to buy arms from the SA arms industry”. By that time Jimmy was back on his peanut farm in Georgia, initiating all the constructive projects for which he eventually received the Nobel Peace Prize in 2002.

I will always be somehow grateful to him.

I am not intending to write a detailed auto-biography of this challenging ten-year period, but to briefly mention that it:

allowed LRA to move into other computer-based applications such as Data Communications and Computer-Aided Design, in turn leading to our involvement in Singapore.

allowed LRA to become specialised in the early days of the new and exciting development of micro-processors. One of my last actions before I left Stellenbosch, by now a Senior Lecturer, was to attend a micro–processor conference in Washington DC. This enabled me to introduce up to date material into my lectures with the indirect result that a number of former students later joined LRA.

Arriving in Johannesburg, one of my first consulting opportunities outside the coal line project, was from Motorola to attend a training course in Geneva and subsequently to conduct their microprocessor training in South Africa. These courses were an excellent way to identify new development opportunities.

One of most memorable was an opportunity to develop a micro-processor based industrial computer for the Anglo group for application in their coal mines. This product saw the light as LRA-1 claiming, at the time a world first, obviously something hard to prove conclusively.

allowed me to become the youngest President of the Computer Society of South Africa (CSSA) and subsequently to represent South Africa in the Council of IFIP – the International Federation of Information Processing for a period of nine years.

Establish an international consulting practice, in conjunction with Walt Nichols, a contact from my HP days. Walt's one claim to fame was that he purchased the first HP mini-computer, serial number **one**, while at Woods Hole Oceanographic Institute on Cape Cod, Massachusetts. I first met Walt when their research vessel, surveying the ocean floor around the South African coast, anchored in Cape Town. Walt, always a HP man, phoned me (then HP Cape Town branch manager) and invited me on board. The beginning of a long and lasting friendship.

The Mayflower Hotel in Washington DC – Venue of micro-processor conference September 1974

We met again a few years later at the micro-processor conference in Washington DC and I subsequently visited him at his home and office in New Bedford, Massachusetts. He recently left Woods Hole and I was leaving the university shortly to take the practice full time. During that visit we agreed, in principle, on what became an independent international practice, based in the US, LII – le Roux International Inc, and my first visit resulting in excess of fifty US visits in subsequent years.

LII eventually undertook consulting assignments in Israel, Singapore and Australia, always contracting with the South African operation LRA for manpower, effectively creating an international export operation. We used LII to export into the US and two particularly pleasing exports were SNAP – Stochastic Network Analyser Program (developed at the Applied Computer Science Institute we established at Stellenbosch University) and a data communications network program operating on an Apple II personal computer. I guess these days a similar program will be an App on a smartphone. The first sale of this particular product was particularly satisfying as the customer was the US Navy - again remembering our friend Jimmy.

Walt and I were adamant that we will never participate in any form of sanction breaking, but we were in total agreement on the legality of this particular transaction.

I salute Walt, a direct Yankee descendant, for his loyal friendship over so many years and for always willing to host a stream of South African visitors taking them on a "tour of the facilities".

allowed me to participate in the Smaller Company Management program at Harvard Business School, a 9-week program for which, in order to be accepted, you had to control a company of more than 45 employees and a turn-over of between 5 and 50 million US dollars.

Harvard Business School, Cambridge, Massachusetts

As time progressed, we developed a strong focus on the Armament Industry, causing a somewhat skewed situation on the income statement. I was a firm believer that "peace will break out one day" regarding the apartheid policy and that a company like ours could become vulnerable during the transition period while endeavouring to replace the defence related income stream.

After a number of years the company was sold into a large conglomerate and I stopped having sleepless nights about all the mouths to be fed – by then there were one hundred and fifty employees, most of them highly paid professionals with advanced degrees in system engineering.

I salute them all for the pleasure of leading them and for what I could learn from each and every one.

The Corporate Stage - I had now worked in government, in academia, in a multi-national corporate and as a self–employed entrepreneur and I was not sure about the next step following the LRA sale.

The decision was taken out of my hands when I received an approach from a Cape Town based mutual insurance company, Southern Life, offering me a position as a Deputy General Manager. The position was to establish a new subsidiary unlocking the intellectual knowledge capital in the mutual, while aiming at improving the administrative ratios by creating a new income stream. One example of the knowledge capital was a considerable investment in Pension Systems.

I relished the opportunity of returning to Cape Town and accepted the appointment.

I was now managing a small company called Ambit, operating within and "protected" by the third largest mutual insurance company in South Africa. My love for acronyms nearly landed me in early trouble with my boss, Ian Sedgewick, one of three general managers, when asked what Ambit means, I explained to a small group "aggh man business is terrible", not realising that Ian was standing right behind me. Fortunately, I was able to save the day by continuing – "the T is also for terrific".

About two months after joining Southern Life, Ian informed me in the strictness of confidence, of the fact that Southern Life is planning to merge with Anglo Life, an equal size subsidiary of the mining giant, the Anglo-American Corporation. This step implied the first time anywhere of a mutual merging with a corporate, to be followed by a stock exchange listing. This will merge two different business cultures, geographically a thousand miles apart. However, the implication for me was that there was post-merger, no future need for Ambit, given the planned nature of the to be listed parent company.

Ian conveyed a message from the Southern Board that it is only fair for me to know that I will be out of a job, three years hence.

Great Westerford, Southern Life Headquarters, Rondebosch, Cape Town

However, Ian, with an IT management background appreciated the technology challenge accompanying integrating two different mainframe systems (ICL and IBM) into one seamless country wide system. I was fortunate in being able to contribute some data communications expertise and we commenced on a comprehensive planning exercise, requiring amongst other the development of new hardware, software and system solutions.

This was 1984 and the Internet, the World Wide Web and search engines were still in the distant future but we had Videotext technology available as an information distributor. The development of videotext-based solutions in both British and German standards became a second development opportunity.

Personal computers were starting to disrupt the established main frame environments and the challenge was to develop a sensible user support policy for the new group, introducing a third business aspect into Ambit.

The combination of Videotext and personal computers led to a further requirement, this time for a suitable hardware/software interface and Ambit responded in-house with the development of the Ampac modem – the "Ambit package". One of my final tasks was to arrange an Ampac export contract to Australia – one of the few countries where videotext was well established.

All these functions were gradually integrated into the regular IT services of the merged corporate and I left happily after almost three years, having observed the dog – eat - dog survival tactics amongst top management in the corporate merger process.

One of my interesting assignments with Southern Life was chairing the monthly "Computers in Marketing" committee, attended by every divisional head in the company. I quietly thanked my experiences at SAFUES and the CSSA in leading large and challenging meetings.

Another interesting assignment - one of my first interviews with Ian Sedgewick took place in the cockpit of a Beechcraft Baron which I sold shortly after accepting the Southern/Ambit position. In addition, having an Air Force background, it was therefore not unexpected to be tasked with a study whether the company should invest in a Corporate Jet, given the steady daily flow of executives between Cape Town and Johannesburg, all aiming at a successful implementation of the merger. I was not exactly popular in certain quarters when I strongly recommended a No Go.

Venture capital stage – Having had enough time to consider the future, I decided as the next career stage to establish a venture capital company. Always a supporter of the development of University based expertise, the need for urgent import replacement was underlined by the increased sanctions applied against the South African Government in order to force change to apartheid policies.

One of the first projects in this new stage was to set up a small electronics factory for the manufacturing of floppy disk controllers, to be used in ICL Personal computers. ICL was a British computer manufacturer with a strong presence in South Africa, developed over many years. They later became part of the Japanese Fujitsu group.

By coincidence, during a family visit, my father (a former headmaster) made me aware that the old school building in Napier, where I grew up and matriculated, is on the market. Setting up a modest high-tech operation in a relatively rural environment was perhaps not exactly what is generally understood as venture capital. That model, however, introduced the first principles of the key drivers applicable in the sustainability community model in later years. I certainly appreciated ICL management's vision to support this modest endeavour.

Napier (34.4754° S, 19.8961° E), Western Cape Province. The school hostel clearly seen in the top left and the Dutch Reformed Church in middle foreground, two institutions providing a compass for later life.

During the planning process, I made contact with the local Member of Parliament, Lampie Fick. He was very helpful on a number of planning issues and in subsequent years, we became very good friends. Other than being a lawyer and parliamentarian, he was a passionate farmer on their farm Vaalplaas, just outside Caledon. This wheat and sheep farm had been in the family for over two hundred years and in recent years he wrote a book about the history of the Fick family in South Africa. Lampie served in the last cabinet of President F.W. de Klerk and in the new South Africa he became a Cabinet member in the Government of the Western Cape Province.

Our paths crossed professionally several times over the years especially when he took on the Development Planning portfolio. As a respected personal friend, I owe him a lot for his support in so many ways.

On a business visit to the UK, I read about a "transputer" in the Financial Times. This was a new form of microprocessor with four input/output channels, lending itself imminently to the design of a parallel processor. Visiting the Professor, referenced in the article, at the University of Bristol shortly afterwards, he informed me that the first transputer conference will be taking place in Grenoble during the following week.

At the time I was working on the replacement strategy for a mainframe computer, with a major computer supplier as the customer, concerned about the future supply of equipment under sanctions. I contacted my customer and he agreed to me attending the conference. As a result, following a quick return home, I arrived in Grenoble early Sunday afternoon.

Going for a walk after checking into the hotel, I bumped into two former Stellenbosch colleagues, Jan du Plessis and Pieter Bakkes, having a side-walk coffee, obviously there for the same Conference. To my delight, it turned out that they have been "experimenting" with transputers for some time. Under cover of an informal and verbal confidentiality–agreement, I disclosed our main frame project and we "contracted" on the spot to jointly produce the required development strategy.

As a member of the IFIP Council, I held an appointment as Chairman of the Publications Committee, responsible for publishing several hundred books per annum as deliverables from global conferences and seminars, organised by the 64 member countries in this organisation. In this role I became friends with Einar Frederickson, an Executive at the time at North Holland, one of our sub-contracted publishers. Einar had subsequently established his own publishing company and while at the transputer conference I arranged future transputer related publishing rights with the organisers for his company. Einar invited me years later to Amsterdam as a guest to the ten-year celebration of his publishing house, saying thank you for the original introduction and the success of the transputer series his company published.

In subsequent years I moved back to Johannesburg, being the industrial capital of South Africa, and continued with several transputer-based import replacement developments and strategy consulting assignments.

The original transputer manufacturer sold their operation and, unfortunately the DNA immediately changed in the new organisation and it was not long before this innovative solution to address parallel processing, altogether disappeared.

Our expectation of a break-out of peace eventually occurred in February 1990, when at the opening of Parliament, State President F.W. de Klerk announced the release of Nelson Mandela. Although there initially was a great amount of uncertainty what the overall effect would be on the country, I had no doubt that I had personally reached the end of the import replacement venture capital model.

It was time to change tack.

My original interest in computer-aided design resulted from an appreciation of architecture and always envying the fact that this is one profession where the professional achievement is highly visible and measurable.

I started a consulting service offering conceptual design, financial models and raising of project finance for selected types of property developments. I was excited about the combination of the experience gained with an interest in system thinking and architecture. The subject of sustainability was still very remote at this stage.

I initially established my first financial instrument (without fully realising it), combining property development with advanced technology, providing the investor with a balanced investment. On the one hand the reliability of a brick-and-mortar asset. On the other the excitement of potential growth using new technology.

This newfound interest in property development led to an invitation by an old friend, Paul Mare, to consider leading a Cape Town-based development out of trouble. After the decision to accept the challenge Yvonne and I returned to Cape Town.

As a professional cost consultancy practice, Paul's had access to various development opportunities and I became very busy in the new consultancy. I remember one opportunity being the design of a new hospital for indigents which was my first challenge of addressing the balance between socio-economic needs and investment pay-back. I did not manage to solve the challenge at the time except applying government assistance, which was not forthcoming. It remained a challenge not to be solved for some considerable time.

Yvonne encouraged me to combine my consultancy with a return to University and listening to her (always sensible advice), I enrolled for a Masters degree in Engineering, at the University of Cape Town in the department of Geomatics, with a special focus on Geographic Information Systems (GIS). At the end of the first quarter and at our first set of presentations, the Head of the Department asked me to his office and invited me to become a visiting lecturer. The invitation included the offer to upgrade my student status to that of a Ph.D student.

Unfortunately, always a bit of a sucker for doing extra work, I accepted and proposed "*The quantification of qualitative issues in design*" as a research title – not realising how much this will become a challenge in sustainability finance later – more than six years in the future. In the research that followed I proposed and developed the Finance-Technology-Innovation model as a basis. This model to this day is still part of the Sustainability Toolbox. Unfortunately, as a result of the demands imposed by my day job, it never resulted in a complete Ph.D dissertation.

The beautiful setting on the slope of Devil's peak, of the upper campus of the University of Cape Town. Table Bay and the Atlantic Ocean in the background.

As a visiting lecturer, I introduced a course on Strategic Management of Technology. I presented this twelve-lecture course over the next five years until the course was cancelled with the departure of one of the key GIS lecturers in the department, relocating overseas - an event I was very sad about.

I had never doubted the value of GIS-based systems, and the knowledge gained at UCT, turned out to be very useful when applied to sustainability applications in subsequent years.

Apart from being a visiting lecturer, the challenges of everyday life continued.

The re-development of the power station site on the Cape Town Foreshore presented a challenge to deliver an icon urban development. Having previously been involved with the Raffles Centre (not to be confused with the new Raffles Hotel) development in Singapore in the late 1970's, I could imagine a "twin development" on the site.

The Raffles development was an integration of two high rise hotels, a high-rise office block, and a conference centre on top of a huge shopping centre. The LRA role in this development during the Singapore years was in developing a micro-processor based, room-automation system. I had lost contact with the consulting engineers and requiring some assistance, I contacted my very first contact in Singapore in August 1979, and subsequently very good friend, the late Robert Iau. I also knew Robert from IFIP, where he represented SEARCC (South East Asia Computer Confederation).

I presented Robert with my idea for the Cape Town site: producing a look-alike to the Raffles configuration, with an extended Conference facility, and additionally a waterway extension connected to the iconic Victoria & Albert Waterfront in Cape Town. "Digital twinning" as a concept was unknown then, but I think that is a potential route to be followed today in similar circumstances, alleviating months of design.

He replied promptly saying that a new precinct, called Marina Bay had been developed in the interim years, including the state-of-the-art Suntec Conference facility, a number of high-rise office blocks and four hotels in the immediate vicinity. All this on reclaimed land, still unused during my last Singapore visit. Clearly, in the subsequent years this area went through a total metamorphosis. Today part of this precinct is the venue for the Singapore Formula One race in motorsport.

He went further and introduced me to the main partner at the architect firm involved in this overall development.

Raffles City Singapore

Following an initial telephonic discussion with one of the key architects, we hosted a few weeks later a visit from the Singapore managing partner, aiming to jointly evaluate the development opportunities in Cape Town.

I subsequently travelled to Singapore where I had the pleasure of observing the metamorphosis of the Marina Area first-hand, dreaming of doing something similar on our home turf. In conjunction with the Singapore practice, we responded to a tender invitation and submitted a design proposal for the regeneration of the old Culemborg Yard, retaining the original façade and turning it into a sport facility but we lost our bid to a proposal that sadly involved destroying the original building.

Suntec City Singapore

This left my new colleagues to ponder the “architectural soul” of Cape Town.

Moving forward, we unfortunately confronted political head winds, especially from bureaucracy in the City Council. In one discussion my colleague was told – “we do have architects in Cape Town and really do not need the imported product”. With that attitude from decision-makers locally, international transfer of design technology looked like a dream, and after several months we decided to rather invest in a wine estate. This rather sensible decision followed many discussions over a glass of wine, during which we discovered our mutual interest. Yvonne and I formed a consortium with the managing partner of the architectural practice, agreeing that we, being local, will take responsibility for management and on-going development.

The Wine Estate stage – as a result we moved from Cape Town to Paarl and entered the final stage of the thirty-two preparatory years before commencing the sustainability finance journey.

Following our decision, we found a suitable 45-hectare property in Paarl, obtained a three-month option to exercise due diligence and completed the purchase in November 1995.

Paarl is special for a number of reasons:

It is the home of the KWV, the then controlling body for the South African wine industry.

It is the birthplace of Afrikaans, the third (14%) most spoken language after Zulu (23%) and Xhosa (16%), with English (9.6%), most understood in urban areas and the dominant language in government and the media. Incidentally, there are thirty-five languages indigenous to South Africa, eleven of which are official.

Paarl happens to be where my grand-parents lived and where my father went to school at the well-known Paarl Gymnasium. I got to know Paarl very well starting with my earliest memory of visiting my grandparents, my grandfather lived to the ripe and richly blessed age of ninety-seven.

Back to the farm, with the harvest typically towards the end of January, and completing the purchase, we had to move fast but with the help of a lecturer at the Elsenburg Agricultural College near Stellenbosch we managed to appoint two specialists, one as wine maker and one as farm manager.

Afrikaans language Monument, on Paarl mountain

Paarl is situated at the foot of Paarl rock, and I invite the uninformed reader to follow the link https://en.wikipedia.org/wiki/Paarl in order to gain an overview of this town and its history.

Paarl Rock on mountain, towering above the town

Early in the New Year, Yvonne and I attended the founding meeting of Paarl Vintners, a new body aiming to be representative of the wine estates in the district. Other wine districts, over time, established similar organisations. Being elected as a director at the first meeting, was a special honour, especially as a number of well-known wine makers were fellow directors, with me being a total green horn. However, it was a wonderful opportunity to get an immediate start in the industry.

Tourism was a priority item for the Western Cape Province government and in the process of developing the province as a leading international tourist destination, each local Tourist Bureau had an important task in setting standards for the hospitality industry. With wine estates playing an important role in this regard, Paarl Municipality approached Paarl Vintners to consider a merger of the two organisations. The task fell upon me and a fellow director to construct the merger and I was appointed as the Vintner’s representative on the Bureau board. I became Chairman shortly afterwards and had the pleasure of working with the newly appointed black mayor jointly taking steps towards tourism success in the “new South Africa”.

This was an excellent experience, contributing in many ways to later years during the journey.

I was extremely fortunate and privileged to have had the four very different stages of experience to look back on.

How does one summarise the highlights of six years of a completely different and privileged lifestyle on a wine estate?

There is a romantic notion about living on a wine estate, but for those who have had the privilege, there is also the everyday hard reality.

Some of our memories and highlights:

Farming is a joint venture with nature everyday of your life – praying that it does not rain when the sugar readings are spot on and the team is ready to commence the harvest – and then praying that it does rain when new shoots appear after the winter - if that does not teach humility nothing will.

Following the purchase, my daughter Jacqueline declared – "thank heavens, now I can tell my friends what my dad does for a living – he is a farmer"! Give me a system engineering challenge any time Jacqs.

Once the harvest is in the tank, to firstly secure the quality and safety of the product. To then calculate the future value of the asset and plan a marketing strategy. I regularly thanked Dan Bricklin for his moment of inspiration while attending a lecture at Harvard Business School, when he perceived the first spreadsheet that became Visicalc. Yvonne once remarked that I came to bed with my spreadsheets. (I could not help thinking of the days when in IQ2000 (a LRA subsidiary and Visicalc distributor in South Africa), we compiled lists on the potential uses of spreadsheets for potential customers. I could certainly not remember having "wine cellar management" on that list).

To meet the wine buyer of a large international hotel, having waited quite a while for an appointment and to then discover that your wine is not that special because "I have another hundred wines to taste and evaluate". On a marketing note – following our first bottling, we made an early claim to be the first estate in the world to put our web address on the label – presenting our DNA in one go.

I recall the many interesting and challenging discussions in Paarl Vintners board meetings. The discussions were light years away in content and focus from my experience at LRA, Ambit, SAFUES, CSSA and IFIP equivalents, as is to be expected. At the Vintners the focus was constantly on the socio-economic issues facing the wine industry, providing a totally alternative vision. In hindsight, that was probably the birthplace of the Tuscany Village concept and what followed.

I once remarked that the privilege of being a vintner is on par with:

Getting high marks in a difficult examination paper;

Hitting a golf ball straight down the middle of the fairway (not a regular occurrence);

In addition, one of the fringe benefits is enjoying "your wine" with customers and friends. Or, alternatively, to be hosted at lunch at the Tanglin Club in Singapore and the host orders your wine – "because it is very good – right?" I can still see the worry on Yvonne's face – by then she had become the wine maker.

Towards the end of our period on the farm we had the pleasure of inviting a new neighbour, former President F.W. de Klerk to lunch. By then he had left Government after serving as a Vice-President under President Mandela at the start of the new South Africa. He and his charming wife enjoyed our wine, after listening to the pleasures of wine-making from Yvonne, he invited me to provide him with a feasibility study in order to establish his own cellar.

To my knowledge he never followed the challenging route of producing his own estate wine.

There is much more to pull out of the memory bank, but I will conclude by stating that after many successful harvests, personally marketing our wine and participating in numerous exhibitions, sadly the blackgoo virus struck.

Were we ready for what lay ahead?

The rest of the book aims at telling the story following that moment and you, the reader, be the judge.

Go well.

Storm le Roux -- Ascot – Berkshire – United Kingdom

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11 May 2021

CHAPTER 1

2001 – 2004 - AT THE START

Summary

We commence the story of our journey with the discovery of the blackgoo virus in the vineyards, the disappearance of a dream and the slow process of creating a new career, styled as ISD Consultancy - Investment Sustainability Delivery.

My one lasting memory, standing in the vineyard, twenty-one years ago, observing the dead vines, is one of utter devastation.

It was already a considerable journey to arrive at that point and I have often been asked about my motivation in scaling down a successful consulting practice, in exchange for getting involved in a wine estate – however romantic that might sound.

The answer is simply – DNA. To which we could add our love for wine, wine making and the wine industry generally.

I am a ninth-generation descendant of JC le Roux, considered the founding father of the South African wine industry. He is further acknowledged in that the leading Methode Cap Classique (the South African term for champagne) producer in South Africa is named after him.

On October 18, 1685, Louis XIV formally revoked the Edict of Nantes and deprived the French Protestants of all religious and civil liberties.

A group of French Huguenots, fleeing from the resulting religious persecution, arrived at the Cape of Good Hope, at the time a small Dutch settlement at the foot of Table Mountain, the southern tip of Africa. Fourteen families on the small vessel, called the Voorschoot (the apron), left Holland several months previously after being taken care of by King William III (William of Orange). On that small boat were two young le Roux brothers and they were followed to the Cape of Good Hope a few years later by a cousin, Jean of Normandy. He brought an extensive knowledge of viticulture with him and married a Dutch girl, with whom he had nine children, JC apparently number two in the pecking order. As they say – the rest is history. Today the le Rouxs are one of the larger family groups amongst many families with French names in South Africa.

Now we were a week away from exercising an option to buy out our co-shareholder and to commence the implementation of our long-term vision and dream.

What was that dream?

When we first arrived on the estate in November 1995 , we were shocked to see the poor quality of the available accommodation for farm workers – comprising a simple one bedroom cottage with no running water and no sanitation. While poor accommodation is the fate of many in poverty-stricken parts of the world, the low standard observed was simply unacceptable in the elitist wine industry of the Western Cape Province of South Africa.

In 1994, following the first democratically held election in South Africa, brought Nelson Mandela to power as the first black president. In a quest by the ANC to win every one of the nine provinces, including the Western Cape, and probably the jewel in the crown, busloads of people were brought in from the Eastern Cape province and simply dumped with no jobs and no accommodation. This created an overnight infrastructure problem in the smaller towns near Cape Town, such as Stellenbosch, Paarl and Franchhoek, with the result that squatter camps sadly became a common sight.

The development of low-cost housing became a priority item, delivered as mass housing solutions with limited government funding, with little or no urban planning, the latter largely due to time constraints and needless to say, no provision for the extra facilities with which to create a social fabric. However, a lot of credit is due to many employees within the local municipalities for managing delivery of liveable conditions under tremendous strains at the start of the post 1994 "*new South Africa*", as it became generally known.

Within our own confines at the estate, our immediate priority was the upgrading of daily living standards of our workers, to be followed by delivering a sustainability community with our farm workers, including property upgrade, community facilities such as a health clinic and a creche facility for the little ones. In addition, basic lifestyle skills upgrading was clearly a priority. The bottom line was we wanted to be proud to show any visitor around, be it a customer, wine agent, tourists or even the media.

This all sounds good and logical but the challenge has to be seen and judged in an economic context, given our relatively small operation.

As a 45-hectare property (one hectare being 2.47 acres) or 450, 000 square metres, or 4,843,755 square feet or more interestingly, approximately 84 football fields, with 35 hectares planted with vineyards and a cellar capacity to process 300 tons of grapes in a once per year season, this was going to be challenging.

Our maximum production capacity therefore resulted in approximately 18, 000 cases (12 x 750 milli-liter bottles) – equivalent to 42, 804 gallons of wine - a considerable amount to get into the market.

(A standard bottle of wine is 750 milli-liters (ml), meaning a case of 12 bottles contains 9 liters, or 2.378 gallons. At 150 gallons per ton, a ton of grapes becomes 150/2.378 gallons per case, or a little more than 63 cases of wine. With 12 bottles per case, we have 756 bottles/ton in total).

This positioned us as a producer somewhere above a boutique cellar (so called "mom and pop" wineries in the USA), but well below any mid-size operation.

To make a comparison with the state of Missouri, where German settlers introduced vineyards in 1837, making the state one of the oldest wine producers in the USA. Today, more than 1,600 acres (6.5 km^2) are planted with wine grapes. In 2008 over 888,000 gallons of Missouri wine was sold, with a winery count of over 126 by 2016, providing an average of 7,047 gallons per winery. Some interesting facts about Missouri goes back to the mid-19th century, when the phylloxera louse destroyed much of the grape crop in Europe, especially France. Missouri's state entomologist, Charles Riley, found that American rootstocks were resistant to the pest. He directed sending millions of rootstocks to vineyards around the world, to which their grape varieties could be grafted. This saved the French wine industry as well as others, including South Africa. The city of Montpellier erected statues honouring these events.

By contrast in France, between 7 and 8 billion bottles were produced in 2015, by 84,483 wineries across eleven regions, producing on average 16,419 gallons per winery.

When considering these numbers, there is no question about the competitive wine producing world out there.

In all this our dream of combining modest production capability, with modest economic means and ambitious sustainability community objectives had to be somehow made real.

The potential answer was in honouring the heritage of the stone cellar, built by Italian prisoners of War, towards the end of World War 2, in calling one of our first wines, Tuscany Spring (a wine of the month selection in 1996). From there the idea initiated to develop the cellar building into a combination of wine related production, hospitality and training, to be called Tuscany Village. The objective was to establish the project as an economic driver in support of the desired sustainability community development.

What was interesting was that the Italian style architecture (built in stone from the bed of the river flowing through the farm) differed from the typical Cape Dutch architecture found on many wine estates in the Western Cape. As a result many advertisements were filmed on the estate during the European winter, when outdoor shooting was problematic. This provided funding for that bit extra for the workers and this combination of economic driver and sustainability needs, further contributed to the origination of the Tuscany Village concept.

The front view of the cellars – the planned future Tuscany Village development

Given our modest economic strength, it was considered making the Tuscany Village a separate legal entity from the wine estate. This would allow raising the development funding externally, to be applied towards application of future profits to the benefit of the sustainable community – a form of impact investment, although the terminology was certainly not in use at the time.

Looking back, that objective represented ambitious thinking, being somewhat scant and under-developed, albeit based on a strong belief in the principles of applying sustainability in practice with all the concomitant challenges.

However, at that lonely moment in the vineyard I had to act, trying to immediately determine the extent of the infection across the estate as well as the root cause (no pun intended).

Healthy vineyards with cellar complex at left in background

It was patently clear that the proposed sale could not proceed, before we have at least determined whether we are sitting on a toxic situation or not.

A request to Nietvoorbij, the nearby situated world leading viticultural research institute, was met with prompt action. They produced a detailed and disturbing report on the extent of the damage within two days.

The cause was identified as the “blackgoo virus” but with very little knowledge about it. For example, is the virus air borne or soil borne and what is its life expectancy (if applicable to a virus)? The Nietvoorbij consultants presented their best available knowledge and were also able to consult with visiting French viticulturists – who also had never seen it.

For a more detailed discussion please use the link https://www.wineland.co.za/black-goo-decline-of-grapevine/

Vineyards hit by blackgoo

Very briefly – when the stem of the vine is cut, a black oily substance is observed, capable of totally smothering the flow of nutrients from the roots to the vine, leaving it with normal looking foilage but only zero to five percent of the berries formed. Clearly the only obvious solution is to remove the vines, replace the soil to a certain depth and to commence with a replant program, a process in the order of five to seven years before back to business as usual-obviously a no-brainer, with limited funding available.

The immediate question then arose - What is the next step?

At the time it seemed obvious that the closing date had to be postponed, in order to enable a proper investigation, evaluation of the toxicity of the blackgoo infection and having enough time to determine a future strategy before closing the sale.

One way out of the dilemma was to sell the estate for potential future property development. The farm was on the urban development edge and it would only be a question of time before a future urban edge would include the farm.

Given a long time frame, this clearly called for a visionary developer with deep pockets and we were fortunate in locating a suitable buyer. The property development value enabled us, to hand over the property, at this time no longer an estate, within a period of 6 months. We were left, deeply disappointed in the failure of our dream for a future Tuscany Village development and unclear about a future strategy – a potential Plan B if you like.

However, in the following three years, a number of "lessons" co-mingled to provide the beginning of a future strategy.

The first "lesson" kicked off, with an introduction by Dennis Moss, a local urban planner in Stellenbosch, to a better understanding of sustainability and definition of the "triple bottom line".

During the period 2000 to 2003 I became involved with a professional team in developing a proposal for a Cape Town Culture and Convention Centre combined with the Arts Cape theatre and a new exhibition centre on the one hand and on the other a parking garage integrated with the unfinished motorway on the Foreshore of the City of Cape Town. In our team this project became known as the C4 project.

The uncompleted Foreshore Freeway Bridge in Cape Town circa 2007 – source : wikipedia

Before proceeding, some additional remarks on the remarkable history of the Foreshore Freeway, will not be out of place.

The **Foreshore Freeway Bridge**, also known as Cape Town's **Unfinished Bridge**, is an incomplete section of what was intended to be the Eastern Boulevard Highway in the city bowl of Cape Town, South Africa. Conceptualised and designed in the late 1960s, work began in the early 1970s with the freeway aimed at alleviating future traffic congestion in the city expected in the years to come. However, due to budget constraints in city expenditure at the time, the project never came to completion and has stood in its unfinished state since construction officially ended in 1977. While there has been much speculation in local press over the years regarding the freeway's eventual conclusion, the city council has yet to come to a decision regarding the matter. The structure has become somewhat of a tourist attraction over the years and is also a popular movie and fashion shoot location.

Completion of the bridge became a definite challenge to engineering professionals in Cape Town over the years and the C4 Team was certainly no exception. The concept of using the roof of a future parking garage as the road deck of the motorway, was a brilliant idea introduced by our architecture team member Tobie Lochner and we could suddenly envisage a completed freeway. Unfortunately, feasibility margins were tight in the financial model and with no additional financial support from the City Council declaring to us “we rather build houses than be seen spending money on this monstrosity”, we knew that we were challenged and quietly terminated the development of the proposal.

Numerous attempts to finish construction have been made over the years, but have all failed for one reason or another. As recently as February 2018, following a request for proposals, a contractor was chosen to complete the unfinished highway but work was, once again, halted, this time because of alleged tender irregularities. For the time being, sadly, the bridge will stay the way it is.

With the advantage of hind-sight, and with reference to the “Unfinished Bridge “, what is challenging is to consider the linkage between large infrastructure projects and sustainability and climate neutrality. We will be returning to green infrastructure finance at a later stage.

In the meantime, let’s cross the bridge and continue with our story. The process of raising finance for the C4 project required a number of business trips to the UK and Europe. During one such trip, the process of “better understanding sustainability” were helped along during a visit to London, when I had the privilege of meeting John Elkington (who coined “the triple bottom line”) in person and subsequently buying his book – “Cannibals eat with forks”.

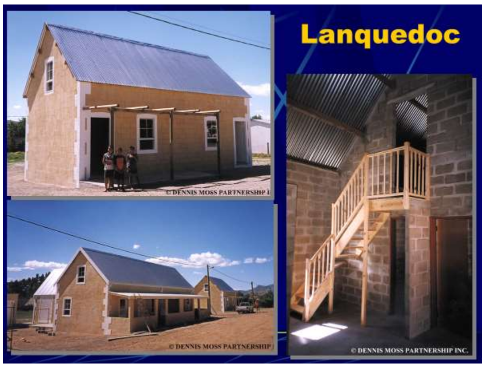
This important first step in this lesson (i.e. understanding the triple bottom line) was followed by an extensive introduction by Dennis to the very interesting subject of bio-regional planning and the accompanying legal planning structures accentuating the importance of bio-sphere reserves.

These are important subjects in the onward journey and more time will be dedicated to them later.

A second “lesson” took place during a visit to Lanquedoc, a low-cost housing project abutting the Boschendal wine estate, in which individual housing units were delivered in 2000 within a Government budget of ZAR18,000 per unit. However, to their credit, the architect’s team in the Dennis Moss practice managed to introduce a more liveable unit with the introduction of an additional floor.

However, what struck me most during that first visit was the lack of reasonable infrastructure, such as streets and proper street water drainage, simply due to the lack of funding. Clearly the principal objectives driving the Tuscany Village dream, were again refreshed.

Developing the sustainable community concept is in itself a challenging subject and became an important part of our consultancy over ensuing years.



Enhanced housing unit including additional floor

A Lanquedoc street scene – note the football in the right foreground

Just to make life interesting and even more challenging, during this same period HIV aids developed to pandemic proportions in South Africa, and an opportunity arose to consider the development of an orphanage for children whose parents have succumbed to HIV Aids. One approach was to consider the orphanage as effectively the development of a sustainability community and will be further discussed later.

Exposure to these challenging projects, led to making a statement, repeated many times over in the ensuing years – ***"In order for sustainability and climate neutrality to be effective, it has to be successfully delivered. In order for it to be successfully delivered, it has to be financed."***

Observing the ZAR 18,000 homes (that could be argued is better than nothing) and considering the orphanage challenge, it was crystal clear that one could not rely solely on Government for challenging sustainability funding. As a result, I was faced with an issue that became a personal challenge, i.e. to develop investment mechanisms for the delivering of sustainability (incorporating climate neutrality) – coining the challenge as "sustainability finance", but at that stage not having much of a definition yet. That was to come with time and the discovery (or invention) of suitable solutions.

The third "lesson" followed, i.e. introducing real options analysis as a first step in what was to become a library of sustainability finance solutions. By then, in 2002, options pricing was certainly a well-developed principle in corporate finance and providing a robust basis for global derivative trading. However, real options analysis was early out of the blocks. Here options theory was being applied to "real" world applications and the finance opportunity (arbitrage value) was created in the difference between calculating the normal net present value (NPV) of a project (by then a well-established methodology) and the alternative NPV, resulting from the consideration and introduction of a combination of various real options.

September 2002 also saw the founding of ISD Consultancy (Investment, Sustainability, Delivery) in conjunction with Dennis, my son Hein and Paul Mare, an old colleague and long-time friend. Two years into the journey, the impression of the first number of lessons was clearly incorporated into the name, of what was to become our consultancy vehicle into the future.

Not credited earlier, Hein was very involved in the development of the Tuscany Village in the pre-blackgoo years. At the time he was a final year honours student in Quantity Surveying at the University of Cape Town, where he submitted the design concept as part of meeting degree requirements. He later obtained a Masters degree in Sustainable Development and Climate Change at de Montfort University in the UK, and is still contributing greatly to keeping the Tuscany Village dream alive.

Following the discovery of blackgoo in the vineyards and the initial termination of the dream, with the interim passing of the first few years, I felt that we turned the corner and that there was a future to be looking forward to. How that future developed, I look forward to sharing with you, the reader.

In our next chapter, we will talk about the events leading us to leave on a permanent basis for London, being one of the leading financial centers of the world.

Highlights for this period:

This first period brought a down to earth understanding of the true definition of sustainability, best described as the triple bottom line. It also produced a better understanding of housing needs by the poor and the contribution sustainability communities could make.

The ALEF model available as the first investment model in the Sustainability Toolbox.

CHAPTER 2

2004 – 2005 - THE CITY OF LONDON

Summary

An unfortunate investment led to the opportunity to transfer to the UK and start a new career. Invited to work in a high-powered financial environment, provided several opportunities gaining an insight into appreciating the potential for converting financial instruments into new solutions in sustainability finance. The message is sometimes complex and difficult to deliver.

If you want to travel fast – travel alone, if you want to travel far – travel together

African proverb

Fund raising for the C4 project took me on a number of trips to the UK, in some cases accompanied by Johan Loubser, a colleague in the development team.

Johan, an alumnus of Stellenbosch University Faculty of Law, had many years of practising corporate law behind him, and an appreciated team member. He influenced my appreciation of the potential contribution of a good lawyer in the team, to the extent, that my subsequent view had been that the legal member of the development team should be one of the very first appointments to be made. The seed for what became SULAFI (SUstainability LAw and Finance Initiative) years later, received a start at that early stage. Johan went on to become a successful practitioner of Public Finance Initiatives (PFI), with a specialisation in delivering hospitals. He also became the owner of a wine estate in the Wellington wine district.

On one such UK visit we were hosted by the management of the National Exhibition Centre just outside Birmingham, a site covering 182,000 sq m and 20 interconnected exhibition areas.

On a further occasion we were invited to pay a visit to the EXCEL exhibition centre, a 100-acre facility in Newham in East London, at that stage (2000) in the final stages of being completed. These visits certainly opened our eyes to the scale and potential marketing reach of a well-designed exhibition facility – our ambitions back in Cape Town certainly paled in comparison.

The importance of these two visits is that it introduced me to a retired banker, Horst Mueller who spent most of his career with Commerz Bank in Germany.

Horst was spending his retirement concentrating on financing third world developments and in 2002 provided one of the first opportunities to introduce the ALEF model.

ALEF being **Agri-Life-Export-Model** with **Life** being a further acronym – "Lifestyle Improvement for Farm Employees within the **Agri**cultural Sector" – all summarised in one word – thanks to the power of an acronym.

ALEF Vision - To provide a structured sustainable platform, consisting of Investment Finance, International Import/Export Trading Mechanisms, Project Management and Support Structures, with the primary aim of **Alleviating** and eventually **eradicating** poverty in the Western Cape Agricultural Sector.

Sustainability driven investment models, developed during the course of this journey, will be introduced at appropriate times.

In each model we normally commence with a need statement and/or strategic goals, proceeding to a business model where the primary source of revenue generation is identified. We then progress with an investment model in which the business model is combined with an investment resource using an appropriate financial instrument. The complete package is delivered as an investment proposal, incorporating a financial model and risk-reward-impact analysis.

One of the many picturesque views of Constance on the Lake

Horst was based in Constance, a city on Lake Constance, on the southern border of Germany with Austria and Switzerland. In 2002 I met with Horst a number of times, first in Stuttgart and then in Constance, principally to explore the practical financing and implementation of ALEF.

On the second visit to Constance in mid-2002, Horst introduced me to a gentleman known as dr. Frans Haas, an ex-diplomat for West Germany and at the time an executive with an Austrian based philanthropic foundation, underwritten by an aristocratic Austrian family. He served some of his time as a diplomat in the Central Congo Republic and I certainly got the impression that he had an understanding of third world challenges.

A good part of our evening was spent on a detailed explanation of the high yield sophisticated investment model developed by their Foundation and the manner in which it could support the implementation of the ALEF model.

Following a satisfactory meeting, Horst and I held a quick debrief and one thing I remember from that is a strange remark by Horst – "I do know that dr. Haas has a very expensive wife". Unfortunately, I did not take great notice of the remark at the time. However, I was reminded of the remark once more, when at a subsequent visit to Constance, dr. Haas called me at my hotel, apologising for not being able to meet as he was spending time at an exclusive Spa resort with his wife.

This remark was totally forgotten by early December, when he called me unexpectantly with an invitation to invest in the Foundation's model with a promise of an outstanding yield to be applied to the delivery of the ALEF model. Promising everything that we were working on in a series of payments early in 2003 enabling the realisation of a strategy and a dream.

Looking back it is so easy to identify the basic mistakes made, i.e.

Taking my eye off the ball and not realising that he had fully read my mojo and the fact that I was so keen to deliver on our strategy two years after blackgoo.

Not remembering that when something sounds too good to be true, it normally is.

Ignoring the fact that he wanted our investment before the end of the year.

We finally concluded the "transaction" in Frankfurt (venue at his suggestion).

My biggest mistake in his whole sequence of errors and misjudgements was that I did not consult with Horst on this "investment opportunity."

As it happened, the next time we talked to each other, towards the end of the first quarter of 2003, was an unhappy and embarrassing (for me) discussion. The occasion was me calling him from my hotel in Frankfurt airport to tell him about the ill-fated dr. Haas investment.

The events leading to this call: the investment had been made in Frankfurt between the previous Christmas and New Year; subsequently three months have transpired with no promised deposits forthcoming from the investment, accompanied by endless excuses offered by our friend dr. Haas. In one of those excuses offered it transpired that he will be staying at a certain hotel on the outskirts of Frankfurt on a specific date. After confirming with the hotel that he is in fact booked into the hotel, I made a spur of the moment decision to travel to the same hotel, with the intention of surprising him at breakfast the next morning. Arriving early the next morning after an overnight flight, the front desk disclosed the disturbing news that he had in fact not arrived yet and with no communication or cancellation from him at all.

Making my subsequent call to Horst and disclosing my sorry tale, to his credit he offered no recriminations and promised to look into dr Haas's whereabouts as quickly as possible. It was also not long before he called back with the news that dr. Haas was in police custody after being arrested at the airport the previous day for a number of fraudulent transactions over the last year! It also transpired that he was not in employ of the Foundation at the time of our transaction – it was just one enormous scam.

What does one say at moments like these. Not much other than apologising to a sympathetic friend.

The positive outcome of this sorry tale was that Horst shared with me, several weeks later, information about a recent visit he made to London where he met a small but interesting group of structured finance specialists led by a German lawyer Uli Herzog. Horst followed this up with an introduction to Uli, who immediately extended an invitation to visit them in London. The initial invitation was for a week, allowing the introduction of the ALEF model, also allowing exploring potential solutions and implementations.

The end result was that a few weeks later, in early September 2003, I arrived at their offices, a modern town house, on the marina in St Katherine Dock, next to Tower Bridge in London. That September turned out to be one of the hottest summers in Europe. However, not only was it hot outside, it turned out to be hot inside the office as well, but from a totally different viewpoint. Clearly there was a lot of totally new knowledge to absorb, evaluate and digest and Uli and his partners were not shy in sharing their knowledge. My one week intended stay was in trouble in that there was simply too much ground to cover, but they also found themselves in the middle of a huge and unexpected consulting assignment.

In the end my one week eventually became six weeks. Fortunately, my hosts in London, Jim and Jane Pettit graciously and very kindly extended my credit and I will be forever grateful to them.

This period also provided an eye-opener on the value a presence in London could provide for a start-up consultancy like mine. After an invitation from Uli's group to join them on a permanent basis, it did not take Yvonne and me long to make the big decision considering a move from South Africa to the UK, and London specifically.

An aerial view of St Katherine Dock, the green roof office in the left foreground

Six months later, on 14th March 2004, we arrived with an uncertain strategy but with a crystal-clear objective – to establish a sustainability finance advisory practice, with a particular focus on developing countries, operating as ISDC – Investment Sustainability Delivery Consultancy.

Our arrival in London on that Sunday morning, travelling on Birdcage Walk towards Parliament Square and the palace of Westminster, is still very clear in my mind, largely for the picture of the beautiful yellow daffodiles in St James's Park. That is the same route travelled by participants in the London Marathon, going the other way towards the finishing point. Little did we know about the challenges ahead, that we were about to embark on a marathon of our own. A remark still reverberates, made to our Cape Town friends Michael and Wendy Thompson at lunch the previous day in reply to a question – "How long are you going to London for?" and to which I replied "Mike it is either for three weeks – when our return flight is booked for – or for three years". Here we are seventeen years later and still in a marathon delivering sustainability and climate neutrality solutions.

However, let's start at the new beginning (two and a half years after blackgoo) by going to the office the next morning – a five-minute commute from the Hilton Tower Bridge Hotel.

(Two days later the commute changed, after Yvonne secured an apartment on Edgeware Road, close to Marble Arch, resulting in a forty-minute journey via Bank, through a tunnel to the Circle Line, a short hop to Tower Hill station and another walk to the office).

A few weeks later we moved to Thames Ditton in South West London, to look after the house of an old South African friend, Roland de la Harpe, who is sadly no longer with us.

Now the commute into London Waterloo station had become forty minutes, with another thirty-minute bus ride to Tower Bridge.

That stay was followed by five weeks in Sunning House in Sunningdale (Berkshire), house sitting for a friend and former client of Yvonne, recuperating in Spain.

From there the next move was to nearby Ascot, where we still reside after seventeen years.

(The commute now is an hour into Waterloo Station from where typically up to thirty minutes to any destination in central London).

The point I am making with this useless travel information, is that I certainly missed the farm, where a studio above our house constituted our office. In London, however, to get to work, and to obtain the results that you are searching for, you have to commute. I maintained the commute for two years on a daily basis and then switched to what everyone has now been doing in the Covid-19 lockdown period – started working from home, saving a three hour commute every day. Not mentioning the cost saving.

At this point a special word about my amazing wife Yvonne will not be out of place. She will appear regularly in the narrative and deserves a huge amount of praise for supporting her sustainability finance focused husband. Back in South Africa, she owned and managed a successful event management company, boasting a track record of a number of high-profile conferences. One of them, was the International Press Union Conference, held once every four years at various locations in the world. This event introduced her to the likes of the Aga Khan, Tony Blair (then opposition leader in the UK), Bill Bradley of the Washington Post and Lady Astor. Her client for this Conference was the International Press Union Secretary General, Robin McKeegan who later let his house in Sunningdale to us in our early days in the UK.

With her track record, it was not a surprise that shortly after our arrival, an old South African friend in the Conference business, Wendy de la Harpe, called for assistance in a difficult event, never been profitable before. Wendy was now employed at a London based conference company – Neil Stewart Associates (NSA). Yvonne took up the challenge and produced the biggest ever profit for the event. Next, she found herself employed as a member of the sponsorship team, successfully contributing to record breaking sponsorships. She stayed at NSA until retiring in early 2011, commuting into London every week-day morning on the one minute to seven train out of Ascot. Thank you BIG time Vonnie.

We managed to travel to Europe regularly and she accompanied me to most of the Rothschild Fund Management Conferences, first described in the next chapter.

Before her retirement we jointly worked on a Conference at the end of 2010 – an extension of the annual Environment Agency Conference. This event will be discussed later in the story.

At the office I was fortunate to join the team at a time when they had just started with the design of a capital protected fixed income instrument (code name LE+1), with an annual coupon. The offering memorandum eventually comprised a two hundred and fifty page legal document, put together jointly with a boutique investment bank in New York and Lehman Brothers as the underwriter.

Yours truly had the pleasure of structuring the financial modelling and I certainly considered this instrument as potentially a future component part of the ALEF model.

In the mean-time a question about what happened to Horst? He and I continued corresponding a while after our arrival in the UK, me keeping him updated on all the new knowledge I was gaining from Uli's group, as a result of his kind introduction earlier. Then his replies stopped and when not being able to raise him telephonically, I suspected that he retired and went to live with his daughter. Not having a contact address, I had to say quietly good-bye and thanked him for introducing us to the new journey.

The first breakthrough came when I received a conditional order for the LE+1 instrument for two hundred million US dollars from a Japanese investment bank in London.

By now we have already cancelled our return flight to South Africa and this sale certainly made the decision to remain in the UK much easier.

A few weeks later, while negotiating the finer details of the LE+1 sale, Lehman Brothers cancelled the underwriting agreement, only for our product to appear a few weeks later in a somewhat different guise in the USA. No further comment, other than to observe – "what goes around comes around" – we all know what happened four years later with our brothers.

This serious set-back, Lesson One, was instrumental in the decision to stay permanently, realising how far our marathon actually had to still go when we considered the need to try and turn the challenge around.

We were never able to achieve a turn-around, given that Lehman's initial involvement and then later about turn, soured the risk appetite for other banks to continue with the product and LE+1 got filed away as an unrealised product.

However, in those early days, it was not always about work.

Meeting Yvonne and Majorie, one her work colleagues, after work in London one evening, she suggested that we join her later at the opening of the new casino at the Ritz Hotel.

Despite our objectives about no invitation, not being gamblers etc. we suddenly found ourselves behind Marjorie, leading the way, entering the new casino and wondering how this is going to work.

To our total amazement, she grandly announced to the doorkeeper, "please meet Lord Storm and Lady le Roux" and within a moment, with no fuss, we were introduced to the General Manager. There I am, dressed in my favourite Herringbone jacket, in a sea of black ties. Yvonne however, straight from the office, looked totally at ease – always recognised as the best dresser at work. Just shows you the strength of innovative thought!

We had a great evening and despite not being a gambler, I have been receiving regular newsletters from the Ritz for years.

The structural finance solutions kept flowing from Uli and his team while I continually tried to marry these structures with sustainability focused outcomes. While these structured solutions were very interesting and challenging, I was determined to keep an eye on the original ball and not forget about the sustainability finance challenge generally and the ALEF model specifically. This model's primary objective is to finance wine lands related sustainability communities specifically and from there a broader base of sustainability communities. While at the same time, recognising the interface with the environment, biodiversity and bioregional planning.

As there was not yet a robust consulting base on which to proceed, these issues became an important introductory part of ISDC presentation material, proceeding through the rest of 2004 and on into 2005.

Towards the end of 2005 I performed a serious gap analysis on the content of the ISDC Consultancy offer and market opportunities, and concluded:

Firstly, we have made little progress in transforming existing and well accepted capital market instruments into effective sustainability finance solutions.

The Commercial Paper Structure Investment Model represents one of these design concepts, that although not proceeding much further at the time, might still be worth considering today, in conjunction with advanced financial technologies.

Secondly, a clear opportunity existed in innovative housing solutions and the design and establishment of Sustainability Communities. Then and now, the existing ALEF model had a lot to contribute.

An innovative housing solution came along in the form of the MVCS (Modular Volumetric Construction System) – in early January 2005, when I was given the opportunity of doing a presentation to top management at ARUP, a global engineering consulting company headquartered in London. This opportunity was facilitated by Mark Bostock, a director and economist – according to Mark "the only non-engineer in this company". Previously, Mark consulted on the C4 project in Cape Town. In this presentation I managed to present the ISDC philosophy and an introduction to structured finance as it pertained to sustainability.

The presentation generated some interest and led to a number of subsequent meetings with a small, but high-powered team within ARUP busy developing the MVCS concept – a visionary attempt to address the housing shortage in the UK and elsewhere through modular (i.e. factory produced) high-rise construction. For most of 2005, we jointly explored the potential use of available structured finance tools to fund future developments. Over time I gradually introduced the idea of "ARUP Finance" being in essence an internal investment bank operation, aimed at funding on-going development and implementation. Their eventual response was to employ a former investment banker to progress the concept further.

Arup has subsequently patented in the US the structural system for volumetric modular high-rise construction. Also, commissioned by the Canadian Standards Association (CSA Group), ARUP published: "*High-Rise Modular Construction A Review of the Regulatory Landscape and Considerations for Growth*" in July 2020.
Arup's project director *John Barrot* stated, "*Modular construction contributes to a number of the United Nations Sustainable Development Goals and aligns with Arup's commitment to sustainable development progress and to shaping a better world."*

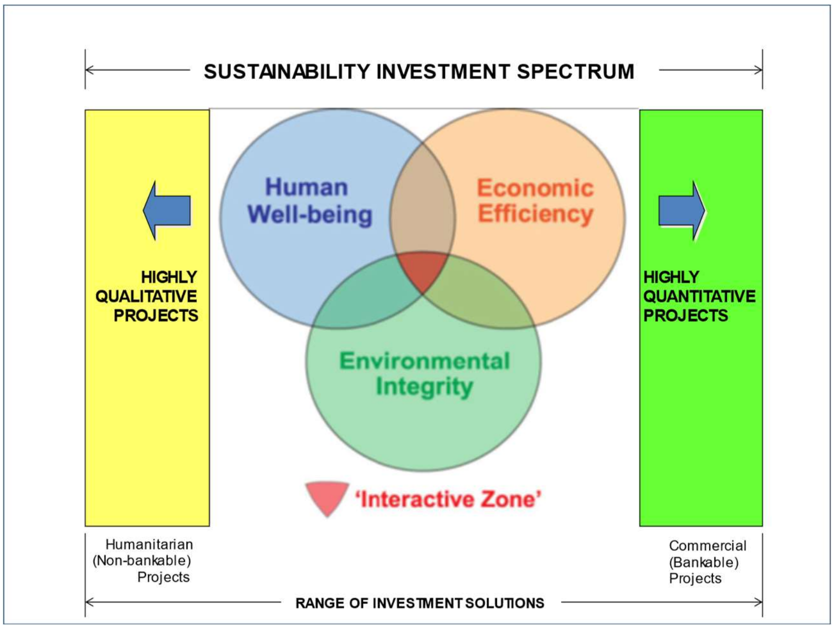
Therefore, the early MVCS development opened up new and innovative thinking at least ten years ahead of the introduction of the UN Sustainable Development Goals.

Thirdly, throughout 2005, it became clear that a number of sustainability community models were available and ready for further exploration. The work completed on this subject still constitutes one of the important investment models in the Sustainability Toolbox.

Finally, I defined Sustainability Finance for the first time, using a simple self-explanatory diagram as in the diagram on the next page.

To summarise my final conclusion from the gap analysis towards the end of 2005, I would like to refer to a book I recently had the pleasure of reading:

"**IMPACT – Reshaping capitalism to drive real change**" by Sir Ronald Cohen. Sir Ronald brought the concept of venture capital on his return from Harvard Business School to the UK, for which he was later knighted after founding Apax Partners.



I quote from page 193 – "***our motivation for creating impact as consumers, employees, entrepreneurs and investors springs from being part of <u>something inspiring that is much bigger than ourselves – helping those in need and preserving our planet."</u>***

The underlined part was very much where my hope and dreams rested at the end of 2005. A dream I considered the core of sustainability finance ever since, but very pleased to re-address, following the risk-reward-impact model presented in Sir Roland's inspiring book.

Finally, to conclude the 2005 stage of the journey, I attended the World Money Conference in November 2005 in London, where I had the pleasure of meeting Colin Cloy of the Fortune Group, a Fund of Funds management group. I subsequently received an invite from them to their annual conference in February 2006 – an event that introduced the beginning of a totally new world – providing the opportunity to put the existing ISDC consulting offering seriously to work.

Highlights for this period:

 # A new strategy became clear as feasible vis-a-vis the integration of standard and not so standard financial instruments with sustainability needs and the potential for delivering new solutions.

 # The Sustainability Community model started to take shape.

CHAPTER 3

2006 - TOWARDS THE RAINFORESTS

Summary

The chapter follows the story through 2006 and introduces the Luxembourg Investment Fund ecosystem up to final preparations for a meeting with the Gabon government. Some important contacts are made along the way. The sustainability finance delivery objective provides for a new definite direction of travel.

"Nothing is more powerful than an idea whose time has come" – Victor Hugo

Following our gap analysis towards end of 2005 we entered the new year with high expectations to somehow land a quality consulting opportunity.

Unbeknown to us, three events were in the process of merging towards the creation of such an opportunity, eventually leading to the biggest placement to date, not only in my general consulting career, but specifically in my newly developed focus on sustainability finance.

The first event leads back to a meeting on the 29th March 2005 in the St Katherine Dock office, when I first met dr Jin Guo, a UCL (University College London) graduate, resident in both Beijing and London. The latter being where his wife, a dual Ph.D in genecology and genetics, practices. At the time Jin virtually commuted between Beijing and London and as a result we met regularly in subsequent years. Jin, whose family suffered greatly in the Cultural Revolution, now had excellent contacts in the upper echelons of the Chinese financial institutions.

The second significant event, forming part of the build up to this new consulting project in the making, happened when I attended the Fortune Group Fund of Funds management conference in London in early February 2006. At this event a collection of hedge fund managers presented their individual strategies, most of it well over my head.

What I remember very clearly, was a small exhibition accompanying the Conference and that is where I met a tall Claude Pech, towering above a small table in front of him, the table overflowing with a pile of documents.

Claude was then a Vice President, responsible for fund administration and based in Luxembourg, at the Swiss Private Bank, Banque Privee Edmond de Rothschild (BPEDR). The documents in front of him were overviewing the latest addition to the UCITS products in Luxembourg, i.e. SICAR - an société d'investissement en capital à risque (**SICAR**)-is an investment company in risk capital, an investment vehicle that was designed for investments in private equity and venture capital. "UCITS" funds, or '*Undertakings for Collective Investment in Transferable Securities'*, is the core product the Grand Duchy of Luxembourg is famous for.

Without realising it, with that one stop, I received a nut-shell introduction into the comprehensive world of investments funds, an investment vehicle serving many projects in subsequent years.

Firstly, a bit of background on this Luxembourg success story, enabling in the past quarter of a century, Luxembourg to rise to be the main fund centre for UCITS processing.

Think of a small country that has a feature of its commercial life so famous it belies the size of population or the expanse of land it covers.

Cuba (population 11 million) has its cigars; Panama (population 6.6 million) has its canal. Luxembourg (population 515,000) has its investment funds.

When Brussels delivered the initial UCITS Directive to the European investment funds industry in 1985, it opened the way for a harmonised funds regime in Europe. It must have been hard to understand how a fund branded with such a cumbersome title and clunky acronym like UCITS could be marketed, especially to the general public.

But Luxembourg managed it. Though by their very nature UCITS funds are not the property of one particular country – rather UCITS is a set of rules meant to make funds in one EU country marketable in another – however, Luxembourg has become the nation most identified with the administration and distribution of these funds.

In 1988, three years after the first UCITS directive was born, the Association of the Luxembourg Fund Industry – with the more approachable acronym of ALFI – launched. In the thirty-two years of existence, Luxembourg has become the largest base for cross-border funds in the world.

The rise of Luxembourg's funds industry began the same year as the founding of ALFI, when Luxembourg became the first country to transpose the UCITS Directive into national law.

Then, in 2003, the country became the first to transpose UCITS III into national law. UCITS III broadened the types of assets available for investment funds – a move that still rankles some who fear greater complexity could damage the UCITS brand.

In May 2007 the Luxembourg fund industry topped €2 trillion of assets, including non-UCITS funds, and by the end of the year 75% of all UCITS registered were Luxembourg funds.

By 2012, Luxembourg was the largest investment fund centre in Europe, followed by France and Germany, and the second largest investment fund centre in the world, after the US.

For its success, Luxembourg has depended primarily on a supportive government, a forward-thinking regulator (the Commission de Surveillance du Secteur Financier, or CSSF), and 14,000 plus staff, many who come in from neighbouring countries each day to work there.

A **specialized investment fund** or **SIF** is a lightly regulated and tax-efficient regulatory regime in Luxembourg aimed for a broader range of eligible investors. This type of investment fund is governed by the Luxembourg law of 13 February 2007 replacing the law of 1991 defining the legal framework for institutional funds and enlarging the distribution scope to "well-informed investors". The SIF law significantly simplified the rules for setting up investment fund structures ranging from straightforward investment strategies investing in listed securities to hedge funds, real estate and private equity funds.

The SIF may be structured as:

- A common contractual fund (FCP- Fond commun de placement) which has no legal personality and must therefore be managed by a management company;
- An investment company with variable capital (SICAV- société d' investissement à capital variable) or fixed capital (SICAF- société d'investissement à capital fixe) which can be self-managed or managed by an external management company.

A SICAV or SICAF can be set up using different legal forms. It can be set up as a public limited company (SA), a partnership limited by shares (SCA), a private limited liability company (SARL), a cooperative in the form of a public limited company (SCoSA), a limited partnership (SCS) or a special limited partnership (SCSp).

These different entities may create sub-funds each with a different investment policy. The rights of investors and of creditors concerning a sub-fund which have arisen in connection with the creation, operation or liquidation of a sub-fund, are limited to the assets of that sub-fund (i.e. Protected Cell Concept), unless a clause included in the constitutional documents provide otherwise.

Following the Fortune function and the brief introductory meeting with Claude, and after studying Claude's documentation, he and I arranged to meet again in London towards the end of February 2006.

Clearly the newly gained knowledge on fund structures led me thinking in totally new directions such as a number of consulting opportunities Jin and I were exploring making it easy to apply the SICAR solution. I also mentioned the concept of a philanthropy model to Claude, an idea he reacted very favourably to, expressing the opinion that it fitted well into the Bank's general philosophy. A bit later in the story, I will arrive at where the philanthropy discussion led to. Suffice at this stage to quote Andrew Carnegie (November 1895) – "*surplus wealth is a secured trust, to be administered during the life by its possessor for the best good of his fellow men*".

During the meeting Claude also made mention of a Luxembourg lawyer, specialising in project finance and SICAR applications, to whom he would pass my name. By sheer coincidence he bumped into the said lawyer, Francois Pfister, at the airport later that evening on his way back and had the opportunity to convey the gist of our discussion earlier.

I had the pleasure of meeting Francois a few weeks later in mid-May, at the annual BPEDR Fund Management Conference, held in Barcelona that year. I managed to take a seat at the first Conference session and in introducing myself to my neighbour, happening to be Francois Pfister, the beginning of another journey.

For me, as a total greenhorn in the fund management world, these conferences, held in cities where there is typically a BPEDR office, provided a wonderful opportunity for absorbing knowledge from a wide range of fund managers sharing their knowledge freely, the general networking opportunity with other participants, staying in a five-star hotel as a guest of the Bank and the pleasure of a well-designed excursion in the host city. The agenda normally kicked off with a welcome lunch, followed by an afternoon of Conferencing. The evening was the occasion for the Gala dinner at a venue, typically associated with the host city. More conferencing the next morning, followed by a closing lunch and an afternoon excursion visiting some iconic sites in the host city.

I was not quite sure why I had been invited, but we certainly appreciated that we were privileged and in the presence of some special people in the world of finance.

As it turned out the initial invitation to Barcelona, was followed by Monte Carlo (2007), Rome (2008), Madrid (2009), Lisbon (2010), Brussels (2011) and Bratislava (2012). Claude then left the bank and I suspect these special events were terminated.

Did attending these conferences in any way contribute to pushing the sustainability finance agenda forward? Absolutely yes, as in each case I was given the opportunity to test my views with some very smart people, improving my own "product" each time. Looking back, what is interesting is that I managed to make a special connection at each of these events, and I will certainly mention them in each case as we progress.

At the Barcelona conference the special contacts were the opportunity getting to know Claude better, meeting Francois Pfister and an invite from Humbert Garreau de la Barre, my BEDR host at the gala dinner, to do a general presentation on sustainability in the Paris office.

I travelled to Paris on a hot day in mid-June, made a one-hour presentation in late morning and was given, following lunch, a private office by Humbert, to review extensive documentation on microfinance that the bank recently got involved in. My presentation was well received but as happens so many times, people get transferred in large corporations and in this instance Humbert left for Shangai, which made follow up in future difficult. One other memory of this visit was taking a stroll up the **Avenue des Champs-Élysées** and having to pay the equivalent of £4.60 for a small glass of Coca Cola. That taught me to rather drink beer in future.

Francois made contact shortly after the Conference and re-introduced the SICAR concept. I introduced the sustainability agenda to him at a meeting in London in late June, during which he agreed to act as an adviser on the application of UCITS solutions, with special reference to sustainability. It was clear to me that his specialist knowledge will combine very effectively with our sustainability objectives. As a follow-up we met in London in June, discussing a general strategy on which to go forward. The need for a substantial consulting opportunity became clear and fortunately we were not too far away from it happening. The outcome of this meeting significantly improved the ISDC consulting offering.

The third contributing event, moving towards a major consulting opportunity, was a totally unexpected contact in July 2006 from an old friend in Cape Town, Silvio Baptiste. Silvio's family, originally from Portugal had to flee Angola, following the 1974 revolution. He subsequently developed a very successful export business in South African agricultural products in parallel to on-going property development in Portugal. I assisted him in a number of cases over the years and on this occasion he presented an opportunity, acquired from an export client, in Gabon (where Silvio?) for a new 3,000 homes community valued at an estimated cost of approximately fifty million dollars. This was obviously the ideal opportunity to consider the principles of sustainable communities and I asked Silvio to allow me a bit of time to consider the total picture.

Following Silvio's initial contact, I immediately made contact with Jin, enquiring about the potential appetite amongst his "rolodex" cards, for a project of this magnitude.

Jin soon reverted with the news that not only is the China Development Bank interested in the housing project, but they are also willing to provide funding in the amount of one billion dollars, for an Economic Development Initiative in Gabon, given the availability of suitable collateral (ideally in the form of mining and rainforest concessions).

We now had a major challenge and opportunity on our hands and the core of a suitable consulting team to take forward in a meeting with the client, loosely defined at this stage as Silvio's Gabon based client.

Firstly, on the 7th August I decided to renew my contact with Dennis Moss, managing partner of Dennis Moss Partners (DMP) in Stellenbosch, from whom I received my initial introduction into sustainability. By now, after two and a half years in Europe, I suggested to Dennis that we have made significant progress to make sustainability communities a compelling consulting offering in a DMP/ISDC professional co-operation.

Given the potential of the Gabon opportunity, his agreement enabled me to compile the first detailed presentation of the Sustainability Communities Investment Model.

In order to get Claude and the bank as part of the team, we met in August in London, when he immediately reminded me of the fact that Gabon is considered one of the most corrupt countries, certainly in Africa, if not the whole world. Having done some homework by then and also given the stated EDI objective, I assured him that I believe there was a bankable solution in the structure of a potential delivery vehicle. However, we agreed that the next step was to meet with the client.

This first meeting took place in Luxembourg in mid-September, meeting with Silvio's Gabon agent at both the bank and at the office of Oostvogels-Pfister-Feyten. The meeting was an excellent opportunity, while presenting the Sustainability Communities Investment Model to fully inform both Claude, his colleagues and Francois on our thinking. However, as a team we gained the impression that we are not yet talking to the proper customer, representing Gabon. My suspicion was further aroused when, out for dinner later that evening, I noticed at a distance, another person in the company of our "client". This suspicion was confirmed when I was contacted by a representative, in the Gabon Economics Ministry a few days later when back in London. Introducing himself as Mr Goungoula, he explained that he was tasked with this project but was prevented from meeting us in Luxembourg by the "agent". With this somewhat annoying news it was clear that we had to reschedule another meeting.

This time around, Mr Goungoula informed me that he would be accompanied by the Minister of Finance. Accordingly, we were in the hands of this very busy individual whose diary would dictate the date for a follow up meeting to Luxembourg! Subsequently, in two separate meetings with Francois and Claude in London, I proposed our Gabon EDI strategy in preparation for a meeting, now confirmed for early in the new year with the Minister, in Luxembourg. This suited us well as Francois and I had a fair amount of documentation to prepare, given that one billion dollars is a considerable investment, especially into a questionable financial environment.

My own busy diary for the period ahead, showed firstly creating an opportunity to attend the annual meeting of the *Institutional Group on Climate Change* (IIGC) in Paris on the 12th and 13th October and spending my birthday on the 14th in Paris with Yvonne. I noticed a few days earlier that Al Gore (former US Vice President) will be the opening speaker and I managed a "press" invitation as a representative of Yvonne's employer, Neil Stewart Associates. The IIGC today represent 250 member companies, from 16 countries and in excess of Euro33 trillion in assets. The IIGCC is a leading organisation engaged in finance and climate policy at the global, EU and national level across Europe. A visit to their web site at https://www.iigcc.org/about-us/ will provide the extent of resources coming from this organisation.

The irony of the trip was that due to a delayed train I arrived too late to hear the opening address. However, it was a great opportunity for a first major introduction to policy thinking on climate change, meeting interesting delegates, the most memorable being Boston based Mindy Lubber, CEO of CERES (https://www.ceres.org/) since 2014 up to today. In response to the Exxon Valdez oil spill in 1989, Ceres was founded by Joan Bavaria, then-president of Trillium Asset Management, forming an alliance with leading environmentalists with the goal of changing corporate environmental practices. She named the organization the "**C**oalition for **E**nvironmentally **R**esponsible **E**conomie**S**", or CERES. Meeting Mindy was my first introduction to CERES, other than as the ancient Roman goddess of fertility and agriculture and also a town in South Africa. Mindy made a lasting impression with her passion for environmental responsibility and we are still receiving regular CERES newsletters.

Shortly after my first major introduction to climate change, the publication of the Stern Report followed on the 30th October.

The **Stern Review on the Economics of Climate Change** , to use it's proper description, is a 700-page report released for the Government of the United Kingdom on 30 October 2006 by economist Nicholas Stern, chair of the Grantham Research Institute on Climate Change and the Environment at the London School of Economics (LSE) and also chair of the Centre for Climate Change Economics and Policy (CCCEP) at Leeds University and LSE. The report discusses the effect of global warming on the world economy. Although not the first economic report on climate change, it is significant as the largest and most widely known and discussed report of its kind.

The next major event, while preparing for the Gabon meeting in early 2007, was Hein arriving in London towards the end of November, after being recruited in South Africa by the UK based cost management consultancy Davis Langdon. A few days later we combined a visit to Twickenham, the head-quarters of England Rugby Football Union with our four sons, all in support of the South African national rugby team versus England, South Africa victorious on the day 25-14.

Springbok supporters - Mason, Lawson, Ross, Yvonne, Me and Hein in celebratory mood under the Twickenham South Stand (then under construction)

Two further events before returning to Luxembourg to negotiate, were two consecutive cataract operations, spaced approximately three weeks apart. The consultant John Salmon and his wife Susie subsequently became very good friends of Yvonne and me.

John Salmon proudly showing off his rose garden in Oxford to Yvonne

John is a graduate of Pretoria Boys High School and Pretoria and UCT medical schools. He and Susie moved to the UK after being appointed a senior lecturer at Oxford University medical school. John is recognised as a leading ophthalmic surgeon, a world leading expert on glaucoma, the author of several books, while holding a position in the NHS in addition to a highly successful private practice. They met at the Atkinson Hospital in Durban where Susie, daughter of a GP in Natal, worked as a mid-wife. On their move to Oxford, Susie took a position as a highly respected and beloved college matron at Magdalen College.

I felt myself very fortunate to be in good hands with these two operations. I remember quipping after the second operation, that hopefully I will now notice the fine print better in contract documents in future.

My need for new eyes made us two wonderful friends and we were devastated when Susie unexpectantly passed away early in 2021.

Returning to Gabon, in the end, contracts are about mutual trust and between people and we will learn in the next chapter what happened in Luxembourg in February 2007 and subsequent events, during what turned into a highly informative year on the sustainability finance road. We did not realise it, but the rainforests in Gabon will become an important negotiating instrument.

Highlights for 2006

 # The value of high-level networking such as at the Rothschild Fund management meetings.

 # The general value of the UCITS structure and the opportunity to manage risk as offered by the SICAR structures.

 # The value of health and the privilege to be treated at one of the best eye clinics in the world at the John Radcliffe Hospital in Oxford.

CHAPTER 4

2007 - THE TRUTH WILL SET YOU FREE

Summary

Setting off to a second Luxembourg meeting to lay the table for a meeting with the CDB (China Development Bank) in Beijing. This chapter proceeds beyond Beijing with a visit to Libreville in Gabon.

In the process a basic understanding is developed on rainforests. The Rothschild Fund manager meeting in Monte Carlo opens the door to a broader relationship with the Group.

"Then you will know the truth, and the truth will set you free" -- John 8.32

Truth is defined by Merriam Webster as the actuality of things or events, fact, or spiritual reality. Other definitions of truth have to do with sincerity in action or character. No matter how it is viewed, truth bears the fruit of trust, and many of us spend our entire lives looking for it. The intrinsic desire for truth is what gives us that inquisitive approach to answer questions like "what is the purpose of the project," "who are we," or "whom do we serve?"

"What is truth?"

Three significant inputs up to the end of December 2006 made me pose this question with regards the Gabon opportunity, with a date now fixed for a meeting with representatives of the Gabon government for 18th and 19th January 2007 in Luxembourg.

The first input, in the form of a two-page memorandum, resulted from a meeting between Jin and an adviser to the Governor of the CDB (China Development Bank), provided two basic requirements for the loan repayment and the successful delivery of the project. The two requirements being (a) the CDB will become a strategic partner by taking a share (undefined) of the Gabon Development Bank and (b) a direct repayment from natural resources, being listed as Manganese, Niobium and Timber (read rainforest). Additionally, a sovereign guarantee is expected as a back-up.

Quite a tall order!

The memo also disclosed that the CDB has a West Africa (including Gabon) specialised working group to whom Jin will be introduced in order to develop a formal relationship.

Finally, the CDB Governor expects to meet with the Gabon President, if not on a first visit, then definitely on a follow up visit. The existing relationship with the Gabon representatives are also being recognised, especially as Minister Toungui, who we are expecting at the Luxembourg meeting, is the son-in-law of the President.

The second input, came from a friend Paul Dymock, an economist, at that time recently retired from the OECD (Organisation for Economic Co-operation and Development).

In the relatively short "rest" period between the two eye operations, we accepted an invitation from Paul and his wife Jillian to see 2006 out at their home in a small rural village near Dijon, in the heart of the Burgundy wine region. It was not my intention to discuss the Gabon project with Paul, but the opportunity arose during our journey to France. With me still recovering from my eye operation, we decided against driving and took the Eurostar to Brussels, where Paul and Jillian spent Christmas, meeting them and continuing our journey by car with them. As it turned out the route took us through the outskirts of Luxembourg. While crossing the Pont-Grande Duchess Charlotte, with a lovely view of Luxembourg, Paul posed the question whether we have been there before and in my reply I mentioned our visit the previous September and also the upcoming meeting in late January. On further questioning I disclosed our client which invoked a surprised “really?” from Paul.

Pont-Grande Duchess Charlotte outside Luxembourg

This was so noticeable that I felt compelled to ask Paul about it a day or two later leading to a thorough introduction by him to the politics and economics of the Gabonese government and especially that of the El Hadj Omar Bongo Ondimba President of Gabon for 42 years, from 1967 until his death in 2009. Although comforted by the presence of Rothschild Bank in the team, his clear message was “be careful”.

The third input came from Mr Goungoulou, when we had our first telephonic encounter shortly after the September meeting. During the meeting he extensively raised their interests in the development of the Mandji Free Zone. I came away from this discussion under the impression that Mr.Goungoulou had his own agenda in these matters. Briefly, the Madji Island houses the city of Port-Gentil, the economic capital of Gabon with a population of 80,000 citizens. The Trade Free Zone, a site of about 490 hectares, promulgated by law in 2000, intended offering attractive packages for companies intending to settle there.

Shortly before the Luxembourg meeting Mr. Goungoulou notified us that Minister Paul Tougui will not be attending but that he will be represented by his adviser Regis Immonghault. This disappointing step had the one advantage that there was now no need for English to French translations.

The meeting produced no surprise and the agenda focus was to introduce the GDA (Gabon Development Agency) and GDI (Gabon Development Initiative) concepts, delivering on a range of projects with the people of Gabon being the main beneficiaries and the way that natural resources will be applied towards loan repayment, in accordance with CDB requirements.

We could supply a separate explanation of the GDA/GDI Investment Model, important components of the EDI (Economic Development Initiative) to any interested parties.

We agreed with our visitors that we will now be aiming for a meeting with the CDB in conjunction with Minister Toungai, to be arranged at a mutually convenient time.

We also left the two Gabon representatives with a considerable amount of contractual work to complete, in addition to the challenging task of conveying the core contents of the meeting to their Minister.

We experienced extreme winds over the UK and Western Europe on that Friday and I was very pleased that my return journey was by train and not by plane. In fact, back home in Ascot in the UK, a tall and very old pine tree toppled over onto the roof over our bedroom and if it was not for a steel support beam in the roof structure, would have fallen into the bedroom. Yvonne slept through all this happening and only discovered the tree on the roof the next morning.

Strangely enough, those heavy winds became somewhat symbolic with the unfolding of events later in the year, with at times the desire for a steel support beam.

The next step in the process was a meeting with the CDB in Beijing, ideally with the Gabonese government properly represented and our two Gabonese colleagues properly briefing the Minister ahead of the meeting, on the strategy agreed to.

Yvonne and I took a break from what was clearly becoming a difficult negotiation and flew to Bordeaux, hired a car and spent a week exploring the south west of France. With her being a gourmet cook, a former wine maker and wine lover, as well as it being her birthday, the outing was essentially a seven-day birthday party. Returning safely and fully recharged to Ascot, we were both ready to commence the next phase of the journey.

In the mean time, Jin had met the Gabonese Ambassador to China, based in Beijing. We were planning a meeting with the CDB in Beijing, hopefully in late May, to coincide with Minister Toungai's planned visit to Shanghai and possibly Beijing.

In parallel, I had received the assurance from mr. Goungoulou that Regis Immonghault has fully briefed the Minister on the strategy decisions agreed on in Luxembourg. I dedicated time studying the feasibility report on Mandji Free Trade Zone and also calculating the approximate net asset value of a potential portfolio of natural resources, including the extent of rainforests. Both these subjects (mining and forestry) were outside my normal scope of specialisation, but opened up the opportunity to develop two investment models with which to underpin repayment of the proposed CDB loan.

These two models being the Natural Resources model and the Rainforest Carbon Certificates are separately available.

The CDB meeting was finally confirmed for Monday 21st May and Jin now had his task cut out to work towards a confirmation, via the Ambassador, of attendance from our client, Minister Toungai.

I have been reminded over the years about leaving London on the Thursday morning as the day, while waiting for departure, watching an update report on Madeleine McCann who disappeared on the evening of 3 May 2007 from her bed in a holiday apartment at a resort in Praia da Luz, in the Algarve region of Portugal. It is amazing how one's mind can produce associations, and the Beijing departure surfaced every time an update report on Madeleine appeared in the media – sadly, to this day. Our minds and hearts certainly went out to the family over the years.

I am also reminded of that morning when I left my business bag on the train in the rush of disembarking in Feltham station, from where to take a bus to Heathrow.

While waiting for the bus, I suddenly with a jolt realised that I don't have my bag, including ticket, passport, money and mobile phone. The platform manager in Feltham saw my panic and kindly allowed me to use his mobile phone and I could phone Yvonne. She, on her way to London, was blissfully unaware of my bag on the rack above her head. Fortunately she could hop off at the next stop and bring it back to Feltham. At the same time arranging to take the rest of the day off. This smart move enabled us to spend the morning together until flight departure. I still get jitters when thinking what would have happened if the Heathrow bus arrived on time that morning.

The steel support beam was still in place!

Claude, Francois and I arrived on the Friday morning and checked into a very modern high rise Western Hotel in the heart of the Beijing financial district. We then spent the next few days reviewing our strategy including an overview of the Resources Repayment Model, eating Chinese every evening in good restaurants with Jin and one of his CDB contacts, and doing what typical tourists would do, i.e. visiting the massive Tiananmen Square plaza, the Forbidden City complex and making a day trip to the Great Wall of China, all very impressive.

Eventually Monday arrived and we had a confirmation via the Ambassador (on whose neck Jin had sat over the weekend) that we will be joined by our client.

Claude Pech, Me, Francois Pfister and Jin Guo waiting at CDB

There we were, our team of four, ready to meet a clearly grumpy and highly irritated Minister Toungai, who walked straight passed us, with the Ambassador in his slip stream (yes, it was that fast). We were then thoroughly photographed from various angles and sat in a row opposite the CDB management. That is where my understanding of the proceedings stopped, as everything following was conducted in French. Not that there were a lot of proceedings.

From Claude's summary to me in Jin's car back to the hotel was simply that the Minister told the CDB hosts that he had no idea why he was there and certainly had no interest in entering into a loan agreement with the Chinese Government! We were all totally stunned and it is just as well that messrs. Goungoulou and Regis Immonghault were not in the vicinity.

At the debrief over dinner that evening, I got full support for stating categorically that I believed the Minister was not briefed at all or had a poor briefing at most and that I will forward him a letter of apology and request a meeting, in Gabon this time.

Under the heading "Gabon Investment Model" and using the Gabon Development Agency letterhead (based at Francois' offices) I forwarded a letter dated 3 June to the Minister thanking him "for your time and dignity at the meeting".

I continued "it is clear to us that we have allowed this proposed concept to expand too quickly without the necessary explanation of the underlying structure allowing the raising of project finance for suitable infrastructure development projects".

After referring to the importance of the Resources Cost Model to obtain a "fair and equitable value placed on those resources", I continued with the suggestion "that we should first concentrate on the potential project finance solution for the Trade Free Zone project before proceeding to additional projects". The latter specifically referring to the 3,000 homes, the primary reason for all this happening.

The letter continued with a suggestion for an eight-step implementation program (previously formulated at the Luxembourg meeting). I concluded that the first step was suggesting a review meeting in Gabon of the Gabon Investment Model, ensuring that we operate within the definition and limitation of the then prevailing Gabon-IMF (International Monetary Fund) agreement, requesting his formal response and the hope that we will soon meet in Libreville (the capital of Gabon).

In the interim period between sending the letter and receiving a reply, we attended the annual Rothschild Fund management meeting on 7th and 8th June in Monaco. I will continue with this event a bit later.

The reply arrived promptly dated 13 June with the core paragraph – "*I am fully ready to meet you in order to have some discussions about the financing project for infrastructure development projects in Gabon, and particularly that of the Trade Free Zone. However, we would like to draw your attention to the determination of the Gabon Government to benefit from finance sourced directly from the China Development Bank.*"

The last statement slightly different from his statement in the CDB meeting in Beijing. In retrospect the word "directly" in the last sentence gave a clear indication of our potential future role in the project. (The "truth" slowly appearing?).

Following the receipt of the Minister's letter, I met with Ambassador Zogoulet, the Gabon representative to the Court of St James, who personally issued me with our visas, something I interpreted as a good sign for the road ahead.

Now the next step in the "drama" took place when I received a highly critical letter from Jin suggesting that nobody understands the GDA/GDI concept and that it would be far more beneficial for the project if he deals forthwith directly with the Gabon government. Clearly a totally unacceptable proposition and not only insulting to me (something I could live with) but also insulting to Claude and the Rothschild Bank and also to Francois and his practice, all parties that have by now committed a fair amount of time and direct costs to move the project forward.

In reply and after consultation with Claude and Francois, I indicated that his suggestion is unacceptable and we are planning to continue on the path agreed on by all. This resulted in a long continued backwards/forwards string of e-mails, with even mr. Goungoulou becoming the ham in the sandwich at one stage. Then it stopped without getting fully resolved and needless to say I proceeded, continuously looking over my shoulder.

The lesson here is that it is difficult to fully trust the Chinese, even with agreements on the table. My opinion was that Jin acted under instruction from his ultimate paymasters to "asset grab" at the lowest possible price while bypassing the carefully constructed GDA/GDI structure aimed at ensuring fairness to all parties, including the final beneficiaries, the people of Gabon.

After a moving organ recital in the Royal Albert Hall on the Friday evening, Yvonne and I set off for Gabon, travelling on the evening of Saturday 30 June to Cassablanca, where we were to meet Francois on Sunday afternoon for an onward flight to Libreville.

Meetings were arranged for Monday, Tuesday and Wednesday including meetings with Minister Toungai, and Ministers for Mining and Forestry.

We were kindly met by Mr. Goungoulou and his sheepish look immediately worried me. By now we have almost become used to disappointing news but were not quite ready to hear that Mr. Toungai is out of the country and that we will have to meet with Regis Immonghault.

Francois and I met for breakfast, following a poor night for both of us and decided to make the best of the situation, meet anyone ready to talk and cover as much of the eight-step paperwork as was possible – which is what we did.

Francois and me in serious planning on arrival in Gabon

We had a constructive meeting with the Minister of Mining, who explained their understanding of the concessions available. The Minister of Forestry made a big selling point on the protected forestry parks created by the current regime but was vague about the status of timber concessions in the rainforests.

Mathieu Goungoulou and his assistant with Francois at the Ministry of Mining, Gabon

The meeting with Regis Immonghault was a waste of time and considering his office environment in comparison to the swanky offices of the other Ministries, as a Treasury adviser he was either very low in the pecking order or extremely frugal.

Following the somewhat inconclusive Gabon visit, I received a letter from Mr Goungoulou, authorising ISDC to "*negotiate and implement a list of tasks on behalf of the Commissariat (of Economic Affairs) as part of the formalisation of the proposed Economic Development Initiative (of which the GDA/GDI initiatives are part of)*". The list included "*to present alternative and realistic project finance solutions to the Gabon Government".*

Francois, Yvonne, me and Matthieu over dinner – happier times in Gabon

The last statement came as a surprise when considering the Minister's earlier letter clearly stating that "*the Gabon Government to benefit from finance sourced directly from the China Development Bank*". Does this now mean that the Government is hedging their bets in case the Chinese funding does not materialise?

We decided to accept the challenge of presenting alternative finance arrangements and I dedicated a considerable amount of time concentrating on the Trade Free Zone and the Resources Model, eventually aiming at a final meeting with Mr Goungoulou in Geneva in December 2007.

The June 2007 Rothschild meeting in Monaco was one step up from the Barcelona meeting a year ago and both Yvonne and I agreed that we were again very privileged to be invited. We treated ourselves by arriving from Nice on the Thursday morning by helicopter to the spectacular view of Monaco. The conference agenda again introduced some outstanding speakers, one of them being Jim O'Neill, the originator of the BRIC (Brazil Russia India and China) acronym, at that time the senior economist at Goldman Sachs and later becoming Baron O'Neill of Gatley in the House of Lords in the British Parliament.

The Gala Dinner was at the Café de Paris (where else?) and the excursion on the Friday afternoon was a boat trip in the bay providing a sea view of Monte Carlo and cruising close to some very expensive yachts, one of them being that of Roman Abramovich owner of Chelsea football club.

Cruising on the bay that afternoon, I could not help comparing the accumulated wealth of all the gathered fund managers and questioning the extent they are really interested in finding and contributing to sustainable solutions addressing the challenges in this world. This observation could be considered unfair, but it was based on the somewhat lukewarm response I generally received during networking discussions when raising the subject of sustainability finance.

In fact there was one exception. As I mentioned before, I have had the pleasure of making at least one important contact at each of these functions. This time it was meeting Anders Sjostedt, at the time with La Compagnie Benjamin De Rothschild (abbreviated as CTBR), a Rothschild subsidiary investment bank based in Geneva. Our common ground was sustainability finance and it was not long before I took up an invite from Anders to meet in Geneva for the first of many meetings on 25 September 2007. In a lengthy presentation I suggested how I thought ISDC, with an accompanying project portfolio could be "integrated" into an investment bank such as CTBR. In the presentation I introduced the Philanthropy-bond (or P-Bond), a product, as I was told, later successfully used by the bank.

Yvonne and Claude on Monaco excursion – Conference hotel on coastline on the left

In early August Yvonne and I travelled to the Isle of Wight to meet with our old friend Paul Mare, where he and his Cape Town yacht crew were participating in the Cowes Week competition with a locally leased yacht. Paul is an accomplished yachtsman and for many years Commodore of the Royal Cape Yacht Club based in Cape Town where he recently retired as President of the Club. Our professional careers had overlapped for many years in South Africa and Paul, a highly respected cost management consultant, was a member of our C4 team (previously discussed) and also a founder member of the initiative that morphed into ISDC. We had co-operated on many feasibility studies and I owe him a big debt of gratitude, for his patience and professionalism at all times.

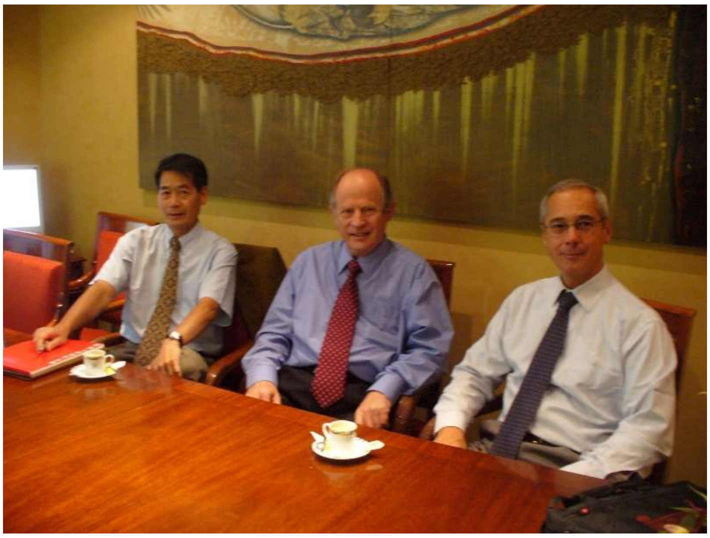
Paul (with red cap) at the helm and crew returning from race in Cowes Week 2007 – Isle of Wight

The Gabon objectives proceeded slowly in parallel with other activities, moving forward to a crunch meeting, to take place before the end of the year.

In one of my endeavours in order to develop a robust natural resources valuation, I called on Prof Dennis Buchanan, *Emeritus Professor of Mining Geology,* Department of Earth Science & Engineering at Imperial College. It is one of the many benefits of living close to a city like London, with relatively easy access to world class universities such as Imperial College, Cranfield, Oxford and Cambridge. His research interest lies in addressing the underlying technical principles applying to mineral projects and demonstrating how these principles influence financial modelling. He is a strong proponent of the use of real options analysis (ROA) applied to capital budgeting in mining operations and I first heard of him through an invite to a ROA course he was co-ordinating. My objective was to negotiate a consulting agreement assisting in developing a fair valuation methodology in the Gabon project. After an excellent introductory meeting over tea in their staff room, he walked me back to the building entrance and said "Given that you are dealing here with Gabon, I do not believe we will be interested in any consulting assignment". Such a pleasure when people are direct and honest, it also saves a lot of time!

Again Paris in the summer with a next step in the journey, meeting for two consecutive days, on 29th and 30th August with James Chan Lee and JP Ludwig, office facilities very kindly supplied by Rothschild Bank. The purpose of the meeting to review the ISDC "product portfolio" and to explore with them being involved as part of a general Advisory committee I was busy assembling.

James, an American by birth, is an International Economist with an interest in economic development, institutions and governance in China and its role in Africa. At the time a Professor at Sciences Po in Paris where he had been for the last twenty-one years. His colleague, Jeanne-Pierre, an experienced banker specialised in Project Finance, having retired early and now specialising in natural medicines and biodiversity.



Meeting with James Chan Lee and J-P Ludwig in Paris

A few days later on 7th September, the opening of the 2007 Rugby World Cup took place in Paris, providing us as rugby lovers and supporters of the South African Springboks a lot of entertainment, right up until the final whistle in Stade de France on the 20th October.

Yvonne in conjunction with a number of wives of friends, Jim and Jane Petit and Mike and Linda Turney arranged to go on a course (4th to 7th October) with a gourmet chef couple, Cedric and Dawn, where time is spent with Monsieur le Chef in his private kitchen, his home being attached to a small hotel, La Benjamine. The venue this time is Pau in the south of France, approximately forty minutes from Toulouse airport. During this time we would be approaching the quarter finals in the Rugby World Cup (RWC) and as the Springboks were advancing well through the pool stages, Yvonne and I agreed upfront that we would be going as long as our itinerary does not interfere with our rugby world cup viewing. She kept her end of the bargain and we managed to watch a number of exciting games, while touring in and around Pau in the foothills of the Pirenees during the day and enjoying amazing meals later.

Happy birthday – Jim Pettit at La Benjamine - Pau

It turned out that Monsieur le Chef was also a lover of the oval ball game and after presenting him with a Rugby World Cup beret in the French colours he invited us into his private quarters to watch the broadcast of the New Zealand All Blacks vs France quarter-final in Cardiff.

A day or two before we left for Pau, I received a note from James Chan Lee providing an overview of his and JP's view of co-operating with ISDC. He closed off his memo with:

"finally, good luck to the Springboks this weekend (in a quarter final vs Fiji) – they will surely win! I have not consulted JP on this thorny issue, but my Bayesian probability model does not forecast a French miracle against the All Blacks in Cardiff this Saturday!"

I don't know how much one can rely on Baysian models, especially when it comes to the surprises in World Cup Rugby. However, the famous surprise win by France over the All Blacks (20-18) in Cardiff that Saturday evening is today part of Rugby World Cup history.

Our chef/host certainly enjoyed the win and I do not think I have ever seen such happiness after a rugby win.

That unexpected win by France, who started the tournament poorly, suddenly opened the road for South Africa to the final, as long as they could beat Fiji in the quarter-final the next day. Yvonne and I returned early to Toulouse where we watched the game in a sport bar with most of the attendees routing for Fiji.

The Springboks won comfortably 37-20 and went on to win the final two weeks later in Paris.

I happened to have a pre-arranged meeting with JP in Paris on the 23rd October, a few days after the final and used the opportunity to arrange a dinner with Mason, whom attended the final from South Africa. After a celebratory dinner he suddenly got up and presented me with a "trophy"– a Springbok supporter coat that he had worn during the final. Following my meeting with JP I folded the coat over my arm in such a way that everyone in Paris could see who I supported and it is unnecessary to mention that I have worn that coat every time over the years when attending a Springbok game, at either Twickenham or at the Millenium Stadium in Cardiff.

Travelling to France always held a special meaning. In addition to the Paris business visits and other trips mentioned elsewhere, we several times of visited our friends, Chris and Carol Sealy.

I first met Chris at his office in Maidenhead, during the early LRA years, aiming at establishing additional capacity and capability in data communications projects in South Africa. He was then sales director at Leasco and greatly surprised me on arrival with “Goeie more meneer, en hoe gaan dit vandag?”(the Afrikaans for “good morning sir and how are you today?”). It transpired that he previously spent three years in South Africa with ICL. Somehow, I never had the opportunity to test the full extent of his prowess in Afrikaans, those opening ice breaker remarks passed the test.

We continued by developing a number of leading data communication projects and we also jointly promoted an interest in videotext technology during the Southern Life/Ambit years. Chris went on to establish and publicly list a successful data communications company that he later sold to General Electric.

In subsequent years, Chris and Carol moved to Brittany (her teaching French at senior school in the UK helped greatly). They, at first, commuted from their holiday day home in la Roche Bernard (where we learned to play Boules during a visit), a short distance north of Nantes, to a site further inland, where they beautifully restored a manoir. The project took them several years to complete, with them producing a monthly newsletter on progress with priceless quips on the mannerisms of the local construction labour force. We had the honour of staying at the manoir, once it was finished and just managed to make the “Rôle d’Honneur”–membership pre-requisite was that you made a physical contribution to the project. Note “physical”.

Important to add that the four of us shared not only an interest in wine, but also in rugby. They held season tickets at Twickenham and would travel by ferry across for the big games, always providing us with an opportunity for post-match reviews on the Monday while sampling Yvonne’s excellent cuisine.

Unfortunately, we were seldom on the same side and to this day I would get a post-match commentary by e-mail as and when applicable. Chris reminded me and lamented for years that he and Carol sat behind the posts at Stade de France in Paris when South Africa’s fly-half, Jannie de Beer, with five drop goals in a quarter-final match, virtually single-handedly knocked England out of the Rugby World Cup in 1999. “And I saw each one coming through the middle of the uprights”.

Fortunately, Jannie’s rugby talent did not do any damage to a long lasting and much valued friendship.

Following my meeting with Anders Sjostedt in September I received an invite to attend the annual CTBR Fund manager conference held on 25 to 28 October in Geneva. This meeting was most interesting as it covered a number of sustainability issues. Like the mother bank, a gala dinner was on the program, held in the grounds of the owner, now late Baron Benjamin de Rothschild. The excursion was a trip from Montreaux on Lake Geneva, by train up the Rochers de Naye (“rocks of Naye”) at 2,042 metres. The train being the highest in the canton with the summit station at 1,968 metres, and only a short walk to the summit.

A view from the summit of Rochers de Naye – Wikipedia

A train ascending the mountain - Wikipedia

As with all the Rothschild meetings, I had the pleasure of making another new contact, and during the visit to the summit I had the pleasure of meeting Luigi Minella. Luigi had just joined the African Development Bank in a senior management position, to be based in Tunis. With our mutual interest in sub-Saharan sustainability issues, we developed a regular communication over the years, while he changed positions in the bank a number of times, always going up. He is still with the Bank.

Two more significant meetings took place before the end of year.

Firstly, was an invitation to a Clifford Chance Perspectives meeting on 6th November, the first of many in the years to follow.

The format of these well organised meetings is normally a one-hour presentation, providing a legal opinion on a current subject, by a panel comprising partners and senior associates, from various Clifford Chance offices. These presentations are supported by extensive quality documentation and followed up with an e-mail the following day, providing all the hard copy documents in electronic format.

The presentations are preceded by coffee or tea and delicious chocolate chip cookies, followed by a cocktail function afterwards with canapes. These events are coded in my diary as C9 (C4 style from the project many years ago in Cape Town) – "Chocolate chip cookies and coffee at Clifford Chance with conferencing, canapes and cocktails." Always an excellent networking opportunity and I have certainly made some worthwhile connections at these functions over the years. (Some of these to be described later).

I always felt very privileged to be invited and have learned an enormous amount from some excellent presentations and panel discussions. I had the opportunity to introduce a number of projects to selected partners, from time to time.

The first opportunity started shortly after the first seminar, with the discussion focused on environmental law. Meeting one of the speakers, Claude Brown, we had a meeting where we explored the potential use of Collateralized Loan Obligations (CLOs) in conjunction with Rainforest applications. Shortly afterwards, as a result of the subprime mortgage crisis, the demand for lending money either in the form of mortgage bonds or CLOs ground to a halt, with negligible issuance in 2008 and 2009. Unfortunately, this particular solution never got close to the rainforests of Gabon, at least not then. Claude Brown later got recruited from Clifford Chance and went on to build a reputation in weather derivatives.

The second significant event before the end of the year was to be a meeting on the Gabon Economic Development Initiative (EDI) on December 6th and 7th in Geneva, with a Gabonese delegation led by Mr. Goungoulou. A lot of work went into the organising of the meeting and we were expecting some senior representation from the Gabonese Government, Ministry of Economic Affairs.

Acting on the Goungoulou letter at the end of July, our primary objective was to present our EDI (Economic Development Initiative) solution and to sign off on the Memorandum of Understanding concerning the overall EDI project. As such we expected somebody with authority to sign off on behalf of Gabon.

Claude and Anders were in attendance from Rothschild Bank, while Francois and I represented our practices. The bank providing their boardroom as the meeting venue with lunch included.

We had hardly started the meeting when, in response to the question about the absence of the expected Gabon Government representatives, Mr Goungoulou quietly and calmly informed us, as if he was buying a Swiss watch at the airport, that our assistance is no longer required in raising the required finance for the EDI. Furthermore, the Government has also come to an arrangement with China establishing a Government-to-Government agreement, primarily based on the Belinga iron ore deposit as the collateral.

This resource, which we will discuss in the next chapter, has never featured in our resource assessment as we were led to believe all along that it is out of bounds for collateral purposes.

No need to explain that, once again, we were stunned, finding it difficult to accept the duplicity in the Government dealings. Why did we have to travel to Geneva for this meeting? A letter would have totally sufficed or maybe Mr Goungoulou needed another free trip to Europe?

It took us no time to concur around the large boardroom table that the meeting should be terminated.

In case the reader wonders, I have decided to expand on the Gabon story in order to illustrate the difficult path to establish the truth and a working arrangement between the different stakeholders in a project of this nature.

This was not the end of the project yet, as set out in the next chapter. We will continue with some soul searching yet hopefully determining the truth in this case.

At that moment as Claude was cancelling the lunch arrangements with the catering department, I was pleased that at least we managed constructive meetings the day before between Claude, Francois and me on the rainforest certificates and between Anders and me on our future action plan.

Flying back to London later that morning after some hectic flight changes (in those days it was much easier to change a flight than today), I at least felt that we did our best to establish a socio-economic benefit in the delivery of 3000 homes. I also had something to look forward to as we were off to South Africa immediately after Christmas for a well- deserved holiday and a face to face catch up with my Stellenbosch colleagues.

Highlights for 2007

 # Once again the value of high level networking at the Rothschild Fund management meetings.

 # The experience gained from negotiating the acceptance of the Gabon EDI (economic development initiative) model – to be further expanded as a case study.

 # The opportunities to be opened up through a focus on sustainability finance.

CHAPTER 5

2008 - CHALLENGES AND OPPORTUNITIES

Summary

2008 brought a new set of opportunities, particularly relevant to rainforests, resulting from the Gabon project.

We established an improved liaison with the DMP office in Stellenbosch, with particular reference to bioregional planning and also building on previous introductions to sustainable communities.

"The secret to change is to focus all of your energy not on fighting the old, but on building the new" – Socrates

Shortly after Christmas 2007, we travelled to George, on the southwestern east coast of South Africa. We were met at the airport by Mason and drove to the popular holiday resort at Plettenberg Bay. He and his family were holidaying in a comfortable family-friendly house, with a delightful view over the Bay and literally miles of beach with soft pure white sand.

What a privilege to take long walks and feel the sand between your toes. Perfect weather, to visit (December/January), well into the thirties Centigrade.

Our first proper break in many years, but it did not take long to totally switch off, forget (for the moment) about Economic Development Initiatives and rainforest resources and enjoy family life with children and grandchildren.

One of our Cape Town based daughters, Jacqueline and her family were in the vicinity and dropped in from time to time. Likewise with my one and only sibling, my brother Eugene, who came across from George for a visit.

From Plett, as it is typically called in South Africa, we travelled six hours south to Cape Town along the Garden Route for a stay with our old friends Mike and Wendy Thompson at the Steenberg Golf Estate in Cape Town.

This part of the visit gave us an opportunity to see our younger daughter, Lesley-Ann and also to get back to work through a number of meetings with Dennis Moss at Dennis Moss Partners (DMP).

Our discussions were very focused on discussing the Sustainable Development Initiative (SDI), a planning initiative in support of the development of sustainable communities. The focused discussion allowed me to introduce in detail some of the sustainability finance consulting solutions available and in particular how various UCITS solutions could be applied to DMP's innovative SDI approach.

Back in the UK, at the end of January, I published a follow up document on a SDI Investment strategy.

The Stellenbosch visit at DMP clearly indicated the need to provide a general overview of the growth that has taken place in the ISDC sustainability toolbox in the 2006/07 period. As a consequence the next few months was spent on compiling a list of appropriate subjects, called "Sustainability on one page", answering the typical questions that often occur during introductory discussions.

In March Luigi forwarded me a copy of the *High Level of Eminent Persons Report* (HLPR), produced for the African Development Bank (AfDB), an analysis across the continent towards Africa 2030. I reported back to him with 39 comments on how spot on, in my modest opinion, this report happened to be. It was also encouraging to see in how many ways this report corresponded with our own thinking. Given that the SDGs (Sustainable Development Goals) were still seven years away (finalised in 2015), this report in itself represented a landmark achievement. It is unfortunately unclear and unknown to us how this report was eventually implemented. A believer in the power of Conferences, I suggested to Luigi at the time that a series of landmark conferences could be organised for 2010, 2020 and 2030 in order to monitor progress and introduce new thinking. Unfortunately, as so typical of large institutions, Luigi's position in the corporate structure required him to act through a colleague, but it is not always clear who that colleague should be, and sadly the communication process failed. As he was settling down in a new position at the AFDB, I was not going to put pressure on the process.

However, there is still nine years to go to 2030 and perhaps the time has come for an update? If not as a Conference, perhaps another HLPR-style report.

As mentioned before, part of the story is to introduce various interesting (and challenging) people met, and in this regard my diary showed in early April an entry – "ZEDFACTORY". This architectural practice, based in South London, was founded by Bill Dunster, after the completion of the BEDZED project in 2002, BEDZED being Beddington Zero Energy Development, named after the suburb where the development is located. The project was designed to be carbon neutral, protecting the environment and supporting a more sustainable lifestyle. The project was led by the Peabody Trust in partnership with Bill Dunster Architects, Ellis & Moore Consulting Engineers, BioRegional, Arup and the cost consultants Gardiner and Theobald. The project was also pioneering by being the first construction project where a local authority sold land at below market value to make sustainable development economically viable.

The 82 homes and 1,405 square metres (15,120 sq ft) of work-space was built within a two year period. The project won several awards over the years.

BEDZED Ecovillage

As part of BedZED's eco-friendly low-energy-emission concept, cars are discouraged; the project encourages public transport, cycling and walking, and has limited parking space. There are good rail and bus links in the immediate area. They also have a car-share scheme.

Bill was later awarded an OBE and I had the pleasure over the years of observing the working of a highly innovative mind. Bill will surface a number of times in the journey ahead.

BEDZED is today globally recognised as an early pace setter in the science and technology associated with zero energy design.

In mid-April I was back in Geneva, the first of a number of visits that year, continuing the discussions on sustainability finance with Anders Sjostedt, increasingly focused on the Philanthropic Bond.

We (spouses always invited) received another invitation to the Rothschild Fund Management meeting, to be held in Rome on the 5th and 6th June. No well organised function held in Rome could possibly fail, and this one was certainly no exception.

As for making a special connection, this time I had the pleasure of being seated at the gala Dinner next to Simon Munns.

Simon had previously been with Morgan Stanley and also spent several years at Goldman Sachs in Japan. Subsequently, Simon co-operated for several years as an ISDC advisor, introducing me over time to a number of members of the investment banking community. I always found it interesting how our sustainability finance focus opened new doors, once you know where to knock.

After attending a seminar focused on Siemens financing capabilities in late June, the next stop was a presentation to senior management at their UK headquarters in Frimley, a short twenty minute train ride from Ascot. I have to mention that over the years in the UK, I always enjoyed a train journey as the best way of transport, finding it more relaxing, with time to read and observing the passing scene. This approach applied equally to short hops (like this twenty minute one to Frimley) as to the longer ones to Brussels, Luxembourg and Paris.

My focus in my presentation to Siemens was to introduce the concept of a "S*ustainability Enhancement Partner - SEP*" where a major corporate is teamed up with a sustainability focused project, enabling a greater level of sustainability, largely due to the core capabilities of the SEP, with financial capability as one of the key items to be considered.

The middle of July saw another visit to Paris, this time in response to an invitation to meet a Gabon delegation, led by the "Directeur General Minister de l'Environnement, Monsieur Etienne MASSARD KABINDA MAKAGA", for a meeting to be held at the Paris office of Rothschild Bank, specifically with regards to the Carbon Absorption Certificate in rainforests as a source of project financing.

The rainforest related work prepared as part of the EDI (Economic Development Initiative) never saw the light of day as a result of the terminated meeting with Mr Goungoulou in Geneva at the end of 2007. However, we consider the protection of rainforests as critical in climate change. In other words, if we have a way to assist in rainforest considerations, it was important to do so. My two friends and staunch supporters, Claude and Francois, also attended the discussion and our old "friend" Mathieu Gongoulou (I bet you thought you have had seen the last of him) also attended along with the Gabon delegation.

The Minister (a replacement of the one we met in Libreville the previous year), was accompanied by Madame Josephine ATSATSEBA, as Chargee de Mission, also introduced as an environmental adviser. The minister expressed his appreciation for the rainforest model and expressed the opinion that it was a more acceptable solution than REDD (A UN program - *Reducing emissions from deforestation and forest degradation*), promising that he wishes to have it implemented in his department. Too bad that we never heard from him again or for that matter from mr. Goungoulou, the latter I expected at the time left government shortly afterwards in order to retire. My best guess is that the "environmental adviser" probably convinced the Minister that his department could do better with REDD and hoping to gain "brownie points" in the process.

Mathhieu Goungoulou, Francois, Josephine Atsatseba, me and Minister Makaga

At this juncture I would like to end the Gabon related part of the journey with a few comments:

Firstly, becoming fairly cognizant of the Gabon rainforests during the development of the resource model, and the significant contribution of rainforests to climate change was probably the most valuable take away from the Gabon project. The preservation of biodiversity and the importance of trees are further spin-offs and have been at the core of our consultancy ever since.

Secondly, meeting mr. Goungoulou in Paris provided the opportunity for him to brief me on what happened in follow up with the China Development Bank since the end of the previous year. The essence of which was that an arrangement was made with the Belinga iron ore deposit (or part of it), in the remote north east of Gabon, offered as the collateral for the required loan. With my "protect the rainforest" mindset, this decision had huge, environmentally negative, implications. This apart from the fact that the EDI objectives and the 3,000 homes originally planned, have all gone.

However, I will pick up on this important issue in the next chapter, describing the potential solution subsequently pursued.

My limited rainforest experience, despite the considerable time dedicated to preparing the EDI proposals, gave me the courage to write a letter to HRH Prince of Wales in November 2007 concerning an article he wrote in the Financial Times of 30 November 2007 – "Bali offers a vital chance to take tough decisions" in reference to the then forthcoming COP 13, to be held in Bali in December that year. In his letter HRH indicated that "I have asked 12 of the world's leading companies to help find an innovative, equitable answer to this highly complex problem". I introduced the essential elements of the Rainforest Certificate solution, and closed by offering more detail, "should that be of interest to you to add a possible thirteenth solution to the problem".

I received a reply on the 9th January from Sir Michael Peat, "The Principal Private Secretary to TRH The Prince of Wales and The Duchess of Cornwall" on the Clarence House letterhead. The reply being: *"The Prince's Rainforests Team would certainly be interested to learn more about your work, and I have asked my colleague Simon Rietbergen, to call and discuss it."*

When I did not hear from Simon Rietbergen, I wrote another letter to HRH on the 11 th February and updated him on our progress and the opportunity of implementing a concession agreement covering 12 million hectares of rainforest. Very shortly afterwards I got a call from Simon Rietbergen, inviting me to a three-day **Prince’s Rainforests Project** conference to be held in September at Clarence House in London.

The **Prince’s Rainforests Project** (PRP) was set up in the UK in 2007 by Charles, Prince of Wales, following reports from leading climate change experts, including the Intergovernmental Panel on Climate Change, to promote awareness of the urgent need to take action against tropical deforestation.

The purpose of the conference called by the PRP was to create a report on how the rainforests of Africa can be saved from destruction with an update on the situation in each African rainforest country.

The vast African rainforest stretches across much of the central African continent, encompassing the following countries in its forests: Benin, Burkina Faso, Burundi, Central African Republic, Comoros, Congo, Cote d'Ivoire (Ivory Coast), Democratic Republic of Congo, Equatorial Guinea, Ethiopia, Gabon, Gambia, Guinea, Guinea-Bissau, Liberia, Mauritania, Mauritius, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sao Tome and Principe, Seychelles, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

Except for the Congo Basin, the tropical rainforests of Africa have been largely depleted by commercial exploitation: logging and conversion for agriculture. In West Africa, nearly 90% of the original rainforest is gone. The remainder is heavily fragmented and in a degraded state, being poorly used.

By far, the largest number of countries with rainforests are located in one geographical section of the world—the Afrotropical region. The Food and Agricultural Organization of the United Nations (FAO) indicates that these countries, mainly in West and Central Africa, are mostly poor with populations that live at the subsistence level.

According to rainforest expert Rhett Butler, who wrote the book "*A Place Out of Time: Tropical Rainforests and the Perils They Face*":

“The outlook for the region's rainforests is not promising. Many countries have agreed in principle to conventions of biodiversity and forest preservation, but in practice, these concepts of sustainable forestry are not enforced. Most governments lack the funds and technical know-how to make these projects a reality.

Funding for most conservation projects comes from foreign sectors and 70-75% of forestry in the region is funded by external resources....Additionally, a population growth rate exceeding 3% annually, combined with the poverty of rural peoples, makes it difficult for the government to control local subsistence clearing and hunting.”

The meeting, held in the conference facilities of Clarence House, brought together an interesting group of individuals and I found myself, once again, privileged to be able to listen and absorb the “rainforest wisdom” espoused. The most impressive individual at the table was dr. Kai Schmidt-Soltau, with a double Ph.D in sociology and impressive experience in more than seventy countries.

Kai provided me with some practical advice regarding a possible Gabon action plan using the tools at our disposal.

At the closing of the three-day conference, I said my good-byes and thankyous and went directly to Gatwick for a flight to Geneva, where I was due to meet Boschendal MD Clive Venning the next morning.

Travelling to Geneva, I had more than enough time to reflect on the Rainforest Project and came to the conclusion that the rainforest degradation delivery objectives were in good hands and felt privileged to have made a small contribution to the report eventually produced.

On 5 May 2009, The Prince's Rainforests Project launched a global awareness campaign to improve understanding of the link between rainforests and climate change and the need for urgent action to stop deforestation in the run up to the climate change conference in Copenhagen in December 2009.

The Prince's Rainforest Project is now a part of the International Sustainability Unit, which was also created by the Prince in relation to international deforestation.

HRH's International Sustainability Unit was formed in 2010 to address critical challenges facing the world, particularly the question of how to sustain the health of the environment while advancing development goals. The I.S.U. builds on the success of The Prince's Rainforests Project, established in 2007 to find solutions to tropical deforestation, which resulted in international commitments of US$5 billion for immediate financing.

Returning to Boschendal - Anders and I decided to invite Clive to a meeting with CTBR in Geneva, in order to introduce how a structured sustainability fund could be applied as part of the proposed SDI project at Boschendal. Being aware that he regularly visited Switzerland, it was easy to coordinate diaries and set up a meeting without huge additional travel for anyone.

A direct result of the meeting was an invite from Clive to continue discussions at Boschendal with his management team.

Returning to London I was again reminded by my wife that I have not done anything in regard to a Christmas present she gave me the previous year – it was now September and time is running out. The present came in a big box but consisted of an envelope with a voucher for a video game at Bournemouth airport. Why a video game at Bournemouth airport, I thought?

Anyway, like a good husband I immediately booked the "video game" and we took the ninety-minute drive to Bournemouth airport a few days later. Why do they need a hangar to play a video game. Great was my surprise when asked by a young man at reception whether we brought our passports. We did not bring passports and I added – "we are not travelling anywhere, just came to play the video game". "you better come with me" he said and as we walked into the hangar proper, the light dawned. From my air force experience many years ago, I certainly know what a proper simulator looked like and in front of us were at least four big ones, a Boeing 747 amongst other.

The young man/receptionist turned out to be a pilot and he explained that we have to have MI5 approval to participate. This requirement goes back to the flight training by the terrorists in the World Trade Centre tragedy of 2001. Blow me down – some video game! It also turned out that the only identification documents (e.g. driver licences) in our possession were not acceptable identification for MI5 and we had to reschedule for a week later.

This gave me time to get my mind around Yvonne's massive unappreciated Christmas present and to get ready for what turned into a most exciting 90 minutes.

The receptionist, now my co-pilot, in the meantime programmed "Heathrow airport" into the 747 simulator and we did five take offs and landings, flying each time from Heathrow in the west-end of the London metropole to Canary Wharf on the east-end and the back again for the landing. Each of them, thankfully, right on the dot (thanks to an excellent simulator and a good co-pilot). Yvonne, sitting behind us in th e jump seat later told me her two observations were, one the hugely realistic simulation of the area in and around the airport, including cars on the M4 and M25 motorways. Secondly, the amount of sweat pouring down the back of my head.

Safely back "on the ground" – in the 747 simulator

My final message – "read the fine print of your next Christmas present" – it is embarrassing to be regularly reminded of inattention to detail.

Considering Yvonne's remark and travelling back from Bournemouth I could not but reflect on how under-appreciated airline pilots are.

I will illustrate with an anecdote from an old Air Force friend, Arrie de Klerk, who joined SAA in later years and went on to become a 747 captain. I followed Arrie's career closely as he progressed up the ranks, in that I always got an invite to the flight deck, when notifying him via an air hostess that I was on board.

Arrie told me once that at a de Klerk-family dinner, his sister was going on about the wonderful experience of her husband, a brain surgeon "holding a patient's brain in his hand" and his skill in performing the required operation. To which Arrie quipped in his dry Western-Transvaal accent "my dear sis, when I fly a 747, I typically have more than three hundred "brains" in my hands!"

Following the meeting with Clive Venning and Anders in Geneva, I arrived at Boschendal on Monday 29 September, for an introduction to management and general operations. The objective of the visit was to evaluate the applicability of a UCITS funding structure in support of the proposed SDI implementation. I also wanted to evaluate first-hand the general thinking on the SDI concept.

A short introduction to the structure and history of this iconic Wine Estate will be appropriate.

"Such is the peace and beauty that Kings must tread lightly and Knaves bow their heads in awe" – this entry in the Rhodes Cottage Guest Book dated 1961 provides a somewhat dramatic introduction.

This 2,260-hectare estate is probably not only one of largest wine estates in the world, but also one of the oldest, having first been established in 1685.

In order to keep our introduction focused, we have taken a set of extracts from an attractive coffee table book on Boschendal, as produced by the new management in 2008.

The Boschendal Valley

Boschendal, with its back drop of sweeping mountain ranges, deep ravines, imposing peaks and sun-baked rock, is renowned throughout the world. In fact, this area of beauty is of such significance that botanists have named it a kingdom on its own – the Cape Floral Kingdom. It is one of the most interesting, diverse and fascinating ecosystems on earth. It is also one of the oldest: there are still areas of the Boschendal estate that look exactly the same as before humans arrived.

The Boschendal Homestead

Of all the stately homesteads in the Drakenstein Valley, Boschendal has the finest setting. The dark, tarring mass of the Drakenstein mountain enhances the whiteness of the homesteads' walls and gables and the long, low, stretching link of the ring wall in the foreground. So wrote Gawie and Gwen Fagan in the story of Boschendal's restoration. They, like so many people throughout history, had fallen under the spell of this special place – truly a gem in the crown of historic Cape homes, and one of the few open to the public as a museum. The Boschendal homestead, werf and surrounds are to be donated to a trust by the new investor group, headed by Clive Venning. In this way Boschendal will continue to be preserved for the nation in perpetuity.

The Homes of Boschendal

The gabled form of the Cape Dutch homestead has become famous. When people think of the Cape, one of the first images that spring to mind are the white-washed thatched and gabled homesteads, it is no accident that the Cape Dutch houses have come to symbolise the Cape as a whole. Confidently elegant, strikingly beautiful and well proportioned, these houses are jewels of architecture. The greater Boschendal estate also has a number of noteworthy homesteads on it: Rhone House, Old Bethlehem, Goede Hoop, Nieuwedorp and Champagne, all homes on farms that represent some of the first grants made to the Huguenot settlers. In addition, the historically famous building Rhodes cottage, designed by Sir Herbert Baker has served as a guest house over the years, with the guest book a fascinating record that reads like a who's who of the 20th Century political and business personalities.

The People of the Valley

Ultimately, all stories are about people. It is their needs that shape the landscape and build houses, it is their desires that creates food and wine, it is their dreams that shapes histories and its their memories that tell them. A look at the story of Boschendal is therefore incomplete without describing the people, especially those that do not "automatically" get entered into the history books. Names like De Villiers and Rhodes have been acknowledged, but there is a fascinating legacy of ordinary people that is only now being told.

As the settlers arrived, slaves were brought in by the Dutch East India Company to aid the settlers in their farming endeavours. These people remained under the control of the ruling classes, even after the abolition of slavery, simply because work was scarce. The story of an old town in the valley reflects the movement from slavery through politically disadvantages wage labour to land ownership. This is Pniel, founded as slavery was abolished, with the majority of the original inhabitants were freed slaves. Pniel means "the face of God", and has always had connections with Boschendal, as many successive generations have worked on the farm, as they do to this day.

This story of Phiel is relatively unique in South African social history. Few black people gained some form of independence so early on. For the rest of the workers and their families who lived on the valley farms, the battle for entitlement to land and civil rights was a long one – with far reaching changes only taking place with the post – 1994 democratic government. Since the 1994 elections, the course of

South African history is, for the first time, in the hands of all the people and every citizen has a stake in its future. As such a central part of the history of the Cape and the country, Boschendal is leading the way in making this participation real. Key to this process is the idea of custodianship – that the people who live and work on the land are the people who look after it. As a home owner at Boschendal one forms part of this network of empowerment and support for the land and its people.

Since 2003, when Boschendal was earmarked to become a residential development, the ultimate goal was identified as being social and economic equity and redressing the imbalances of the past. A Sustainable Development Initiative (SDI) was formalised with the involvement and input of all interested parties, so that this goal could be achieved through teamwork. The improvements in community infrastructure are to be funded by levies on the sales of Boschendal properties. Over a 10 year period these levies will raise in excess of R100m. This money is to be put into trust for projects that include nutritional and health support, basic education, skills development for farm workers, as well as agricultural, heritage and environmental support. There are also programs stemming from the SDI to build opportunities and skills in tourism for the local community. Furthermore, 270 hectares of land will be donated to the community trust from the SDI partners for the development of some 500 homes on 40 hectares, as well as 110 hectares of agricultural and 120 hectares of nature reserve land. This will, for the first time ever, link the communities of Phiel, Lanquedoc, Johannesdaal and Kylemore.

The integration of all the people into a greater Boschendal community is revolutionary, but also common sense. The whole Boschenddal community – historic residents as well as new residents – are now involved. The clear goal is the confluence of human interest, the conservation interest and the economic interest.

Food and Fare

The Cape Dutch farms were historically renowned for their warm welcome and hospitality. What crowned this welcome was the Cape Table, laden with hearty dishes made from ingredients from the farms' werf and fields. The big kitchens were typically the domain of the Malay slave women who were masters of flavour and spice. By the mid – 1970's, Boschendal had a historic home and an excellent range of wines. A world-class restaurant was simply the natural progression in the evolutionary process. Because Boschendal was a symbol of the Cape it called for an icon restaurant to serve famous Cape dishes that had seduced taste buds for centuries.

When Henry Kissinger, former Secretary of State of the USA, was asked what his most pleasing memory of Africa was, he replied ; "the malva pudding and brandy snaps at Boschendal".

I spent an informative week with Clive, his management team and also a lunch with Council Members of the Stellenbosch Municipality. My core message i.e. a UCITS implementation of the SDI Investment model is the way forward, was well received and understood by all the parties. It was a positive feeling to be back in the heart of the Western Cape winelands and to observe the teamwork taking place in a diversified society.

Always on the side lines in constant consultation with Dennis, the SDI model will be very much a primary focus, for the next three years, until December 2011. The story around the development of this model in conjunction with Boschendal will be told as we progress over the next few years.

Since my first interaction with DMP, I have always been impressed by the biodiversity-bioregional planning relationship with real estate development and were constantly on the lookout for potential consulting opportunities in this area. One such opportunity arose during the Rome Rothschild meeting in a discussion with Kristof Szalay-Bobrovniczky, CEO of ADRIATIQ ISLANDS GROUP, a property development group in Hungary.

Kristof presented the development opportunity of a portfolio of 14 projects, all in support of tourism (totalling Euro 900 million), situated all along the Adriatiq coastline of Croatia. He was, however, having problems with the planning authorities. I have never been to Croatia, but have seen pictures of the attractive coastline. I then suggested to Kristof that a comprehensive bioregional plan might sway the authorities towards supporting his development objectives.

He was somewhat perplexed, but agreed to stay in touch and in fact, shortly after the Rome meeting initiated a discussion leading to an invitation to a conference in Zagreb, Croatia, providing the opportunity for a presentation on bioregional planning and property development.

We accepted the challenge to compile an introductory presentation on the subject. We were further encouraged in our effort with the discovery that there already was one Biosphere Reserve in Croatia.

It became a bit of a problem that I could not make the date - no problem, as I encouraged Simon Munns to undertake the challenge of doing my presentation in early November.
Simon reported back after the meeting that he received a welcome reception, but with few questions. Clearly the subject takes some understanding before it makes sense.

Unfortunately, Kristof ignored all the advice forwarded, but in the end could not convince the authorities of his suggested modus operandi and the development of the portfolio never materialised. However, it remains a good investment model for consideration.

The 8th November saw Yvonne and me in full Springbok supporters outfits at the Millenium Stadium in Cardiff in Wales, my first opportunity to wear Mason's Springbok jacket. The Springboks, the current World champions, were under some pressure, with Wales then the current Six Nations champions, convinced they could beat the World Champions, especially their poor performance in the Tri-Nations (an annual competition between SA, Australia and the NZ All Blacks).
However, the Bokke played like true champs and made us proud, final score 20-15 to South Africa.

I was very impressed with the stadium, which is awesome in structure and even more so with the roof closed. Truly an impressive achievement in structural engineering design.
Even more was the singing of the Welsh people - we sat in the middle of a group of Welsh supporters – we had goose bumps listening to their rendition of the National anthem - Land of my Fathers. Such a small country with such a great heart.

We are very honoured today to have a true Welshman, Tim Evans, as a member of the SCNIIC advisory board.

A few days later Simon and I travelled to Zurich for a meeting set up with Reto Kuhn, CEO of SAM - Sustainability Asset Management - then already making a name with their work in sustainability indexes. We were approaching them with the objective of our consultancy raising seed capital through them for the launch of the SIF – Sustainability Investment Fund, an idea receiving a lot of support around the table. After a good meeting, with a follow up arranged for fourteen days later, Simon returned to London, and I stayed overnight waking up with a bad cold, travelled by train to Geneva the next day.

I warned Anders ahead that we should possibly meet outside their office, in case my cold affected more people. As always, Anders was courtesy itself and we had one of our many constructive meetings. He was supportive on our SAM objectives as it could be supplemental to their services. Later in afternoon, I had the opportunity to introduce the Boschendal SDI to Hugo Ferreira, at the time CTBR CEO.

Before returning to Zurich for the follow up meeting with SAM, I first had the pleasure of delivering a paper at the Biodiversity and Ecosystem Finance Conference, held at the Barbican in London. The paper entitled "*Sustainability Finance in Practice*", was a case study of the Boschendal SDI model and resulted in a number of somewhat sceptical questions of the chances of success in this visionary implementation of socio- economic fairness. It was very clear to me that here in the north (e.g. Europe) they did not have a proper understanding of the challenges in the South. I reminded myself to work harder to promote the forward thinking of my colleagues in the South.

One of the rewards of delivering a paper at a Conference, is the networking afterwards. This time was no exception, resulting in an invitation from dr. Susan Canney, Director of the Mali Elephant Project in the department of Zoology at Oxford University. The invite was to receive an introduction to the project, with a view of determining the applicability of sustainability finance.

Never one to say no easily, we arranged to meet in Oxford towards the end of the year.

Straight from the Barbican I hailed a taxi to get to a motel near the City airport before our early flight to Geneva the next morning. Simon and I were scheduled to meet with Anders and Luigi Minella before travelling to Zurich, for a follow up meeting with SAM the following day.

On the way to the hotel the cab driver got totally lost, so badly that I suggested he turns the meter off. This is very unusual for London, where cab drivers have an incredible knowledge of geography and street addresses. This driver was a total exception and somehow got into the system to become a qualified cab driver in a round-about way. The fact that he immediately agreed to a "fare freeze" supported my view. The next morning checking in at City airport, Simon and I were so busy talking, that I left my lap top computer in the security bin, only to miss it late that evening at my hotel in Zurich.

At the meeting in Geneva, it was the first opportunity to meet Luigi face to face since we first met at the CBTR Conference a year earlier, although we had a fair amount of correspondence during the year. It became very clear that Luigi was keen to help in the launching of the SIF, but was simply not in the appropriate position at the AfDB, as discussed earlier.

From Geneva, I convinced Simon that going by train was more convenient than flying, and he agreed.

Our SAM meeting was intense and I was given the third degree by one of Rueto's colleagues on detail of some of the projects in the SIF portfolio, and I got the impression that she was intrigued by some of our approaches in the South. Selling sub-Saharan projects in Europe can be challenging at times, especially considering the cultural differences.

I used the time in Zurich to arrange a meeting with Rainforest specialist Kai, who kindly travelled from Zug to meet with us. As we had already some correspondence since the meeting of the Rainforest Project at Clarence House, it was an ideal opportunity to continue discussions on a generic rainforest strategy. Kai certainly entertained us with some of his own experiences in the deep rainforests in various parts of the world.

Yvonne joined me for a weekend in Zurich and Simon and I met her at the airport later that evening. While enjoying a glass of wine together, I reminded Simon to please trace my laptop back at City airport and I am pleased to report that he achieved that successfully on his return to London later that evening.

The first half of December 2008 was particularly busy and started with a Conference hosted by Fitch Ratings on the 4th. At the time the financial world was still heavily engaged with the fall-out from the financial crisis and the discussion was very much focused on the future. It all seems so long ago now and totally overshadowed by the current Corona virus crisis.

The 8th saw me attending a Financial Times Conference, organised in association with BEDIA (Botswana Export Development and Investment Authority) on "Investing in Botswana" in London.
My attention was caught by a presentation *"Shaping the Future – Sustainable Investment in Botswana"* by Omri van Zyl from Deloitte Consulting. He is a Stellenbosch Law graduate and former Primarius of Wilgenhof Men's residence at Stellenbosch University. Omri was promoting "The First African Centre for Sustainable Development (ACSD)". I had the pleasure of meeting with Omri a few days later, a meeting that led to further connections with BEDIA and a commission to do a Botswana Bioregional Plan.

To my knowledge the ACSD never realised as a single entity but the concept morphed into a number of sustainability initiatives across Africa in later years.

My follow up from the meeting with Susan Canney at the Barbican Conference, realised on the 11th with a visit to the department of Zoology at Oxford University. Susan was a Research Associate in the department and director of the Mali Elephant Project.

The Mali Elephant Project team -- The WILD Foundation, Save the Elephants, and Environment and Development Group – produced a comprehensive report on their Phase One activities, covering 2003 to 2006. The project built on earlier work of Save the Elephants, and consisted of original scientific field research and compilation of archival information in order to work towards the basis of a management plan for the survival of the Gourma elephants. The immediate problem was that unsustainable (read unplanned) development was greatly affecting the natural elephant migration, in the final instance adversely affecting the environment. The work of the project began with elephant conservation in 2002 and has developed into ecosystem restoration and sustainable livelihoods as it became clear that both elephants and people were dependent on a healthy environment. Endlessly fascinating, the dynamics and challenges of this socio-ecological system reflect those of the wider world in microcosm.

I found it quite challenging to provide Susan and her team with an immediate response and finally managed to define a concept styled as MSTMP- Mali Sustainable Tourism Master Plan. This plan needed a bioregional plan at its core but I could not convince my expert colleagues to get very excited about it and to my shame, we gracefully bowed out.

For an update on this socially-ecologically complex and challenging problem and Susan's pioneering work, please refer to the following link dated first quarter 2020:

https://researchoutreach.org/articles/action-research-creates-shared-future-elephants-humans/

A few days later on the 14th saw me and Yvonne attending, as guests of Susie Salmon, a Christmas Carrols recital at Magdalen College in Oxford. Susie served as general nurse (and as surrogate mother at times) for the College, for many years.

That unforgettable evening brought a nice ending to a very busy 2008.

The only disappointing news being a letter shortly before Christmas from Rueto Kuhne, informing that as a result of the ownership change, SAM being taken over by Robobank, they will not be in a position to consider an investment in the SIF.

So well, back to the drawing board in 2009.

CHAPTER 6

2009 - RAINFORESTS AND AIRSHIPS

Summary

Regular visits to South Africa open new Sub Sahara opportunities.

New technology provides new tools with which to deliver climate neutrality and sustainability.

"Global warming is not a future threat-it's the present reality"

Bill McKibben - Boston Globe

Following the last meeting with Matthieu Goungoulou in Paris, I spent considerable time thinking about the rainforest related challenge posed by the exporting of iron ore from the Belinga deposit.

Firstly, some background on this remarkable resource.

The Belinga Iron Ore Project is situated some 100km north of the equator, in the Ogooué-Ivindo province of Gabon, 720km east-northeast of Libreville. The project at the southern edge of a belt of Archaean greenstone rocks that form a growing iron-ore district that includes projects in southern Cameroon and northwest Republic of Congo.

An exploitation permit for Bélinga was awarded in 2007 to Compagnie Minière de l'Ogooué, a 75:25 joint venture between CMEC (China Machinery Engineering Corporation) and the government, but a dispute over the development of the deposit led to the licence being withdrawn in late 2013. I am including at this point the Time Magazine article published in October 2009, that explains the heroic resistance of Marc Ona against this development:

MARC ONA – TIME MAGAZINE – HEROES OF THE ENVIRONMENT – 5th October 2009

A verbatim extract from the magazine:

Marc Ona's campaign to halt a gigantic mining project in the heart of Gabon's rain forest has earned him a few weeks in jail, regular harassment by police and, when his landlord grew nervous about provoking government ire, eviction from his home. But Ona's determination has also generated enough local and international attention to shame Gabonese officials into vastly scaling back the project – and possible derail the mine altogether. When you've seen (the forest) and just know how enormous a loss destruction of it would be for locals, for the Gabonese people, for Africa and the entire world, one man's inconveniences and troubles become insignificant" he says.

In Ona's crosshairs is a $3.5 billion iron-ore project that initially covered 3,000 sw mi. (7,700 sq Km) of the Ivindo national park, part of the world's second largest rain forest. Through Brainforest, an ecological organization he founded in 1998, and a network of Gabonese green groups, Ona, 47, denounced the planned mine, hydroelectric dam, railroads and deepwater port. In 2006 he proved that the project violated Gabonese environmental laws. The next year, he publicized details of a confidential contract between China national Machinery and Equipment Import and Export (CMEC) – under which Gabon was to receive a mere 10% of final profits.

The resulting outcry, both at home and abroad, forced the government to negotiate the contract's financial balance, and scale back the project to less than one tenth of its initial scope. Then the global recession hit. "Financing CMEC counted on from banks and governments has dried up, and with Gabonese officials revising the contract and project, The Chinese are rethinking the entire thing" he says.

Ona plans to use the $150,000 he received as a Goldman Environmental Prize winner this year as seed capital for micro-businesses begun by local entrepreneurs. If he can demonstrate the region's economic richness without plundering it, he says, large-scale projects that damage the environment plundering it, he says, large-scale projects that damage the environment will at least have some competition in the future. Residents of Ivindo who had earlier viewed the mining project as a way to bring jobs and infrastructure to the region are warming to Ona's green alternative. Ona says those changing attitudes are " the biggest reward for my struggle". It's a struggle all the more remarkable because Ona wages it from a wheelchair, the legacy from a childhood battle with polio. "When powerful people see someone who has fought disadvantage his entire life blocking their way in a wheelchair", Ona says with a chuckle of satisfaction, "they tend to think in alarm 'This guy's serious'".

Bruce Chumley

In April 2014 the Gabon government contracted UK-based mining consultancy SRK Consulting to conduct a two-year study of Bélinga's reserves, which were last estimated (in the 1970s) at some 1bn tonnes of 64%-pure iron ore.

From the SRK web site:

- SRK was established in 1974 by Oskar Steffen, Andy Robertson, and Hendrik Kirsten in Johannesburg, South Africa, offering services in soil and rock mechanics and tailings disposal.
- In 2014 SRK Exploration was contracted by the Ministère des Mines, de l'Industrie et du Tourisme (now Ministère de l'Equipement, des Infrastructures et des Mines) in Gabon to undertake a modern exploration programme to evaluate the Belinga iron ore deposit in northwest Gabon. The deposit has been known about for over 50 years, but its extremely remote location, low iron ore prices, and more recent commercial joint venture disagreements have prevented development and exploitation. Historic reports have claimed resources that are not compliant with modern reporting standards but give an indication of the potential size of the deposits, of more than 400 Mt at over 60% Fe. These resources included only 6 of the 10 historically named prospects along the 25 km long ridge of Archaean banded iron formation (BIF).

  To support new geological work at Belinga, SRK first refurbished the overgrown, dilapidated old exploration camp to provide accommodation and messing facilities with power and potable water. At its busiest, the camp comfortably housed almost 100 staff, the vast majority, including labour, cooks, drivers, geologists, and administrators, were Gabonese nationals from the villages surrounding the project and the Capital, Libreville.
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- Geological and regolith mapping, ground magnetic, and resistivity surveys were all completed by SRK over the 10 prospects. An integrated interpretation of new and limited available historic data allowed a resource drilling programme to be designed for the Babiel North prospect and exploratory/scout drilling for other prioritised targets.

  A 420 sq.km high-resolution LiDAR survey was also contracted to provide a digital terrain model (DTM) that was corrected to show the topography below dense forest vegetation. This dataset helped not only with geological interpretation, but clearly identified historic access tracks that were often hard to spot on the ground due to thick secondary vegetation growth.

  SRK was preparing to manage the next phase of resource drilling that would twin historic holes and provide a modern mineral resource estimate reported to internationally accepted standards. Unfortunately, the project again stalled due to financial constraints and was put on care and maintenance by the Government of Gabon.

  SRK is convinced of the potential for this deposit to one day be developed and exploited, bringing much needed income to this region of Gabon. When that day comes, SRK will again be ready and willing to get back in the field.

Back in 2009 my layman's view was the immediate problem constituted by the fact that the total distance from north-east Gabon where the deposit is, to the a deep port facility on the south-west coast of Gabon, is approximately 800 kilometres. *And that is across a pristine rainforest*. Additional new rail facilities would be required, in addition to an extensive update of existing track, presumably resulting in the destruction of a considerable part of the rainforest. In addition to creating unrecoverable damage to the ecological balance.

I could just imagine the infinite care that would be taken by a Chinese construction crew!

To me it seems that going over the rainforest would be the only conceivable and acceptable result.

Question then is how? What is the status of heavy lifting capability of airships? Is it even possible?

Not being aware of Marc Ona's heroic fight, I took the decision to explore whether a solution is possible and feasible and if so, put that forward at an appropriate time.

I commenced with a search process and within a few days found a potential solution in a company called Varialift located in Stourbridge, close to Birmingham, UK.

I first made contact with the principal of Varialift, Alan HANDLEY, and paid him a visit in Stourbridge on the 16th February. Alan turned out to be a highly experienced engineer, totally convinced of his theory that lift can be obtained through the compression of helium. Helium, being an inert gas, is considerably safer than hydrogen, the cause of the Hindenberg air ship explosions in the 1920's.

Alan by then had filed three patents to protect his intellectual property, in Europe, USA and Hong Kong and was busy building a technology demonstrator.

The web site link https://www.varialift.com/ provides a reasonably comprehensive overview of the current technology and specifications.

My experience in dealing with Alan over the following two years, justifies a book in it's own right and the latest Varialift web site also picks up the history and development post 2010.

In early 2009 the Varialift story was still in the crawling stage, with three successful patent filings but still some way away from proof of the technology.

With the basic specification in hand that the first proposed version, ARH-50 will be capable of lifting 50 tons of payload vertically without any external intervention, fly at a max ceiling of 30,000 feet, at an estimated cruise speed of 218 mph (20,000 ft) and 155 mph at sea level, with a range of 6,000 nautical miles, I had sufficient information available to complete a detailed feasibility study.

As a comparison benchmark I had detailed information available of the Shishen-Saldanha railway line on the west coast of South Africa where a 2.43 billion tonnes iron ore deposit at Sishen has been exported over a distance of 800 miles since opening in 1953 to the seaport at Saldanha. This line is renowned for it's 3,780 meter trains. This compares to an estimated deposit of 400 million tonnes plus at Belinga, but with a similar travel distance.

I also suggested that a cargo bay below the airship could be designed to open by remote control, a full cargo could potentially then be dumped directly into a cargo ship (specially adapted?) alleviating the additional cost (estimated in 2009 at US$1 Billion) of a ship loading terminal complex.

The feasibility study was positive, but the remaining challenges were to prove the technology, build the first airship and ensure a suitable manufacturing capability to build a fleet of airships. A considerable mouthful to deliver. Alan's time frame for completion of the technology proof at the time was highly optimistic and with hindsight, somewhat unrealistic.

I had no doubt that a VTOL iron ore/rainforest model was going to be a tough sell. The positive side however was that the availability of VTOL (vertical take-off and landing) capability with a 50-ton payload (the approximate equivalent of two fully loaded twenty foot containers) was opening up new vistas, never even considered before.

Other than exporting the Belinga ore across the rainforest, the vista I found particularly compelling was that of airship-based health delivery service to remote locations on the African continent in particular, but also elsewhere. Some of these concepts will be touched upon again in later discussions.

By now Yvonne and I have become intermittent swallows, that is travelling south in the winter, albeit in our case not regularly. This year in February we spent a lovely holiday with our friends Mike and Wendy Thompson in Glentana, near George, on the South African south-east coast.

Then back to work for a series of meetings in Stellenbosch.

Dennis, in the meantime, introduced the concept of Special Management Areas (SMAs), as an alternative to SDIs, providing additional flexibility in the planning process. The Nuwejaars Wetland was the first SMA to be developed. It was clear that it could fit into the UCITS structure. I paid a courtesy visit to Boschendal for meetings with Clive Venning and Charles Quant (manager of Boschendal beneficiary trust), the latter in regard to the structuring of the trust fund and a visit to the new office from where the beneficiary trust will be managed. From Clive I detected strong impatience with the slow progress made with the SDI registration and I reiterated that we could not do much about an appropriate UCITS registration, and potential investment, before the SDI process is completed. Frustration all around.

Omri van Zyl joined Dennis and me, allowing me to introduce a proposed ACSD (African Centre for Sustainable Development) Investment model – the ACSD first launched by BEDIA in London in December. I obtained a document at the December function – "Botswana Mineral Investment Promotion – 2008", which I have been able to review in the interim, and to which I could apply the (Gabon generated) Natural Resources Model as a potential source of collateral for the ACSD project.

Back in UK, I had a number of meetings with Alan Handley, aiming at a suitable working arrangement. My stimulating break at the seaside in South Africa made me realise that I had to negotiate a worthwhile arrangement with Alan, given that ARH-50 is a long-term project with no immediate generation of consulting fees. Instead, Alan was looking at me for generating the required funds to complete the technology demonstrator.

In the meantime BEDIA informed us that they will be sending a small delegation of two senior managers to visit Stellenbosch for a full introduction to a potential Botswana Bioregional Planning model.

This South African visit from the 8th to 18th June unfortunately conflicted with the annual Rothschild Fund management meeting, taking place in Madrid. I guess we sometimes have to make difficult decisions and consequently I did not attend the Madrid function.

The BEDIA presentation on the 10th June was a definite success, as by now Dennis had this particular presentation well sorted, covering a difficult subject. A visit and lunch at Boschendal were on the agenda, with the exercise later resulting in a formal commission covering Botswana as a whole. I have never been sure whether it was Dennis's slick presentation or the famous Boschendal cuisine that did the trick?

Charles Quant, me and Dennis with our BEDIA guests at the Boschendal Manor House

Other presentations and conferences that week covered amongst others bamboo, and a discussion with dr Clive Dutlow, a chemical pathologist, on the establishment of a bamboo focused Special Management Area, on the Berg River, near Franschhoek, and close to Boschendal. As this was a very localised project, I left it to the DMP team in Stellenbosch to continue. However, my contact with Clive and his colleagues introduced me to the fascinating world of bamboo.

Typical bamboo forest - wikipedia

Another discussion/presentation was with my old friend Silvio Baptiste, preparing for a presentation on a large housing project in Angola, to be delivered to the Angolese Consul in Cape Town a day later. I don't know whether it was the absence of a good lunch on the day, but we never heard from the Consul again regarding the housing project. However, Dennis later managed to turn the housing challenge into a Bioregional Planning exercise for Angola.

I had the pleasure of being a guest in a hospitality suite that Saturday afternoon at Newlands Rugby, watching a close-run game between the local team Western Province and the visiting British and Irish Lions team. Being able to attend this game enabled me to keep my "privileged record" of having watched at least one Lions game in South Africa since 1955. That first time I was an eleven-year old, watching from the school enclosure at Newlands Rugby. The Lions invitation team, is made up of players from England, Scotland, Wales and Ireland. The team tour every four years alternatively to the major rugby playing nations Australia, New Zealand and South Africa. A Lions tour is a big deal in rugby terms and the next tour to South Africa is currently (Covid-19 dependant) in 2021. With South Africa the current Rugby World Champions this tour takes on a special meaning for both sides. I wonder whether I will be able to maintain my "privileged record"?

On the Monday I met with Gustav de Waal, heading a consortium who introduced jatropha planting in the Kavonga area of Namibia in conjunction with small property holders, in order to produce biofuel on a commercial scale. Gustav, a successful farmer with a strong entrepreneurial orientation, was certainly a most interesting person to meet and I very much appreciated him travelling from his farm near Pretoria to our meeting.

Jatropha is a perennial shrub or tree. It is drought resistant and easy to grow in tropical to semi-tropical locations. The plant lives for up to 50 years and may grow nearly 20 feet (6 m.) tall. It has a deep, thick taproot which makes it adaptable to poor, dry soil. Overall, the plant is not particularly visually appealing, but it does get attractive green cymes of flowerets which turn into a tri-compartment fruit with large black seeds. These large black seeds are the reason for all the hullaballoo, because they are high in burnable oil. An interesting piece of Jatropha tree info is that it is listed as a weed in Brazil, Fiji, Honduras, India, Jamaica, Panama, Puerto Rico, and Salvador. This proves how adaptable and hardy the plant is even when introduced to a new region. *Jatropha curcas* cultivation can produce oil that is a good substitute for current biofuels. Its usefulness has been challenged, but it is true the plant can produce seeds with an oil content of 37%. Unfortunately, it is still a part of the food vs. fuel debate, as it requires land that could go into food production. Scientists are trying to develop a "super Jatropha" with bigger seeds and, therefore, bigger oil yields.
https://www.gardeningknowhow.com/ornamental/trees/jatropha/jatropha-cucus-tree.htm

The consortium led by Gustav were promoting a socio-economic project, aimed at the upliftment of subsistence farmers in the Kavongo area of Namibia, well suited for the perennial crop because its rainfall is about 500 mm per year and its inhabitants have already been growing the crop for the past 40 years, with most people planting it around their homesteads as fencing. The National Bio Energy Road Map says most of the Kavango and Caprivi regions are degraded with consequent loss of biodiversity, and thus the employment of bio-fuel initiatives could help to rehabilitate these areas and wholly or partially restore their biodiversity values. The aim was to provide the subsistence farmers with more than the average N$600 per month. (in 2009 exchange rates approximately US$90). The factory, to be erected in the vicinity of Rundu, will add value to the produce by extracting oil from the seeds and produce several other products from oil, including bio-diesel. Other by-products of the jatropha include glycerine, soap, pharmaceuticals and animal feed. The waste cake is most likely to be used to produce bio-fertilizer for the European market, along with many other uses.

What appeared at first an excellent socio-economic investment unfortunately failed under due diligence, largely due to concerns expressed by the Namibian government concerning that the proposed projects will affect the country's food security and land tenure and in fact in June 2011 imposed a ban on large-scale jatropha projects. At that stage investors had already proposed the development of as many as 400,000 hectares (988,400 acres) of jatropha plantations, significantly surpassing the government's target of 63,000 hectares by 2013.

On the 1st July we sadly bade farewell to our friend Linda Turney, who succumbed to breast cancer at far too young an age. Linda was part of our happy group in Pau two years earlier. I was grateful for being able to say a sad good-bye to her shortly before I left for South Africa.

Back in the UK Michael Sippitt, a lawyer with a great interest in the environment and sustainability, promoted an initiative CEIP – *Commonwealth Environment Investment Platform*, and invited me to a reception at the Palace of Westminster, home of the British Parliament. At this opportunity I had the pleasure of meeting Jeff Slade, a consultant specialising in deep level drilling operations for energy sources such as hot water. Jeff and I communicated for many years and he was the source of much humour, general knowledge and with a considerable list of contacts.

In early August I met with an old friend from student days, Graham McKay, at the time executive chairman of SABMiller, the second largest brewery group in the world. Graham was also a client of LRA in his early days at South African Breweries (SAB), from where he led SAB on a growth spree to become the brewer giant they became. Graham studied electrical engineering at Wits University in Johannesburg and succeeded me as President of SAFUES (South African Federation of Engineering Students) in 1970. On the day we discussed sustainability in general and the potential contribution our consultancy could make within a large corporate. It was the last time we saw each other as Graham sadly passed away from a brain tumour a while later.

Early August saw me in Luxembourg meeting with Francois and Claude. The meeting was largely a review of lessons learned from the Gabon project with a presentation of a future strategy. One key question was whether we should consider working with CDB in a future strategy. The considerable size offices available in Shanghai and Hong Kong through Rothschild Bank as an assurance to CDB was considered and rejected. Therefore, caution very much the name of the game going forward.

Following an introduction from Susie Salmon, I met with a friend of theirs, David Hardingham in London on 23rd September. The Hardinghams, ex-South Africans, were friends of Susie's family for many years, before they emigrated to the UK. In the UK, they "fostered" a schoolboy from the Maldives while he attended Dauntsey's, a co-ed independent *school* in Wiltshire, close to the Hardingham family home in Salisbury. The schoolboy, Mohammed Nasheed, became the President of the Maldives from 2008 to 2012. This was an unexpected win in the first democratically held election, upsetting the autocratic Mamoon Abdul Gayoom regime, who had been in power for many years.

For a summary of the up and down political career of this remarkable man we refer the reader to the web link:

https://www.britannica.com/biography/Mohamed-Nasheed

The Maldives consists of 1,192 coral islands grouped in a double chain of 26 atolls, that stretch along a length of 871 kilometres (541 miles) north to south, spread over roughly 90,000 square kilometres (35,000 sq mi), of which only 298 km^2 (115 sq mi) is dry land, making this one of the world's most dispersed countries.

Maldives, is a small archipelagic island country in South Asia, situated in the Arabian Sea of the Indian Ocean. It lies southwest of Sri Lanka and India, about 700 kilometres (430 mi) from the Asian continent's mainland. The chain of 26 atolls comprising a territory spanning roughly 298 square kilometres (115 sq mi), the Maldives is one of the world's most geographically dispersed sovereign states as well as the smallest Asian country by land area and population, with around 515,696 inhabitants. Malé is the capital and the most populated city.

It is the lowest country in the world, with maximum and average natural ground levels of only 2.4 metres (7 ft 10 in) and 1.5 metres (4 ft 11 in) above sea level, respectively. In areas where construction exists, however, this has been increased to several metres. More than 80 per cent of the country's land is composed of coral islands which rise less than one metre above sea level. As a result, the Maldives are at high risk of being submerged due to rising sea levels. The UN's environmental panel has warned that, at current rates, sea-level rise would be high enough to make the Maldives uninhabitable by 2100.

As a result of President Nasheed's rise to power, David, a businessman found himself appointed as an "Ambassador to the Maldives" serving the young president in finding solutions in the UK, to socio-economic problems in the Maldives. Apart from the very real threat of climate change and rising sea levels, one such problem was housing, to be supplied in seven regions, with one thousand units per region. With that comes the challenge of an appropriate transport network, connecting the seven regions across the many islands, constituting the Maldives. I promised to muster an appropriate solution and we agreed on a future date for me to make a short presentation.

It was very clear that any proposed project could only work with close liaison with "top management" in addition to a very challenging environment for doing business. Major environmental challenges, an uncertain and insecure future, an unstable political situation and no natural resources to rely upon.

David and I met on the 1st October in Basingstoke, sort of halfway between Ascot and Salisbury, and I made a presentation to David and a few of his Maldives based colleagues. Importantly, I also suggested an executive summary for presentation to the President. In addition, I pointed out the need for an advisory board with regular liaison with "Maldives top management". The experience gained by DMP in the development of the Eden Island project in the Seychelles, served as an important "teaser" in the presentation.

Ten days later, I again met with David and one of his Maldives colleagues, Mansoon, in Southampton, where David had an office. Mansoon, it transpired was a close and trusted advisor to the President and we jointly reviewed the memo to be handed to the President.

Project Maldives was now effectively under way.

The project received some unexpected publicity, when on the 17th October, Maldivian President Mohammed Nasheed and his cabinet made front page news globally when they, equipped with scuba gear, in Girifushi, Maldives, signed a document that called on all countries to cut down their carbon emissions ahead of a U.N. climate change conference.

President Nasheed with his Cabinet making his point about the dangers of climate change

In the interim, following up on an article in the FT describing the dynamic nature of Opportunity Peterborough, I met with the Director, Steve Compton on 30th September in Peterborough.

My primary objective was to introduce the long-term potential of an airship manufacturing plant, with all the required support facilities, including research and development, being based in Peterborough. With the corresponding question regarding what on-going support could be expected from the Council, especially on planning permissions. Steve was most interested and assured me of the support of the Council. He also identified a number of potentially feasible sites for consideration.

I was further assured of a welcome in Peterborough when Yvonne and I were invited to the Council's annual gala dinner, where we had the pleasure of meeting Olympic rowing legend James Cracknell.

Subsequentially our cooperation with the Council progressed for many months across a number of different initiatives, especially due to the leadership shown by Marco Cereste, the dynamic Leader of the Council at the time. I also managed to raise a sponsorship from Opportunity Peterborough towards the ARH-50 technology demonstrator, support that Alan Handley almost managed to sabotage and directly led to us terminating our professional relationship with regards to the airship development, at the end of 2010. A bit more on that later.

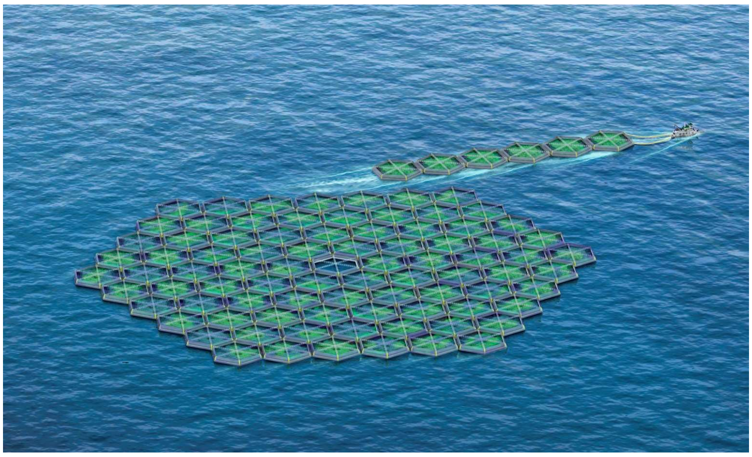
Attending the World Money Market Conference on 30th October led to meeting one of the speakers – Hugh Clark, a six foot ten gentle giant and one of the tallest people I have ever known. A very humble person with a Cambridge masters degree in mathematics and at the time a director of a hedge fund in London, Arbiter Fund Management. I made a detailed presentation to Hugh a few weeks later to enter into a discussion of how we could work together. I met with his partner, Jeremy Campbell-Lamerton, for another presentation a week later, taking place at *The Cavalry and Guards Club,* a London gentlemen's club, at 127 *Piccadilly*. Jeremy, a commissioned officer in the Guards, fought in the Falklands war and played three rugby internationals for Scotland. In fact Jeremey's father, Michael played in all four tests of the 1962 Lions tour in South Africa and later captained the Lions in New

Zealand in 1966. Both Hugh and Jeremy were hugely supportive of my endeavours promoting sustainability finance and for a considerable time allowed me the use of their office at Hanover Square for meetings in London. Unfortunately, the office arrangement came to an end when they had to move office as a result of the construction of a new Crossrail tube station across the street. They both provided very useful advice from time to time. I was very sad when their partnership dissolved a few years later but Hugh and I still speak regularly, especially when there is International Cricket in the UK, and especially when South Africa is playing England. In fact, Hugh's interest in the game goes to the extent that he has built a full cricket pitch for his sons on his property in the New Forest.

As the Maldives project was still in full swing, Hugh provided me with some valuable advice on a number of financial instruments to be considered in the course of setting up a robust investment structure. It was from him that I obtained the important principle – "*no two investors have the same set of objectives".*

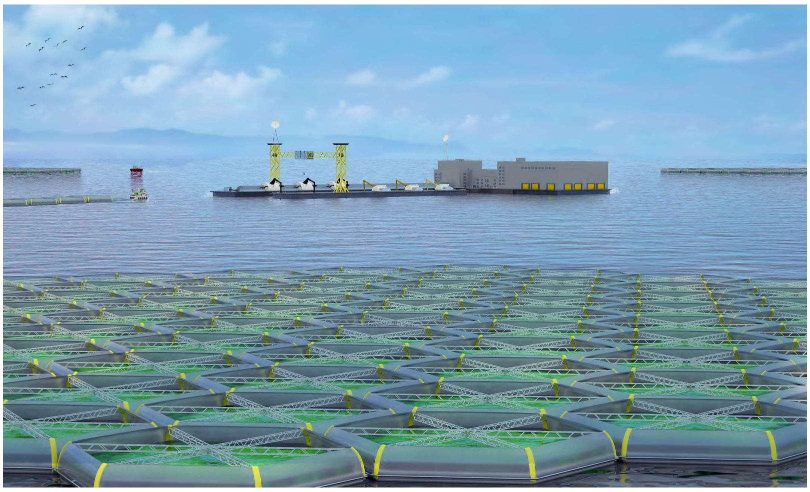
A new contact was Professor Minoo Patel, head of the Faculty of Engineering, at Cranfield University and one of the first guests I hosted at the Hanover Square offices. Minoo was born in Kenya, from where the family fled the Kenyatta government in the 1950's. Minoo remained enough of an African, visiting Tempe Airport, near Bloemfontein in South Africa every year for a week or two of gliding. January is normally the best time to avail oneself of the hot weather and finding the best thermals available. We normally enjoyed a good banter between us on the advantages of a throttle in the cockpit or no throttle and having to use a thermal to find your way. I have always greatly respected glider pilots.

The project being discussed was dubbed APEX – describing an algal bio-fuel production facility that uses both heterotrophic and photo-autotrophic growth processes for microalgae to produce bio-fuel, animal feed and value EicosaPentAenoic acid (EPA) in a free standing facility. For interested readers the heterotrophic growth of microalgae uses the very well established technology of the growth of organically fed micro-algae in closed vessels. "Very much like in a wine cellar" Minoo used to explain, thinking that my vintner background will enable me to understand the process better!



Sea Green project – pods being towed to algal bio-fuel refinery – Cranfield University

On the afternoon of 2nd December I travelled to Cranfield University for a discussion on the "Sea Green Project", an ocean based spin-off from the APEX algae to biofuel development. This project was of



Computer generated view of collection of pods with algal-biofuel

great potential interest for the Maldives project, given the crippling cost of fossil fuel imports every year. In this project, with the name changed later to “Oasis”, especially designed pods are grouped together in the ocean. A special algal is introduced, capable of converting sea water to bio-fuel. A section of pods are then towed regularly, every week or so, to a land based facility for refinery of the bio-fuel to commercial grade diesel. The one thing that the Maldives has aplenty is surrounding ocean.

On the 7th December we took off for South Africa to attend Leslie-Ann’s wedding to Dijon Lester in Franschhoek on the 12th. At a picturesque venue under the oak trees, as proud father of the bride, I walked her up the isle and later proposed a toast on the young and attractive couple.

However, with prior business on the menu, I managed a meeting with Gustav de Waal in the Stellenbosch office on the 9th where he presented the Bruboer model for consideration.

Prior to the big wedding day my diary was also occupied by a lunch on the 12th with old friends from the CSSA (Computer Society of South Africa) days, an organisation I had the honour of serving in a number of capacities, including as President (1978 to 1980) and as the South African representative in IFIP -International Federation of Information Processing. These lunches were organised by an old friend, Mike Graham, who always kindly checked my availability and whether I happened to be visiting South Africa, before finalising a luncheon date.

Another old friend, Andrew (Benno) Thompson, I met on 11th December at the DMP offices in Stellenbosch. Benno, a former director in the Anglo American Corporation, was an appreciated adviser on corporate finance with an increasing interest and the meeting had two objectives – to meet Dennis with an introduction to Bioregional Planning and having lunch at Boschendal. Benno, normally Johannesburg based, was on vacation in Hermanus and he could easily continue from Boschendal, via Franschhoek, over the picturesque Franschhoek mountain pass, back home. We in turn could remain on the estate and checked into the Rhodes Cottage, to be joined by Jacqui and her husband Andrew and Hein and his fiancé Michelle, all readying for the wedding the following day in nearby Franschhoek.

The wind can sometimes really blow strongly in the Dwars River Valley and that weekend it went out of it’s way to welcome us. At one stage I was a tad worried about the safety of the wedding guests but everyone had such a lovely time, and hardly noticed.

Back to the UK on the Sunday and visits to Peterborough and Cranfield in the following week before readying for Christmas.

Highlights for 2009

 # The potential overall contribution of VTOL (vertical take-off and landing) airship technology to all aspects of sustainability and climate neutrality globally, but with particular reference to sub-Sahara Africa;

 # The power of Bioregional Planning as a tool in regional development;

 # The serious plight of small island states vis-à-vis climate change;

 # The application of closed vessel technology in bio-fuel production as a component in 24/7 renewable energy systems

CHAPTER 7

2010 - PETERBOROUGH AND BEYOND

Summary

The two key objectives for the year were to follow up on documents submitted in late 2009 to the Maldives Government.

In addition, the launching of a promotion of airship capabilities in conjunction with Opportunity Peterborough.

Every once in a while, a new technology, an old problem, and big ideas turn into an innovation

Dean Kainan

The year commenced with a presentation on the 5th January to the National School of Government. The subject being "*sustainability finance in practice*" and the choice of content was very much left to me.

The Civil Service College was established at Sunningdale Park in June 1970, just round the corner from where we live in Ascot. It evolved into the National School of Government which also managed Sunningdale Institute – a virtual academy of leading thinkers on management, organisation and governance. According to Wikipedia, the National School of Government closed on 31 March 2012. Very few of its main functions have been taken on by the new body, Civil Service Learning, which is part of the Cabinet Office.

The extensive presentation provided a review of our work over the previous five years and I aimed at giving the future leaders of Government an insight on sustainability thinking in the "South". Question time was very disappointing and it was difficult to judge the exact response. I guess one cannot always have the response I once had, when a class of masters degree students at the University of Cape Town, attending a lecture on Management of Technology, gave me a standing ovation, following a lecture on Cost Benefit Analysis. Thanks to the communications power of Power Point, first launched on the Apple Mac in 1987. This particular presentation being in 1994, I have on occasion wondered whether the applause was for the relative novelty of using Power Point in a lecture or for the contents of the lecture?

Towards the end of the presentation to the National School of Government, I briefly touched in generic terms on the Maldives challenge, referring to it as a *Small Island Development State (SIDS)*, while proposing the formation of a Specialised Investment Bank, aimed at driving the delivery of a portfolio of selected beneficial sustainability projects.

At that point in early 2010, I still had high hopes that we would establish a "top management" relationship with the Maldives Government, led by President Nasheed.

My view was very simply, the need has been identified, and extensively promoted by the President, for urgent action against the potentially catastrophic results of climate change. At the same time, the tools were available to be applied following guidance from science and engineering. What was now required was political will and understanding and no more “underwater cabinet meetings”. The President did an excellent job in telling the world about the need in the Maldives, but was now required to provide leadership on sustainability and climate change. I fully recognised this constitutes a tough challenge for any politician, especially back in 2010.

It is relevant to pause a moment considering the importance of SIDS (Small Island Development States) in the overall context of climate change. To do that, the following is an extract from Wikipedia:

***Alliance of Small Island States** (**AOSIS**) is an intergovernmental organization of low-lying coastal and small island countries. Established in 1990, the main purpose of the alliance is to consolidate the voices of Small Island Developing States (SIDS) to address global warming. AOSIS has been very active from its inception, putting forward the first draft text in the Kyoto Protocol negotiations as early as 1994. At the 2013 Warsaw climate change conference, AOSIS also pushed for the establishment of an international mechanism on loss and damages stressed by the wreckage of Super typhoon Haiyan. As the existence of many AOSIS states are put at risk by climate change AOSIS has threatened lawsuits. The results of a recent review of the literature show that potential liability for climate change-related losses for the Alliance of Small Island States is over $570 trillion.*

Many of the member states were present at the December 2009 United Nations Climate Change Conference (COP15). Democracy Now! reported that members from the island state of Tuvalu interrupted a session of the 10 December 2009 meeting to demand that global temperature rise be limited to 1.5 °C instead of the proposed 2 °C.

AOSIS has a membership of 39 states from all around the world, of which 37 are members of the United Nations while 2 (Cook Islands and Niue) participate within the United Nations, and an additional five states are observers. The alliance represents 28% of the developing countries, and 20% of the UN's total membership.

Clearly SIDS, through the years, have made their presence known in the larger global audience.

On the 18th January I strategized with Minoo Patel on the practicalities to be considered in introducing the Sea Green (later called Oasis) solution as a sustainability project in the proposed Maldives investment structure. Despite additional development required in the project, one of the facts in favour of proceeding was the heavy dependence on imported fossil fuels. If the huge cost could be reduced through bio-fuel production, not only would it be making a major contribution to the treasury, but simultaneously to climate neutrality. The sort of solution we are constantly searching for in system engineering.

Two days later I had the opportunity of following up in Brussels on an earlier visit in 2009 to Boschendal by the EU Commissioner for Agriculture, Trade and Rural development Mariann Fischer Boel, a Danish politician, who served in that role from 2004 to 2009. I was hoping that, following the glowing views on potential EU support from Commissioner Boel, I will be able to muster support for the proposed SDI investment structure from her. Unfortunately, on the day she was suddenly occupied elsewhere and instead I met with Dr. Leonard Mizzi, who served as Head of Unit from 2007 to 2014, and a number of members of his unit. Over the years his areas of specialisation were governance, agriculture, food and nutrition security, for the Mediterranean area and Sub Saharan Africa.

Very interested in our model, he and the team questioned in-depth the pertaining risk factors and the extent of support available but I travelled to Luxembourg in the late afternoon empty handed.

In contrast to the EU Commission, the next day I presented the Boschendal SDI case study to a positive and constructive senior management team at the EIB – the European Investment Bank. I was impressed by their particular interest in biodiversity and one encouraging comment made was – “this is a visionary approach to solving this kind of (socio-economic) development problem” – a nice remark to feed back to Dennis and the team at DMP. The one problem tabled was that the EIB (at the time) did not invest in property development – which the SDI concept largely represented in order to provide the economic driver required by the Treasury Trust. I certainly made a note to further investigate some alternative approaches, some of which eventually transpired in the second semester of 2011.

All in all, a constructive visit and I was additionally loaded with a range of EIB documents for further evaluation. A fair number I completed on the train back to Brussels, before returning to London on the Eurostar later that evening.

I used the rest of the day in meetings with Claude and Francois respectively, reviewing the cost details for the required funding structure for delivering the Maldives project portfolio. Of particular focus was the risk certification in the proposed sub funds of the structure, in particular considering the accompanying regulatory considerations. I was again, not for the first time, very pleased with their presence and contribution and that of their organisations, to "Team Maldives".

Prior to boarding the Eurostar, browsing in the bookstore at Brussels Midi station (not that I already had enough reading to do), I came across the January-February 2010 edition of Harvard Business Review in which the PACE Bond was listed as one of ten breakthrough ideas for 2010. *PACE (Property Assessed Clean Energy) bonds,* were just being introduced in 15 states across the USA. PACE bonds are debt instruments issued by a municipality and backed by property-tax liens on buildings whose owners take PACE loans from the bond pool.

A visionary choice considering the contribution that PACE bonds would make in the years ahead and are still making at the time of writing.

On 26th January I met with Francois, the Arbiter team of Jeremy and Hugh and Minoo Patel, discussing an investment structure with the involvement of the proposed Specialised Investment Bank (SIB), in conjunction with the Bank of Maldives (to possibly be named SIB-M) and the accompanying issuing of a M-Bond, from where a sustainability portfolio will be delivered in the Maldives. The leading projects in the portfolio were project Sea Green, a zero carbon low cost housing project and a range of luxury villas with which to finance a SDI/Treasury Trust model. The SIB will be Luxembourg based and with a share swop with the Bank of Maldives, will create SIB-M to be operating in the Maldives. The design of the proposed structure was now completed but the Government of Maldives now had to be convinced.

At a meeting on the 3rd February, David Hardingham informed me that he will be visiting the Maldives from mid-March onwards as part of an extensive trip including France and China, and as a result will be away for a few months. It was important that we table a detailed document before his departure. One option to be considered in the Maldives was to arrange a personal appearance by our team, jointly leading a workshop with Government representatives.

I expressed my disappointment to David about the fact that we have not had any response, as yet, from the President, following our opening submissions tabled towards the end of 2009. The key question is whether a personal visit would produce the desired response?

I further explained to David that we would rather provide him with a briefing on what has been achieved with the design of the investment structure, than travel to the Maldives. Given the expected time to develop what had now become a fairly complicated structure, it was important to know that we have the full support of the Maldives Government in providing the required seed capital. I pointed out that to date they had the free commitment of a diverse team of talented people and credible institutions, jointly contributing to an innovative solution to be applied to a highly challenging problem and it was time to see some commitment from the President and his team.

David was very understanding and undertook to do his best to convey the overall message and find a way forward.

I used the opportunity to inform David that I intend travelling to Cape Town to attend the wedding of Hein and Michelle. While it will be a tight fit to conduct a workshop in the Maldives and travel to Cape Town, it could be done if a commitment is received timeously.

On the 10th February Hugh and I reviewed and confirmed in detail the requirements of a sovereign bond issuance, arriving at a budget of US$774 million and confirming the sentiments expressed to David a few days earlier.

Our discussions continued on the 8th March, with one important aspect of our discussion the handling of political risk, especially in the event of change of governments – my notes for that discussion stated optimistically "*a certain level of success is to be achieved within the next four years*". As it turned out President Nasheed "resigned" (according to the official announcement) two years later in 2012, with him claiming a "coup d'etat" against his elected government.

Following the meeting Hugh forwarded a memo, for David's benefit, listing the project's short term finance requirements, to be met in three stages i.e. $250,000 to initiate the project, followed by two further stages of $10million and $40 million to be externally financed.

After a review meeting with Claude in the morning of 11th March, I tabled an "*Implementation Strategy for Project – M" that afternoon*. As our sergeant-major in the Air Force Gymnasium used to shout "the ball is in your court now".

A few days later BILL DUNSTER and I travelled to London in order to introduce Bill, as a potential member of the Project-M team, to Jeremy at ARBITER. It was a fascinating meeting watching two strong minded individuals at work.

Meeting with Minoo Patel on the 16th at Cranfield and being introduced to the renewable energy group, enabled me to sign off on a further "component" of the Project-M team. I travelled from Cranfield that afternoon back to London, being proud of both the financial and technical capabilities the team assembled, and hoping that they will be given the opportunity to put meaning to the *3RC concept – remove, reduce and retain carbon* in the Maldives.

On the 23rd March Yvonne and I left for CAPE TOWN for a stay until 6th April during which time we were house sitting for Mike and Wendy in the beautiful Steenberg Golf Estate. This allowed time for a break in a very peaceful environment, in addition to me travelling to Stellenbosch for a number of update meetings with Dennis and the DMP group.

The highlight of the Cape Town visit was without doubt Hein and Michelle's wedding on the 27th that took place at the Clovelly Golf Club, near Fish Hoek in the southern Cape Peninsula. What Yvonne and I especially appreciated was the "re-union" the next day with the newly married couple and their closest friends. They hired a villa on a cliff edge, providing a spectacular view over False Bay across the Bay and Cape Point in the distance.

The meetings at DMP in Stellenbosch provided an opportunity to discuss the need and challenge of developing a CLIMATE NEUTRALITY Strategy for Boschendal, an assignment I accepted gladly, only to realise later the extent of the challenge posed by the assignment.

Another opportunity during my DMP visit was to be introduced to Rudolph Markgraaff, a young and budding property developer, who raised his initial funding from contacts in Hollywood. By now he had already presented his concept of a film studio on the edge of the Orange River and on the border between South Africa and Namibia. The studio will be focused on producing films with biblical themes and the surrounding desolate desert-like landscape certainly provided an appropriate ambiance. The project was appropriately dubbed "Desert Star" and at this meeting Dennis presented some of the initial concept drawings.

Yvonne and I with the happy couple

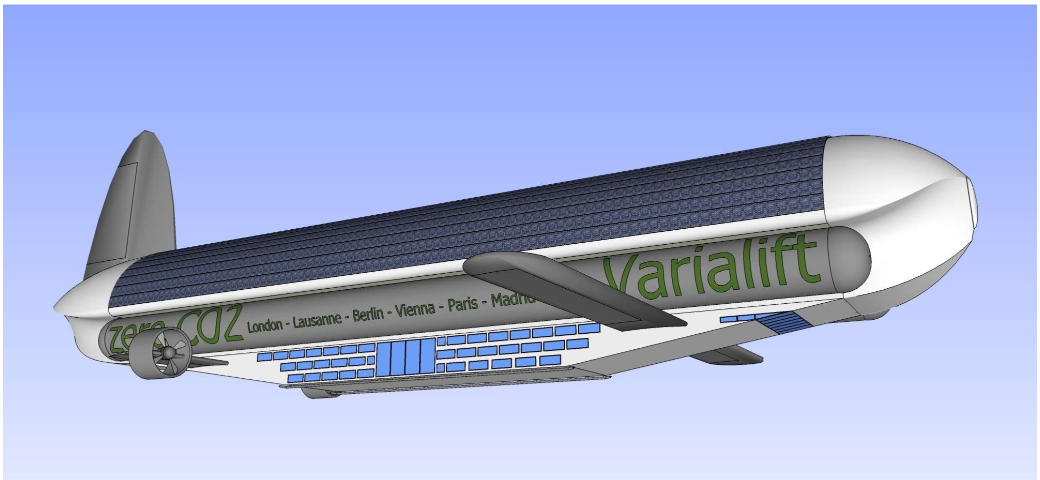
The development objective followed the SDI model, in that the sale of a range of upmarket villas will provide the funding for the required studios, a self-contained village and a golf course being designed by the famous South African golfer, Ernie Els.

Dennis had approached this project with his typical vigour, and already interpreted the brief into an impressive display of concept drawings.

Water, strangely enough presented no problem, while it was assumed that energy could be "tapped" from a 11,000 Volt line, providing a supply feed from South Africa into Namibia, virtually crossing the site. In my own discussions much later with ESCOM, the South African electricity utility, it transpired that the required solution would be more than just a "tap". In studying the drawings I noticed a considerable part of the site (approximately 10,000 ha) going unused and suggested at that early stage, that a PV solar farm be considered. It might be possible that a 24/7 electricity supply for the total site could be possible in conjunction with a selection of other renewable energy solutions, such as wind, bio-fuel and even possible fuel cells. In addition, it was clear that the development of a climate neutral strategy would be equally applicable at Desert Star.

At a subsequent meeting, having worked on it for a while, I suggested to Dennis the creation of a Stellenbosch based professional team, working with DMP on all aspects of electricity supply in the Desert Star project (in addition to all future SDI projects – at that time already five in the pipeline), and supported by a UK entity jointly owned by the Cranfield Renewable Energy Group, ZED factory and ISDC. The preliminary name for such an entity was Eco Electrical Mechanical (EME), with DMP taking a shareholding in the South African EME subsidiary. The transfer of technology from the UK would be considerable, enabling EME South Africa to provide general consulting services to projects outside DMP sourced projects. Dennis was intrigued by the proposal, and asked for time to think about it. I finally got a response from him in November during the Eco Innovation Forum (of which much more is to come).

Back in the UK, I met with a highly motivated Bill Dunster on the 8th April. The reason for Bill's excitement was the fact that he had received an invitation from the Swiss city of Lausanne to participate in a competition for the design of a zero-carbon eco city. To add to his motivation was his vision to incorporate a zero-carbon airship into the design. The concept being that the zero-carbon airship in time will provide a connection with similar cities across Europe and the UK – a concept named Inter Eco City. We discussed at the time how a Peterborough-Lausanne passenger link would totally by-pass London for passengers from the North of the UK. In our modest dreams and opinions a new airline "Inter Eco City" was born that afternoon.



An early VTOL rendition - ZEDFactory

I received an invite to the 2010 Rothschild Fund managers seminar, taking place on 27th and 28th May 2010 in LISBON.

The following is an extract from the seminar brochure:

"Banque Privee Edmond de Rothschild Europe is looking forward to welcoming you to our 12th Annual Institutional Seminar in Lisbon. This year's theme "Going Green." will illustrate and document the growing trend of sustainable development and its implications for the financial industry. We have been able to gather some of the industry's leading professionals who will share their views with us on this timely subject".

I for one, certainly welcomed this approach and travelled to Lisbon with great expectations. As normally the case, the seminar was of high quality and very well organised. However, considering myself knowledgeable on the subject, I wished I had the opportunity to design some of the content, as I felt an opportunity to move the sustainability finance theme forward, was left on the table.

Unknown to me at the time in Lisbon, I would be given a similar challenge shortly. I will come back to this point of our story later.

On the 6th May I received from the DMP office a document entitled – "*A proposal for preparation of a national MAB (Man and Biosphere) strategy for Ethiopia"* for which I prepared a Biosphere Investment Model. The assignment commenced some time later and was supposed to be continued into 2013, by which time I had parted ways with DMP.

On the 9th June I eventually met with David Hardingham, the first opportunity after David's extensive trip and to receive the feedback from the Maldives.

David presented a view from the Government of Maldives requesting more information before any chance of a Memorandum of Understanding and confirmation of seed capital investment could be agreed upon.

Additionally, it was suggested that the Project should proceed with a pilot project – totally undefined.

Learning from the previous Gabon experience it was clear that no seed capital related decision was going to be taken soon and that they were hoping that we will continue.

Additionally, David told me that the President had obtained the services of a Swedish academic, as an expert on climate change. Given the work already done by our team and the lack of any appreciation (like a thank you), this news left me totally underwhelmed.

Poor David had become the ham in the sandwich. My perception of him dealing on the one side with the somewhat insecure President and his internal political opponents in a highly conservative country in opposition to every constructive and positive move he made and on the other hand a team of professional consultants, unwilling to continue working for free.

I told a disappointed but not surprised David that the message was clear – Project M is going nowhere on the current premise and the team are not able to deviate from that position.

Following the meeting, it was my task to convey this disappointing position to the rest of the team.

My last detailed discussion with Hugh Clark took place, in mid-summer, when I travelled on 18th August to his home in the New Forest, one train stop past Southampton, for effectively a post-mortem on the Maldives. We recognised that the provision of affordable low-cost housing presented an universal challenge and spent time on exploring the availability of a "green mortgage" with the tools at our disposal. With him being a specialist in foreign currency trading, we considered amongst others a multi-currency mortgage and the corresponding potential increase in risk. Also considered was the possibility of an arbitrage opportunity in the feed-in-tariff. Unfortunately, we could not generate another sizeable project, such as the Maldives, to test these ideas. I pointed towards a potential in the Boschendal SDI, but that had to wait for another year before we come to that in the next chapter.

At that time Yvonne had already been with NSA for six years, since our arrival in the UK, commuting to London every day. Her particular speciality was raising sponsorships for conferences focused on Home Affairs, and working closely with the Government of the day on interpreting policy issues around this subject. She always had the desire to become involved in environmental issues.

That particular year the Environment Agency, a long-standing NSA client, announced that they will reduce the annual conference, normally held over two days, to one. This was largely due to the first budget cuts from the new Conservative coalition government.

However, the Environment Agency indicated to NSA that they will support the idea if a way could be found to somehow retain a two-day conference.

At the same time in early May, after our return from South Africa, Yvonne was confronted by an enormous increase in her sponsorship target, in her opinion totally out of line with her portfolio. Discussing a strategy with her, she returned to the office, accepting the challenge, on condition that she be given the Environment portfolio, especially the second day of the Environment Agency Conference.

The strategy of linking the environment, sustainability and finance was in our thinking for some time, but never with an opportunity of convincing NSA management of taking the step of a conference on the subject. Being keen to impress the Environment Agency, the NSA management accepted her offer of turning Day Two into a suitable conference.

The format for Day Two transpired into five parallel streams with five presentation sets covering the subject areas: Resource efficiency, Energy efficiency, Environmental efficiency, FTI (Finance, Technology and Innovation) and Sustainability in Practice. It involved twenty-six speakers and one panel of five members.

The conference theme became *Eco Innovation Forum – Towards green investment and a sustainable future.* We produced an initial two-page introductory flyer under the same title.

Although I could identify most of the required speakers from my own list of contacts, it was still a considerable task to confirm each and every speaker, a task that stretched over the next few months.

What was also challenging was the considerable sponsorship package to be achieved. By mid-July the target market of suitable and likely sponsors was identified. Simon Munns (a contact originally from the Rome fund management seminar) and I put our heads together and purchased the package in one go. That left Yvonne free of her commitment of achieving her target and gave us the freedom and opportunity to sell the package as twenty-seven individual sub-sets to the target market, in order to recover the initial investment. The twenty-seven individual sponsors resulted in a small but focused exhibition operating over two days in parallel with the Environment Agency Conference on Day One.

Two informative inputs stood out in the run up to the Conference, underlining the objectives of the EIF conference:

Firstly, is the visionary Danny Stevens quote, included at the head of our brochure: "*The delivery of carbon targets for 2020 and beyond and the tackling of the significant challenges of land remediation; water and resource efficiency; water pollution control; air quality etc presents a major financing challenge for the UK economy, the majority of which will need to be delivered by the private sector -- Danny Stevens, Policy Director of the Environmental Industries Commission (EIC)".*

Secondly – a Financial Times report dated 7th September 2010 – "London warned not to miss out on green finance boom".

The report quoted Greg Barker (energy and climate change minister until 2015 and now Baron Barker of Battle in the House of Lords) as saying "*London risks losing its pivotal position as a centre of green finance and missing out on a growing market worth billions of pounds a year. The vital role of capital markets in tackling climate change has been overlooked for far too long."*

Early in November, escaping some of the tension building up in finalising Conference details, Yvonne and I took off as guests of our neighbour Beverley Williams (with Welsh blood in his arteries) for a weekend in Mumbles, a seaside suburb in Wales. No surprise that the touring Springbok side was playing Wales at the Millenium Stadium on the Saturday afternoon. On the train to Cardiff, swamped by Wales supporters, all telling us that "today is the day for Wales", we were (proudly) standing out in our Springbok supporter's outfits. Pleased to report on a South African victory of 29-25 after a tremendous game of rugby. Fortunately our host still spoke to us afterwards.

Two Springbok supporters on their way to Cardiff

Back to Conference planning - Via Dennis we obtained Boschendal as a sponsor, allowing Dennis and his son Derek to travel to the UK for the event, with Dennis also being a speaker. The Boschendal sponsorship included wine so that we could arrange a wine reception at the close of Day Two.

Other than laying claim to being the "sustainability event" of the year, we also produced a televised record of all the presentations in conjunction with NSA subsidiary, Policy Review TV. We offered access to the TV record on our ISDC web site for a long time afterwards.

With Dennis visiting us in the UK, I planned a schedule of activities for that week, as follows:

Monday morning – Meeting our South African colleagues at Heathrow and travelling to Peterborough, with some site visits in the afternoon;

Tuesday - An "Inter Eco City" workshop in Peterborough in conjunction with Opportunity Peterborough – we will shortly come to this part of our story, specifically concerning the airship;

Returning to London in the evening;

Wednesday - Environment Agency Conference Day One;

Thursday – Eco Innovation Forum;

The five-stream program was opened with me doing a previously recorded TV interview with James Cameron. James was a co-founder in 2003 of Climate Change Capital**, a** private asset management and advisory group, and he was a member of the original legal team that drafted the Kyota Protocol.

Boschendal Wine reception for the EIF Conference;

Dinner with Simon Munns, Dennis, Derek, Yvonne and me;

Friday – meeting with Bill Dunster on future co-operation with specific reference to Boschendal;

Saturday – Post-mortem and rugby at Twickenham (England 11 vs South Africa 21).

Three specific events during that week stand out in my mind:

Firstly, the conference coincided with the funeral of our dear friend and neighbour, Ron Wyatt. Realising the clash in dates with his funeral and the EIF Conference, Yvonne and I then had the painful task to explain to his widow, Josephine, our unfortunate absence. Why is life sometimes so difficult and awkward? Josephine fully understood and we remain really close friends.

Please allow me a quick anecdote about Ron. He was a London cockney, a self-made millionaire and one of the most artistic people I ever had the pleasure of meeting. He started his career at fourteen as a messenger boy in an advertising agency. He eventually built a highly successful agency, specialising in animation advertising.

Ron was a keen golfer and became Club Captain at Wentworth Golf Club in 1996, where he left behind a series of sketches of all the captains over the years, with each depicting the USP of each individual. Priceless!

Ron suffering from lung cancer, had a long suffering. Visiting him close to the end, in a haze of painkillers he whispered to me “Storm do you think they play golf in heaven?” “For sure Ron, and they will make you Club Captain as soon as you get there” was my (hopefully) convincing response. Who knows?

Secondly, to my surprise Alan Handley attended the EIF conference. My relationship with Alan, my efforts on the promotion of VTOL technology, and the break with Alan shortly before the conference, need to be highlighted first, in order to fully explain.

I stated at the beginning of the chapter that apart from the Maldives, focus on the potential of the ARH-50 (airship) was the other major objective for 2010. I also mentioned elsewhere that I could write another book on this subject alone. The good news is that I am not planning to write that book now.

The reader will notice a number of gaps in the dates for this year. You can safely assume that most of those gaps were filled by airship related activities, including numerous meetings with Alan Handley, in a variety of venues.

These include visits to Stourbridge outside Birmingham where Alan was in the process of building his technology demonstrator;

Meetings in London including attending a meeting of the airship association, as a guest, where it became clear that he faced an uphill battle to convince some members on the validity of his theory of obtaining lift through the compression of helium;

We had several meetings in Cranfield where I introduced him to Minoo Patel and the aerospace group within the faculty of engineering. Unfortunately, following the introductory meeting, Alan

incorporated Cranfield University in his Varialift presentation material, without clearance or permission from the University;

I arranged an introduction to Neil Darwin, the new CEO of Opportunity Peterborough, followed by a ARH-50 presentation in Peterborough to a large invited group on the 14th June;

A visit to Farnborough International Air (FIA) Show on 21st July where I arranged a number of visits with companies potentially related to ARH-50 development.

Subsequent to the 2008 Farnborough International Airshow, I have developed a good relationship with Autodesk, a highly respected American multinational software corporation that develops software products and services for the architecture, engineering, construction, manufacturing, media, education, and entertainment industries. The global CEO had a strong orientation towards sustainability issues, and I made a number of presentations to Mike Lucas, Product manager for mechanical engineering, at the local UK headquarters, located not far from Farnborough airport. Incidentally, DMP has also hugely invested in Autodesk software.

Mike, who later participated in the IEC (inter eco city) initiative, facilitated a visit on the 6th October to the advanced engineering design group at the University of Warwick. This group offered very advanced 3-D modelling using the Autodesk platform and my proposal was that a subcontract with this group would alleviate employing highly skilled individuals at great expense.

The point I am making is that arranging these meetings don't just happen out of thin air but sometimes take connections developed over long periods of time.

My initial departure point was that I wanted to present a solution contributing towards the preservation of the Gabon rainforest. As we moved forward, I very quickly realised the wide ranging opportunities offered by VTOL (vertical take-off and landing) technology.

I spent many hours with Alan discussing a variety of business models and my objective of obtaining a small participation in lieu of my time, disbursements incurred and fund raising – once proof of technology was achieved. He agreed at every step but avoided an agreement of any kind.

In the mean time Bill invested a considerable amount of time on an IEC airship design, incorporating a solar PV "skin" – while I cautioned him that the design had to be kept generic, as we had no rights linking it in any way to the ARH-50 concept, of which the intellectual property resided in three separate patents, held by Alan. Incidentally, this fact was always mentioned upfront by Alan in any meeting we entered.

Bill's work resulted in the design of IEC posters for display during the European Future Energy Forum, held at Excel from 19th to 21st October. We received no contacts resulting from the poster display, but it gave me immense pleasure to watch people stopping and displaying a studious interest.

Partly driven by my frustration at the non-recognition received from Alan, I commenced a new search for possible VTOL technology capability that I could have missed the first time around.

To my surprise I discovered a company on the West Coast of the USA, well passed proof of technology, well advanced in production and claiming that they were approaching a launch of an airship with a fifty-ton lifting capability within weeks. It was too early to commence an approach as felt strangely loyal to Alan.

Following the ARH-50 presentation in June, discussions with Opportunity Peterborough continued on a range of subjects, one important aspect was their participation in the Eco Innovation Forum, as exhibitors, sponsors and speakers. We agreed on a panel discussion, to be chaired by Neil Darwin, Opportunity Peterborough CEO, and focused on Transport Sustainability, the format effectively introducing VTOL technology and future inter (eco) city travel. The original intention was to use the ARH-50 technology as a point of reference, but we were forced to deviate from this later, as will be explained.

Included in this sponsorship package was a direct sponsorship to Varialift, connected to the proof of a technology demonstrator, with a condition that it will be payable on successful proof achieved. This important condition was either not understood by Alan or alternatively considered as unnecessary when he sent a scathing letter of demand to Opportunity Peterborough shortly before the Eco Innovation Forum (EIF) Conference. This selfish action by Alan, before discussing it with me, placed Opportunity Peterborough in a precarious position, as they could legally not meet his demand.

I advised Neil Darwin on a carefully drafted letter he was forced to forward to Alan, in order to protect Opportunity Peterborough's legal position.

No need to explain that the letter caused a riot In Stourbridge and the carefully cultivated relationship with Alan terminated in a one-sided shouting match, with him slamming the phone down.

I was now forced to play my back-up card. I firstly contacted the Americans again and requested their agreement to introduce their VTOL solution, without going into any detail, in the panel discussion at the EIF Conference. All the work previously done, enabled me to provide the Americans with a comprehensive proposal. They were understandably circumspect, however the Vice President agreed. I could now explain to Neil that the situation was legally safe, and that they could continue with their EIF involvement, including sponsorship, exhibition and importantly, participation in the panel discussion.

Our VTOL "back-up card" in early construction

During my presentation in the panel discussion on Sustainability Transport, we carefully remained generic and no product technology was mentioned. However, to Alan sitting right in front of me in the audience, it must have been clear that we were not talking about an ARH-50. Following the close of conference, he arrived at the reception, initiated an argument in front of all our guests and stormed out. Not everyday that a glass of Boschendal's finest is left on a table (fortunately not on the floor).

Thirdly, in the Friday meeting with Dennis Moss and Bill Dunster, we once again reviewed the renewable energy challenges at Boschendal. I much appreciated Bill travelling to London on that Friday morning, following his contribution to the development of the IEC concept, and also delivering two papers at the conference. What I did not appreciate was Dennis's subtle dislike of Bill. By then I had developed a strong relationship with him and ZEDfactory, he was very supportive of the challenging issues of sub Sahara Africa and I believed he could make a positive contribution towards a sustainable delivery of the Boschendal SDI. Clearly, Dennis felt differently, and when I questioned him on the proposed Eco Electrical Mechanical (EME) initiative, he replied "I am not interested Storm. Why should we be paying for imported knowledge when we can develop it ourselves"? To which the answer is simple – "we don't have it and in a proposed joint venture we could effectively obtain it for free".

My immediate post Conference objective was to get EIF behind us and to concentrate on VTOL airships in the new year.

The final important event in the diary was to reply to an invite from David Hardingham and to attend a reception for President Nasheed in Salisbury. He showed far more interest in talking to Yvonne, but when I finally had a chance to introduce myself and our group, he remarked to his aide – "*we must listen to this gentleman some time*". Clearly he did not receive the message.

A somewhat ironic conclusion to a most challenging year.

Highlights for 2010

 # Do not give up on the long- term potential of VTOL airships;

 # Disassemble the Maldives model into it's components and continue the development of each component specifically with regards to developing countries;

 # Give the SIDS model the attention it deserves;

 # Continue promoting the introduction of renewable energy into the Boschendal SDI.

CHAPTER 8

2011 – THE SOCIO-ECONOMIC POWER OF SOLAR PV

Summary

The new year started briskly, mostly with reference to events during 2010 and in particular to the final stages of that year.

The year presented not a significant event such as Gabon, the Maldives or the airship, in previous years, but rather a number of interesting assignments.

We did not inherit this world from our parents …

We are borrowing it from our children

Author unknown

Firstly, the 5th January saw the completion of the final draft of the BSDI CNS (Boschendal Sustainable Development Initiative Climate Neutral Strategy), and it truly felt like reaching a milestone, which it turned out to be over time. In retrospect, with the availability of the UN SDGs at the time, some additional value could have been added. However, the reference framework developed have been applied in numerous consulting assignments.

Secondly, Marco Cereste made contact and invited me to PETERBOROUGH on the 13th. The airship had indeed become the common area of interest on which we developed an excellent working relationship. One of which was the Inter Eco City (IEC) concept – the workshop held in Peterborough in the early part of the EIF week the previous November, attended by Marco. Considering he was a busy leader of the Council apart from being a successful businessman, I really appreciated his attendance.

The magnificent Peterborough Cathedral

Travelling to Peterborough I was obviously expecting to talk "airship" and it was consequently a surprise when he addressed an issue around one of the underprivileged precincts of the City. He told me that he was most impressed when he listened to Dennis at the EIF and our general approach to sustainability and wondered whether something similar could be done locally. He then handed me a report titled *Gladstone NIP – Neighbourhood Investment Plan* and said that he would set up a meeting with the planning department. He was hoping I might have some suggestions on how this regeneration project could be moved forward.

Thirdly, returning to London that afternoon I met with Andrew Oakes at St Pancras station. I met Andrew at a hotel outside Peterborough on the afternoon before our IEC seminar the previous November, while I left Dennis and Derek on their own to explore Peterborough. Our meeting was a result of his attendance at the Varialift airship presentation in Peterborough the previous June. He is a farmer and a landowner, very occupied with a planning application for a large housing development called Great Haddon. His primary interest was in raising funds for the development and he expressed an interest in some of the funding structures I previously introduced – a long way from airships.

At the St. Pancras meeting I strongly suggested the Luxembourg Ucits route and suggested to Andrew that I will arrange meetings with Francois and Claude on their next visit in London.

In follow up to the meeting with Marco, I met with Adrian Chapman on the 26th January with an initial presentation after having read the Gladstone NIP report. The challenge was the typical one in inner cities: i.e. low income households, scarcity of jobs and a high crime rate, along with a shortage of funds in the Council budget.

My final proposal to Marco was to consider a Social Impact Bond, which would potentially cover a number of precincts. An alternative would be a form of Social Impact Investing, applying philanthro-capitalism as the investment instrument, providing initial seed capital to kickstart a project. The P-Bond previously developed with Anders Sjostedt was the inspiration, although interest rates were unattractive in the post 2008 financial crisis era. In an earlier chapter I referred to Sir Ronald Cohen's book "Impact". In this book he describes the origin of the first Social Impact Bond in the UK, in fact being delivered in Peterborough in 2009, with a focus on the reduction in the reoffending rate of prisoners.

Reporting to Marco on the 28th January, and given his previous reference to the Boschendal SDI, I suggested that a form of "tax" on real estate development might be sufficient to establish a precinct beneficiary trust. With regard to real estate development in the precinct vicinity I presented two thoughts, i.e. firstly as an off-set, meeting 106 requirements on Andrew Oakes's Great Haddon project or secondly as a rooftop development at Peterborough station (a potential landing area for a VTOL airship and part of the IEC initiative). The problem was obviously that IEC planning was essentially long term, given the problematic short term availability of a VTOL solution.

Planning obligations, also known as Section 106 agreements (based on that section of the 1990 Town & Country Planning Act) are private agreements made between local authorities and developers and can be attached to a planning permission to make a proposed development acceptable which would otherwise be unacceptable in planning. I felt it will be justified in this case, given a strong socio-economic connection.

At an early stage of the first quarter, Yvonne sat me down to discuss her increasing desire to retire, not only from the demand of commuting every day, but also from the daily frustration that became part of her daily task at NSA. By now, her earlier colleagues whom together reached the status of the "Golden Team", had left the company and she felt increasingly isolated. In addition, she had to deal with a daily demand of a young and inexperienced team leader, setting out difficult demands. The unrealistic target, that directly led to the EIF Conference, described in the previous chapter, was a case in point.

Knowing full well that my wife was not a quitter, I immediately supported her and she submitted her notice to resign. This step provided the advantage that we could travel to South Africa, planned for early April, but this time staying for an extended period. The requirement for an extended period was somewhat necessitated by the increasing workload, related to both Boschendal and Desert Star projects, and in particular the delivery of the Climate Neutral Strategies. The extended stay was however facilitated by an invitation from Mike and Wendy Thompson to again housesit at Steenberg Golf Estate.

Her resignation brought the end of an era, during which she delivered an outstanding service on all the projects she was involved in. No wonder that on the day of her saying her final goodbye to Neil Stewart, he said to her "Are you sure there is nothing I can do to change your mind?"

On the 17th February I arranged a meeting between Andrew Oakes and Francois Pfister, exploring in detail a Ucits approach regarding raising development finance on the Great Haddon project. Andrew and I had two potential venues for all our meetings in London, either at the Carlucci's Restaurant at St Pancras station or at the Oxford Cambridge Club in Pall Mall, close to St James's Palace where we had the rainforest meetings, previously described.

Oxford Cambridge Club in Pall Mall, London

A few days later I introduced Andrew during an excellent lunch at the Club to Claude Pech, to further confirm the credibility of my recommended (Ucits) approach.

A further meeting followed with Francois, during which he managed to resolve the outstanding questions in Andrew's mind. Andrew was a graduate of the well-respected real estate masters program at Cambridge University and it was useful to have a client with the necessary background. It was now left to him to face the Peterborough planners, specifically resolving the Section 106 challenge. I strongly recommended developing a connection with the socio-economic challenges presented by the Gladstone precinct.

On a number of subsequent meetings we continued discussing this important issue.

The Peterborough Telegraph reported on 8th August 2018 – "*More than 5,000 new homes at the Great Haddon development have finally been given planning permission after years of delays. The two largest developers on the site close to the A1M and A15 have finally signed their Section 106 agreements with Peterborough City Council which require them to deliver specific community and highways infrastructure at set times throughout the development programme*."

https://www.peterboroughtoday.co.uk/news/politics/more-5000-new-homes-peterboroughs-great-haddon-development-finally-get-green-light-1008011

The economic delay in obtaining a final decision is substantial and to me underlines the need for an effective mechanism to accelerate Section 106 decisions, for the mutual benefit of everyone concerned.

Early March I met with Peter Flint, at the time Global Sports Sector Leader at AECOM, considering a project initially dubbed "eco air Brazil" in order to address the upcoming FIFA world cup 2014 and subsequent Rio Olympic Games to be held in 2016. AECOM was heavily committed to finding suitable ways to accelerate decision-making and our immediate goal was to determine, what difference the availability of a VTOL airship could make with specific reference to the, now seriously delayed, construction program.

The most used stadiums were the Maracana-stadium in Rio and Estadio Nacional in Brasilia, which hosted seven matches each. The least-used **venues** were in Cuiabá, Manaus, Natal, and Curitiba, which hosted four matches each; as the four smallest stadiums in use at the tournament, they did not host any knockout round matches.

https://www.dailymail.co.uk/sport/worldcup2014/article-2518090/World-Cup-2014-venues--Brazil-Stadium-Guide.html

It was the second time that Brazil staged the competition, the first being in 1950, and the fifth time that it was held in South America. Fans and pundits alike consider this edition of the World Cup to be one of the greatest ever held.

The absence of a confirmation on an availability date of the American VTOL version, was however starting to affect decision-making on a number of projects. Obtaining a confirmation date quickly, was always going to be a bit of a gamble, but being a glass half-full person I tended to be optimistic.

Other than an "eco-air Brazil" strategy, the Inter Eco -City strategy in conjunction with Peterborough continued with a meeting on the 8th APRIL with the team in Peterborough.

On the 10th March I attended the Mexico Air Space Conference near Heathrow, introducing amongst others, the extensive support facilities available for aerospace manufacturing, providing us with an interesting wish list to convey to our friends in Peterborough in order to be internationally competitive in future.

By early April my American contacts disclosed that they obtained most of their development finance from DARPA – a fact previously unknown to us. (The **Defense Advanced Research Projects Agency** is a research and development agency of the United States Department of Defence responsible for the development of emerging technologies for use by the military). Given the strategic value of VTOL technology, it followed understandably that a tight control over the application of their technology will be carefully sanctioned. This meant that manufacturing licensing, at least in the short term, would be difficult if not impossible. It also meant that the company will only be able to provide a facility management service to a client at a fee. This did not necessarily spell the end of the road in dealing with this specific VTOL product. However, having dealt with US companies before in similar circumstances, I knew it was going to be a long process to obtain all the necessary approvals.

I had this experience at Southern Life/Ambit with the introduction of a high-speed mini-computer system assisting the trading desk. The sales to South African companies of the selected machine (being a VAX from Digital Equipment Corporation – hopefully meaning something to some readers) was at the time closely monitored by the US State Department. As a result of our importation application I had many visits from the Commercial Attache in the Cape Town Consulate. I even had to show him the exact spot where the system will be installed. Perhaps the fact that he was a former officer in the US Air Force helped as we ended enjoying some barbeques after approval of the import license.

At the time our only other option was Varialift, still a considerable time away from delivery (later transpired to be more than ten years), if we could come to any form of agreement.

I therefore had to reluctantly archive, for the longer term, the use of VTOL technology in delivering sustainability solutions.

I had, however, an opportunity a few years later, during a World Bank course on development finance, to present an essay on the VTOL subject, with special reference to the delivery of health solutions in developing countries from which I obtained definite interest. The idea is good and is supported but the delivery model unfortunately falls short to this day.

As will be described in later chapters, we investigated the use of remote-controlled airborne vehicles, albeit it with a limited payload.

We now see the use of drones being used to deliver medical supplies, using relatively small parcels, in remote regions of Africa. Albeit a compromise on the payload/application ratio, it is certainly a positive step forward.

Ecobuild, normally taking place in early March, provided an interesting seminar on Biophilic design, something we have never heard of previously. I proudly supplied a book on the subject to my colleagues in Stellenbosch.

Yvonne (now fully retired) and I left for South Africa on 12th April with a return date to the UK set for May 15th – being more like swallows this time.

My first BSDI CNS (Boschendal Sustainable Development Initiative Climate Neutral Strategy) presentation took place on 18th April, serving more as a discussion forum than a formal presentation.

In a Desert Star meeting the next day, an interesting airship application “popped up” as a convenient transport platform for film crews, travelling to and from this remote site.

In a further Desert Star meeting, ten days later, the concept was tabled to consider each of ten proposed SDIs across Namibia as an eco-city with the potential for the airship to provide an inter eco city service.

A fair portion of my time during this specific South African visit was dedicated to the financing aspects, resulting from the Climate Neutral Strategy study.

In a presentation on the 3rd May I made the following points:

- An accredited reference framework is a prerequisite for sustainable development;
- Sustainable development must be delivered and in order to be delivered it has to be financed, including extensive consideration of the following five forms of capital – *Monetary, Environmental, Infrastructure, Intellectual and Social*.

I suggested that a mechanism is required to lock the five forms of capital into a single "currency" in order to finance sustainable development.

To be honest, at that time, I had no clear strategy how we could deliver on this latter statement – except for a reference to the existing Sustainability Investment Platform (SIP).

With the development in digital finance subsequently, I see the availability of blockchain technology providing substance to the concept for which the proposed term is now ***"Integrated Digital Sustainability Finance***" a subject to be separately progressed within the SCNiiC operation .

In a meeting with Derek Moss on the 5th May was the first mention of the South African based Louis Group as the owners of the Desert Star site – a significant fact that will be explained further.

I made my BDAL Climate Neutral Strategy presentation on the estate on the 10th May, with the CEO of the mining company, Peter Gray, present. The estate has had a change of ownership since my last visit in 2010 and it was my first meeting with him. Other than formally tabling the CNS, my presentation concentrated on the financing aspects of delivering the strategy. At the core of my recommendations was a proposal to establish a Ucits like structure, a recommendation not being made for the first time. To my delight, Peter questioned me extensively on costs, and process and it was a pleasure fielding his questions.

On Friday 13th I was flown to Windhoek as a guest of DESERT STAR and the developer, Rudolph Markgraaff. The purpose of the visit was to table and present the Desert Star CNS and big was my surprise when there was no sight of Rudolph for several hours. The time was (fortunately) kindly taken by one of the US partners, who had no idea who I was (not important) and why I was visiting. What surprised me however was the extensive DMP produced presentation material all around the office with my new host telling me things already familiar to me. My thanks to him for his time and taking care of me until Rudolph eventually arrived looking totally dishevelled. Giving him the presentation that he was paying for, I got the distinct impression of "no interest".

Let's face it, as professional consultants, we sometimes have to take a lot of nonsense from developers, but I guess, the client is always right!

He then "passed me on" to Dirk Hattingh, the project manager, asking him to take me to lunch with the company auditor, with a promise to join us later. Rudolph did eventually arrive at the restaurant as I was leaving to catch my flight back to Cape Town. The lunch however was very informative, especially as Dirk and the auditor, both of whom I had never met before, discovered that we were contemporaries at Stellenbosch University, a good forty three years ago.

My reasons for this extensive discussion of the Windhoek visit will transpire a bit later.

The next day, I held a Desert Star "wrap up" meeting with Dennis and Dirk (who flew down that morning) at Dennis's home in Stellenbsoch.

I made an unsubstantiated statement that day, saying to Dennis and Dirk, “I can’t put my finger on it, but there is something that worries me about this project”. That “something” transpired later.

Yvonne and I returned to the UK the next day.

The rest of 2011 was very much dedicated to renewable energy issues, in and around both Boschendal and Desert Star.

One of my first objectives after our return was to define the components of a Desert Star SESCO – sustainable energy service company. Despite the main site being in a very high solar irradiation belt, the sun still does not shine 24 hours per day, with the necessity to introduce further renewable energy elements in order to achieve a 24/7 balance for the total development. The proposed additional components were wind and algal bio-fuel (instead of regular diesel).

As a result I met with Minoo Patel on 23rd May. On the agenda was NOVA (Novel off-shore vertical axis), a new vertical axis wind turbine (VAWT) development at Cranfield. I am not a fan of horizontal axis wind turbines, as they generally generate a scar on the countryside, whereas VAWTs could be “condensed” in their appearance, allowing them to be incorporated into a project.

Cranfield University aerial view

The discussion – any reason why an off-shore VAWT could not work on-shore – as will be required in Desert Star.

In addition, to finding a VAWT solution, I was keen to obtain a cost proposal for an algal bio-fuel solution, both solutions to be applied at Desert Star.

From the recent Desert Star meeting in Windhoek, and specifically meeting with the company auditor, I felt I could assure Minoo that the required seed finance will be made available from the development company.

From the input gained over the past few weeks, I could postulate a Desert Star Energy Masterplan by month's end.

The identified income sources were identified as:

A long term power purchase agreement (PPA) signed with Nampower (Namibian Power Utility), with the Desert Star solar farm and the proposed ten Desert Star SDIs mini-grids as the energy source;

Carbon credits calculated on the overall package, including net zero housing at Desert Star; and

Development finance based on a Public Private Policy and the Climate Neutral Strategy in conjunction with the Namibian Government.

In London on 7th June, I again met with Peter Gray, CEO of the Boschendal Holding company. This time, he was distinctly cooler about an Ucits style investment structure for the Boschendal SDI, than during our discussion on the estate in May. It transpired later, that they were in fact in the process of finding another owner for the estate!

On the 9th and 10th June, we again had the pleasure and privilege to attend a ROTHSCHILD Fund Manager Conference. This time Brussels being the venue, with "GOING FOR GROWTH" as the theme.

Other than meeting so many familiar faces, including old stalwarts such as Claude, Francois and Luigi Minella, some of the memorable highlights were;

A presentation by the owner of Lotus, one of F1 cars on the circuit, with the story of how he had been summoned by President Vladimir Putin to bring a F1 car to Moscow, for the President to drive. Although he mentioned it, he was not forthcoming about the business forthcoming from that act of goodwill. Apparently he was locked in a business meeting with the President for two days.

I made a note about the feasibility of bio-fuel in Formula One? Also, the future potential of Eco Air in shifting all the equipment from track to track?

Another fascinating presentation was about a Bordeaux Red Wine storage facility that has been set up exclusively for Chinese buyers.

David Murrin author of "Breaking the code of history" presented a thought-provoking scenario, with a statement "we are facing the biggest geo-political shift in 500 years". From my notes at the time – "*It appears to be a logical conclusion that Africa will end up in an "Alliance" with China. If so, it will be because of China's huge interest in Africa's resources. But at what price? Is there a way that an intermediary could be introduced where the function would be to intercede, using a fair business/financial model and where a specific country is legally/financially/contractually represented by this entity.*

What should this entity look like? Is the AfDB (African Development Bank) such an entity?"

I had an opportunity to discuss this thought with Luigi Minella during the conference and he agreed to give it some thought.

As was the case at previous conferences, my special contact was Tobias Reichmuth, a Swiss National, the founder and CEO of SUSI partners, and an expert on renewable energies and the financing of the energy transition. After graduating with an MBA from the University of St. Gallen and gaining a Ph.D from the European Business School in Oestrich-Winkel, he had several years of experience as a Strategy Consultant with The Boston Consulting Group in Zurich, before founding SUSI partners in 2008.

He showed interest when I told him that I will shortly be travelling to Johannesburg in order to deliver a paper titled – "*The key role of private equity in rolling out solar projects*" - at the SOLAR South Africa Conference. Resulting from the gala dinner, we met again in London on the 17th and at the time he supplied me with eight pictures depicting some of SUSI's successful solar PV installations in Europe. This gesture was much appreciated as it enabled me to bring the real world into my paper.

Two of the SUSI solar PV sites presented in the paper at Solar SA - *The key role of private equity in rolling out solar projects*

I met again on the 14th June with Andrew Oakes, providing him with a short presentation on a possible Section 106 related structure with Peterborough Council.

On the 15th June, I was back at Cranfield for a full day workshop on algal bio-fuel, "absorbing" further information/understanding towards the implementation of the Desert Star Energy Masterplan.

I have always been an admirer of the excellent research and development done at Cranfield in the algal bio-fuel space.

I am enclosing two press clippings, one dated September 2010 and the other May 2020, indicating the relative slow pace of development in this technology area.

The question today is whether the green hydrogen economy has arrived as a viable alternative?

https://www.greenaironline.com/news.php?viewStory=922

Tue 21 Sept 2010 – Airbus and British Airways are to take part in a project set up by the UK's Cranfield University to explore how algae can be harvested in ocean-based facilities to produce jet fuel in commercial quantities. A consortium called the Sustainable Use of Renewable Fuels (SURF) has been set by the three parties, along with Rolls-Royce, Finnair, London Gatwick Airport and IATA, to serve as an advisory and steering group to Cranfield's Sea Green project. The university already has a pilot facility on campus that is growing and processing algae for biofuels but the eventual aim is for Sea

Green to set up sustainable salt-water facilities, producing the first commercial quantities of biomass for biofuels within three years.

https://www.euractiv.com/section/energy/news/danish-groups-team-up-to-deliver-green-hydrogen-for-transport-fuel/

A report dated 27 May 2020

Renewable energy company Ørsted and Copenhagen Airport are amongst the consortium of businesses aiming to develop a hydrogen and sustainable transport fuel facility in the heart of the Danish capital.

Ørsted and Copenhagen Airports are working with shipping giant Maersk, Danish logistics firm DSV Panalpina, ferry firm DFDS and airline SAS on a new sustainable fuels facility which could become operational by 2023.

The project, which is still subject to application and funding, would be rolled out in three phases. The first phase, targeted for 2023, would see a 10MW electrolyser constructed that would produce renewable hydrogen that would be used as fuel for buses and trucks.

By 2027, a 250MW electrolyser facility would be installed and powered by renewable electricity sourced from the nearby Bornholm offshore windfarm. Renewable hydrogen would be produced, while carbon capture operating in the city of Copenhagen would be used to assist the creation of renewable methanol for maritime and aviation fuel.

The finale stage, which could be fully operational by 2030 would see the capacity reach 1.3GW, enough to supply the creation of more than 250,000 tonnes of sustainable fuel to be used across all transport types in the city. The partners hope the project can be replicated internationally.

The project has the potential to displace 5% of fossil fuels at Copenhagen Airport by 2027 and 30% by 2030.

Copenhagen Airport's chief executive Thomas Woldbye said: "Whether we operate in road transport, shipping or aviation, we all have a major task to contribute to the sustainable transition in Denmark. The challenge of creating a future-proof and sustainable fuel is common to everyone in the transport sector, and the fact that we are now working together in a partnership is crucial for us to be able to produce sustainable fuel in the necessary quantities.

"It also supports the ambition to transition Danish aviation to become completely free of carbon emissions in 2050 and make Denmark a pioneer in the development of future climate-friendly fuels."

The project, which is supported by the Municipality of Copenhagen, could reduce annual carbon emissions by 850,000 tonnes. It would assist with the nation's goals of reducing carbon emissions by 70% by 2030.

On 19th June I travelled to Johannesburg for the Solar South Africa Conference, taking place the following Tuesday to Thursday, in Sandton, a city North of Johannesburg. By previous arrangement I was staying with Benno Thompson, whom I have previously mentioned when we last met In Stellenbosch. A civil engineer and MBA graduate from Wharton School of Finance at the University of Pennsylvania, he served with distinction in Anglo American Corporation as the CEO of paper manufacturer Mondi, before taking early retirement. He kindly offered his skills in corporate finance in an advisory role whenever asked for it. Despite the fact that the Thompson's (Benno and Julia) home is relatively close to the Sandton Sun Hotel, venue for the Conference, Benno made a car available for the week, making transportation easy. My sincere appreciation to Benno and Julia again after all these years – that week in Sandton was certainly a 2011 highlight, being a very informative conference, allowing me to make some excellent contacts while providing an opportunity to meet with Escom management on some Desert Star related problems.

Gautrain – The South African bullet train – at Johannesburg Airport

Gautrain Station in Sandton (above) and below an aerial view of Sandton, South Africa

I met two speakers, Barry Maccoll and Roland Marais, both Escom senior management, during the conference. I managed preliminary appointments immediately after their respective presentations, following up with detailed e-mails on a meeting agenda. I managed to meet with Roland and relevant colleagues at Escom on the Friday and with Barry at Sandton City (at the time the biggest shopping centre in the Southern Hemisphere) on the Saturday.

(ESCOM – Electricity Supply Commission, is a parastatal, operating as the exclusive electricity supply utility across South Africa, with local municipalities as their local distributors).

Other interesting contacts at the conference were Trevor de Vries from AEG and John Moran, OPIC - Director investment development and coordination.

(The **Overseas Private Investment Corporation** (**OPIC**) was the United States government's development finance institution until it merged with the Development Credit Authority (DCA) of the United States Agency for International Development to form the U.S. International Development Finance Corporation (DFC).

The date for the conference was originally chosen to combine with a final announcement of the South African Government's Renewable Energy program, but unfortunately it took place a few weeks too early due to delays in Government.

Nevertheless, the content was hugely informative and effectively a series of case studies and/or project proposals. The Boschendal SDI was also a prospective candidate and I used the opportunity to address the potential solar aspects of the project. In addition, the proposed Desert Star Integrated Energy Plan across ten SDI developments, albeit just over the border in Namibia, solicited some interest.

A statement during the conference that "South Africa is a solar gold mine" was most appropriate, considering the wide range of applications presented.

A sobering fact was a remark concerning a 30% unemployment rate in Northern Cape Province of South Africa. I used the opportunity to mention that DMP had tabled a document on the 14th June, a few days prior to the conference, entitled *Northern Cape Provincial Development Framework/Development & Resource Management Plan*. Post conference, I made sure that Dennis and the team became fully aware of the fact that resource management should strongly consider solar as a resource. I certainly took the solar component forward in both the Boschendal SDI and Desert Star projects, post conference, in the second half of the year.

Two further conference messages conveyed to DMP as potential services:

provision for renewable energy applications within NEMA (National Environment Management Authority) applications for land rezoning; and

giving attention to GIS-based site scouting with special reference to wind farm applications.

One note to myself was to consider a Renewable Energy Investment Model specially focused on small communities. I later introduced the concept of mini-ESCOs (electricity service companies) when developing a solar strategy for the communities surrounding the Boschendal estate.

The meeting with Ronald Marais and the GCCA group (Generation Connection Capacity Assessment) was most constructive and resulted in the fact that the so called "tap" of the power line crossing Desert Star had to be a link of about 40 km at a cost of approximately R50 million (about US$5million at the time).

My meeting with Barry Maccoll at Sandton City on the Saturday, produced long term constructive potential, as we concentrated on two issues, i.e.

Firstly, the 30% unemployment rate in Northern Cape Province of South Africa, when considered relevant to the Northern Cape Provincial Development Framework/Development & Resource Management Plan. We agreed to arrange a meeting between the DMP office and a selection of suitable people in Escom and elsewhere;

The other issue concerned the Escom energy growth ambitions across sub-Sahara Africa, where I raised potential interest of the ROTHSCHILD Banking Group as potentially a contributor to put an investment syndication together. Barry very diplomatically expressed the view that such an idea might be too ambitious but I made a note to explore with Claude at an appropriate time.

Dennis facilitated a meeting for me with dr. Judex Oberholzer, Founder and CEO of Urban-Econ, development economists and consultants, head-quartered in Pretoria. I previously met Judex in the DMP office and the primary objective of the meeting was to introduce our consultancy services, especially the structuring of Ucits solutions. Judex responded with a list of potential projects and as we both had further commitments on the day, we agreed to meet the next day for a detailed discussion.

Mason and I met for a beer at the Conference hotel one evening earlier in the week. As I was in the process of providing him with free consulting on a solar PV installation for a small warehouse park he owned, he promised to take me to the best steak restaurant, "probably in South Africa". There we were, following my abbreviated meeting with Judex, sitting in a pleasant restaurant on the edge of Mandela square in the Sandton City complex, with a diverse range of clientele, all part of an (apparently) prosperous new South Africa. At that stage South Africa was only two years into a Jacob Zuma presidency (2009-2018) with no idea of the corruption and downhill trend ahead.

Judex and I continued our meeting on the Sunday around Benno's large dining room table (Benno by then had left on a golf tour, with Julia still away in the UK visiting her sister) – and I for one was pleased to have interesting company, before returning later that evening to London, via Nairobi and Amsterdam.

Comfortably seated on the Nairobi to Amsterdam daylight flight the next day, I had lots of time compiling an action/ideas list resulting from the five days in Johannesburg. It was clear that the proposed application of solar PV at the Boschendal SDI and Desert Star projects presented demanding challenges. At the same time I felt that the overall renewable energy space offered opportunities to pursue. As a result the second semester of 2011 became somewhat dedicated to the "solar challenge".

Reflecting later on the conference - What always amazed me and what I respect most is how South Africans managed to produce quality output in specialised areas despite political turmoil.

An example was **South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP)** launched in 2011 a few months after the conference.

In a paper dated November 2016 by Anton Eberhard and Raine Naude, lecturers at the University of Cape Town Graduate School of Business reported: "*The South African Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) is a competitive tender process that was launched to facilitate private sector investment into grid-connected renewable energy (RE) generation. It has been an undisputed success in terms of capacity, investment and price outcomes. Since 2011 a total of 6,328 Megawatts of wind, solar photovoltaic and other RE generation capacity has been procured, amounting to USD 20.5 billion in investment. Bid tariffs have fallen sharply over the course of the* *programme and the most recently awarded projects are amongst the lowest priced grid-connected RE projects in the world. Considering South Africa's success in achieving more investment via independent power producers in four years than in the rest of Sub-Saharan Africa over the past 25, the REIPPPP's design and management is likely to be of interest to policymakers in African (and other developing) countries."*

In February 2020, Luzuko Nomjana, an investment analyst at Future Growth produced a report – *REIPPP comes of age* and certainly constitutes recommended reading.

Just in case I could possibly add to our renewable energy arsenal, I went to a Conference on 6th July at the National Exhibition Centre in Birmingham to explore what *anaerobic digestion* (*AD) and biogas could offer* – leading to the conclusion that it has considerable value to add to farming. This had potential at Boschendal but was doubtful for Desert Star.

Now, back to the "solar challenge" in the second semester of 2011, mentioned earlier.

Allow me to mention that I felt comfortable with this challenge. With an electrical engineering background, my immediate objective was to update my knowledge, not that an engineering degree was necessarily a requirement, but certainly helpful. I consequently invested in the excellent book by Roger Messenger and Jerry Ventre – "Photovoltaic Systems Engineering". Today, several courses are offered on the Internet.

On the 9th July – I commenced with the first design on the proposed solar farm, culminating in the design of a small pilot project. One of the challenging questions during this exercise – why are designs so often placing the solar panels close to the ground and not leaving sufficient space below for an alternative use?

A meeting with Bill Dunster on the 18th added a further dimension to the question, when during an introduction to a new design for solar villages, Bill announced his Integrated roof design – where the integration of multiple solar panels constitute the roof. In the recent past ZEDfactory has arrived at a joint venture, HiminZed, with the Chinese solar manufacturer and this product was one of the first results of this "marriage".

Bill was initially somewhat perplexed by my question about lifting the solar panels in the solar farm and it then dawned, that with the availability of the sealed solar roof, an extensive greenhouse facility could be considered. The potential existed for the Desert Star solar farm becoming a real oasis in the desert, providing a supply of fresh produce not only to the development, but also to neighbouring settlements.

Bill being Bill, it did not take long to provide a first rendition of the result of this productive discussion.

By the end of July I had managed to apply the renewable energy model to the Lanquedoc housing estate abutting Boschendal, where it was showed that a total of 950 homes could produce an annual power output 4272 MWh. In addition to considerable savings in carbon emissions, the business model indicated a capability of serving a 6% coupon.

One outstanding task was to make Dennis aware of the need, in the case of Lanquedoc, for a front-end company, positioned bidding for a 25-year power purchase agreement under the recently announced first round of the REIPPP initiative. In my opinion this was an action to be taken by a suitable party representative of the Lanquedoc home owners, especially where one of the main objectives of the initiative was socio-economic upliftment, fully in line with REIPPP objectives.

Escom recently announced their long term pricing tariffs, for electricity to be supplied, in this case via the local authority, being Stellenbosch Municipality. My suggestion was that the Watt-hour price to the home owner be pegged below the announced 5 year Escom price projection, providing additional savings to the user.

Back in the UK, I met on the 18th July in Peterborough with the Chief of Planning, Helen Edward, reviewing the Gladstone project. I used the opportunity to introduce the concept of a PACE bond and submitted a final report. It is wise to know in a consulting role, that it is up to your client to make the final decision, and leave it in their hands. Sometimes the correct decisions arrive much later.

However, sometimes a decision is jeopardised by unexpected geo-political factors, even with a compelling solution on the table.

One such event resulted from a phone call from one of my earliest contacts in the UK – an experienced investor David Abramson. David, CEO of Arena Investment Partners, is a well-known former South African, creator in the sixties, in South Africa, of the first mutual fund, outside the USA. This fund became the Sanlam Growth Fund and is still in operation today. David came to the UK when his wife Glenda, was appointed a Professor at Oxford University. She now holds the titles of Emeritus Professor of Hebrew and Jewish Studies and Emeritus Fellow of St Cross College and of the Oxford Centre for Hebrew and Jewish Studies.

During my early years in the UK, I often travelled to Oxford to meet with David for advice and I am always grateful to him for recommending me to John Salmon, the surgeon and good friend, mentioned earlier.

David relayed the fact that he had been contacted by Michelle Swartz, a former Rothschild Israel manager, with a letter of intent from the Israel Prime Minister, concerning the supply of 10,000 houses, designed to fully use the excellent solar conditions in Israel.

By mid-August I could respond to David with a proposal for a packaged solution in conjunction with a consortium of expertise to be licensed to a suitable contractor and implemented with local professionals.

The challenging part of the solution was the expected time frame, implying the use of modular manufacturing.

At the time Paul Mare, my old friend in Cape Town, had just completed a similar exercise in conjunction with an European company, a leading supplier of precast concrete technology worldwide. This company has worked in over 100 countries on six continents and was capable of supplying anything from a single machine, to a production line and to a complete precast plant. By early September we were in discussion with a senior manager in the company, while David and Michelle were in discussion with a number of local construction companies. Negotiations were well under way when my manufacturing contact categorically stated that they will not supply their know-how and equipment, if any of the proposed homes are to be erected in the West-bank of Jerusalem.

Well talk about “geo-politics” – Michelle took extreme exception to this attitude and immediately terminated further discussions. These are issues that need to be declared upfront not when the chosen design team had already delivered a considerable amount of work.

At this time we had already gathered a consulting portfolio of nine opportunities for the REIM – *Renewable Energy Investment Model*. This enabled the construction of *SEIN – sustainable energy investment note* – providing protection of investment principal over 25 years with a 6% coupon.

Mid – October provided an opportunity to review the overall consulting portfolio with Dan Wright, a partner at OSBORNE CLARKE, one of the leading legal practices in London. One of our objectives was to find a suitable home for our portfolio and I will always be appreciative of Dan’s advice and assistance.

He has subsequently been recognised by the Financial Times as one of Europe's most Innovative Lawyers, and as a top disruptor by The Lawyer in their Hot 100 of 2019. He is part of some industry partnerships looking at collaborative product development, as well as working with other organisations on technology projects and industry standards. He speaks regularly at conferences and client events and is known as a thought-leader in the professional services innovation space.

By now Rudolph Markgraaff was in full swing with his campaign to raise development finance for Desert Star and he arrived in London towards end of October for a meeting with DELOITTES to obtain their professional cooperation. I previously made contact with one of the partners during the planning of the EIF Conference and gladly introduced him. Rudolph stayed in and around London for a number of days and we met a number of times during this period, before he continued on his fund-raising endeavours. During these sessions I got the distinct impression that he was not particularly concerned about some of the detail issues, for example – the electricity supply for this extensive site.

On the 10th November, John Moran of OPIC, whom I met at Solar South Africa earlier, stopped for a visit and we reviewed their organisation’s modus operandi as a potential source of finance.

Given John’s position as Director of Investment Development and Coordination, I felt complimented that he could find the time to drop in and Yvonne did one of her star performances in her kitchen that day. We discussed amongst other things, the Copenhagen Accord, established during the 2009 United Nations Climate Change Conference (COP-15) in Copenhagen and specifically the "Copenhagen Green Climate Fund". The fund was formally established during the 2010 United Nations Climate Change Conference in Cancun as a fund within the UNFCCC framework.

John mentioned that the governing instrument was to be adopted at the 2011 United Nations Climate Change Conference (COP 17) in Durban, South Africa from 28 November to 11 December. He was going to attend the Conference and expressed the thought that it might be an excellent opportunity to set up a meeting with Trevor Manuel, the highly respected South African Minister of Finance, who was playing a leading role in the launching of the *Green Climate Fund.*

John was of the opinion that an experienced fund manager such as Rothschild could be an excellent candidate contributing towards the distribution of this major fund, aimed to help poor countries to adapt to climate change. Knowing that Trevor Manuel had a leading role on the establishment of the proposed fund, we agreed that it might be a good idea to provide some early suggestions for consideration by the Minister and his committee.

The challenge of meeting the Minister now became one of logistics. It was too late to arrange a meeting prior to COP 17, so it had to be at COP 17. However, it was already too late to register for COP 17 with all hotel rooms in Durban fully booked. In addition, I had to obtain Claude's interest and support.

The latter turned out to be the easiest part and in no time I had received an excellent letter of intention from Claude, with his full support. I have to mention that by now I had an agreement with the Bank under which I introduced external investors, especially in Ucits funding structures. This initiative, getting access to the Green Climate Fund, certainly qualified as one of the typical actions for an "agent" like me.

The difficult part transpired to get a short meeting confirmed with Minister Manuel, following the forwarding of a short proposal and the accompanying Rothschild letter. Discussing my challenge with Dennis, he in turn made contact with Professor Franklin Sonn, a well-known educational academic and community figure in South Africa. Appointed by President Nelson Mandela in 1995 to 1999 as democratic South Africa's first Ambassador to the United States of America. Dennis, aware that Professor Sonn and Minister Manuel were good friends, decided to use some "friendship capital" and requested his assistance in setting up a contact. This resulted in the Minister's private secretary making contact and being fully aware of the memo, promised to arrange a meeting with the Minister on short notice, given that I am in the COP17 neighbourhood all day on Thursday 1st December.

Given previous experience with Treasury Ministers, I considered this arrangement "flimsy", thanked Dennis for his assistance and told him that I am going to decline. "I have spent more than enough money on long distance travel and speculative hope, not again" I told him and he expressed his understanding. However, he called me and told me after a call to Professor Sonn, I should not decline and that the practice will pay my air ticket. In addition, he thought that my presence in Stellenbosch during the following week, will be very helpful.

Given the circumstances I found myself on a direct British Airways flight on Tuesday 29th November, from London to Johannesburg. Arriving on Wednesday early morning, I allowed time for a meeting with Benno to review my approach to Minister Manuel and also a meeting later in the day with Judex Oberholzer. Benno, very kindly providing me with accommodation, then dropped me at the Gautrain terminal very early Thursday morning for the flight to Durban. Not knowing what to expect in terms of the appointment, I made my first contact with the Minister's Private Secretary, from my rental car at Durban's brand-new international airport, the first of many unanswered calls that day. Yvonne arranged for me to meet an old family friend from our Johannesburg days, Maddy Wiltshire. She was delighted to see me and keen to introduce me to the new love of her life.

Meeting Maddy after so many years, and experiencing her lovely home in the middle of a quasi-rainforest north of Durban, was a wonderful break from waiting for "the meeting summoning". Maddy then drove me into the city in her lovely Mercedes sports and dropped me close to the COP-17 venue, at the Durban International Convention Centre.

Aerial view - Durban International Convention Centre

Main Entrance view - Durban International Convention Centre

I notified the private secretary that I am now within "touching distance" and ready to meet. The call eventually came late in the afternoon, simply to be told briskly that "unfortunately the Minister is unable to meet". In my best and most polite language I expressed my deep disappointment and pointed out that having travelled all the way to Durban, I expected a bit more. Simply to be told (understandably) "there is nothing that I can do."

But he actually did something. Unbeknown to Claude and me, there was actually a side event by the London branch of Rothschild Banking dynasty and Minister Manuel paid them a brief visit in the late afternoon – presumably following my last discussion with the private secretary. This news reached us a few days later when Claude was contacted by a colleague enquiring whether he knows anything about the unexpected visit to the side event by the South African Finance Minister.

That afternoon in Durban, I met with John Moran shortly after the phone call for a pre-arranged drink (we did say "see you in Durban" when we parted at Ascot station after his visit), but obviously I had no progress to report. After introducing me to Elizabeth Littlefield, highly respected OPIC CEO at the time, he made a "courageous" promise to see if he could have a word with the Minister during a COP 17 reception he was about to attend. Thank you for trying John.

I wish I had the information about Trevor Manuel's visit to the side event at my disposal when I arrived in Dennis's office, first thing Monday morning. A very cold welcome awaited me, given the failure of my primary mission, to which the DMP office "richly" contributed – never mind my wasted time and exhaustion!

That was the unfortunate start to a very stormy day, largely focused on Boschendal and to a certain extent on Desert Star, to be further discussed in the next chapter.

Back in Stellenbosch the next day (Tuesday) provided the opportunity of reviewing with a DMP partner, SW van der Merwe, the Cape Northern Cape Provincial Development Framework/Development & Resource Management Plan and the potential for a specialised fund. The fund will be focused on 32 municipalities and 120 towns in the province (one of the nine provinces in South Africa) and could go a long way towards addressing the 30% unemployment rate, mentioned earlier.

Dennis's son Derek took me on an extensive tour outside Stellenbosch, of eleven potential DMP projects, a solar PV/wind solution applicable in each case.

The next day I paid a visit to Boschendal, meeting with Graham Johnstone, responsible for managing overall operations on the estate. We agreed that a concept proposal will be developed for the development of a Boschendal SDI Renewable Energy Service company, an initiative that will ensure a low cost energy source for all participants within the Dwarsriver Valley. It certainly appears that a number of renewable energy driven objectives, specifically addressed during 2011, were being realised. See what happened next in the next chapter.

Leaving the Stellenbosch office that morning and driving to Boschendal, was actually the last time I was there, although I still had some dealings with the DMP office over the following eighteen months.

However, I made a promise that I will not produce the "gallery of lamentations" that finally led me to distance myself quietly and totally from the Stellenbosch office eighteen months later. Suffice to say, this story is about thank you's and I certainly enjoyed a constructive period from the initiation of ISDC in 2000 representing the DMP practice in London, and elsewhere, while contributing to their service mix.

I met Trevor De Vries of AEG, always good company, at his invitation, for an early dinner at Cape Town International Airport, before returning to London that evening.

Trevor wanted to thank me for recommending their products and services in the Wendywood Warehouse Park in Sandton. I could but smile that I gained two meals out of a straightforward bit of free consulting given - who says consulting does not pay?

Before ending this chapter, a brief word on the Green Climate Fund (GCF) and here I extract from Wikipedia.

"*Based on a report presented at COP 17 in Durban, the COP decided that the "GCF would become an operating entity of the financial mechanism" of the UNFCCC and that at COP-18 in 2012, the necessary rules should be adopted to ensure that the GCF "is accountable to and functions under the guidance of the COP".*

The Fund has set itself a goal of raising $100 billion a year by 2020, but as at 3 February 2020, a total of only US$10.3 billion has been pledged and US$8.24 billion confirmed, as part of the Initial Resource Mobilization (IRM) period.

The lack of pledged funds and potential reliance on the private sector is controversial and has been criticized by developing countries.

U.S. President Obama committed the US to contributing US$3 billion to the fund. In January 2017, in his final 3 days in office, Obama initiated the transfer of a second $500m instalment to the fund, leaving $2 billion owing. U.S. President Donald Trump in his announcement of U.S. withdrawal from the Paris

Agreement on 1 June 2017, also criticized the Green Climate Fund, calling it a scheme to redistribute wealth from rich to poor countries."

Today the fund partners with 84 organizations that include commercial and development banks, state agencies and civil society groups, which pilot and execute innovative approaches to climate programs.

A painfully slow process!

I do feel a brief response from Minister Manuel to our original proposal perhaps indicating the intended process, considering he was chairing the steering group for establishing the Green Climate Fund, could have saved a lot of time.

Further thoughts on the role of funds in the developing country environment, will be presented later.

The year concluded with us spending Christmas in the New Forest with the family in a lovely rented house. Hein and Michelle being in South Africa with her family and Hein's sisters, a Christmas celebration was planned for later.

This house had the most impressive dining room with a glass roof. I was tempted to offer the owner my "solar PV expertise" to turn that roof into a small power generator, but the excellent mulled wine over the Christmas Season, quickly dulled that idea.

Take away for 2011

 # The immense "socio-economic power" of the availability of energy in disadvantaged communities;

 # The need for a better understanding of social impact investment and for suitable financial instruments in this area;

 # The increasing range of renewable energy solutions such as algal bio-fuel and green hydrogen.

CHAPTER 9

2012 – A CHANGE IN LIFE-STYLE

Summary

As a consultant your life is not always exciting and challenging. It can at times revert to the mundane and at times it is outright frustrating. I refer here specifically to actions of clients, at the time not fully equipped to take a strategic decision and going against the grain of the sensible.

These are times one has to remember that you are simply the adviser and the client, as typically the developer/sponsor, is the responsible party.

When you are convinced that you have provided your best advice, and the deliverables are tabled, and ignored, the best frustration alleviating route is at times to terminate your own appointment and walk away.

We have to wake up to the fierce urgency of the new

Jim Yong Kim President World Bank

Where our advisory was mostly focused on the sustainability finance aspect of the opportunity at hand, it at times led to an undelivered solution. However, some of the solutions in this category are archived and as stated previously, with the advent of new and advanced technologies, could potentially lead to the regeneration of an opportunity. This being one of the primary reasons for describing our journey.

The year 2012 certainly brought a mixture of mundane projects (no further reporting will be forthcoming) on the one hand and challenging projects on the other. In addition, the opportunity to mention interesting people met along the journey, and thanking them appropriately, certainly adds another dimension.

Marco Cereste, mentioned several times previously, is one such individual. He showed a great interest and support for the Inter Eco City (IEC) concept.

We met early in the year and he expressed the objective of setting up a high-volume fresh vegetable delivery service between Foggia in Italy and Peterborough. I developed an extensive presentation on the potential cost structure and overall feasibility, delivered to the visiting Foggia mayor in April.

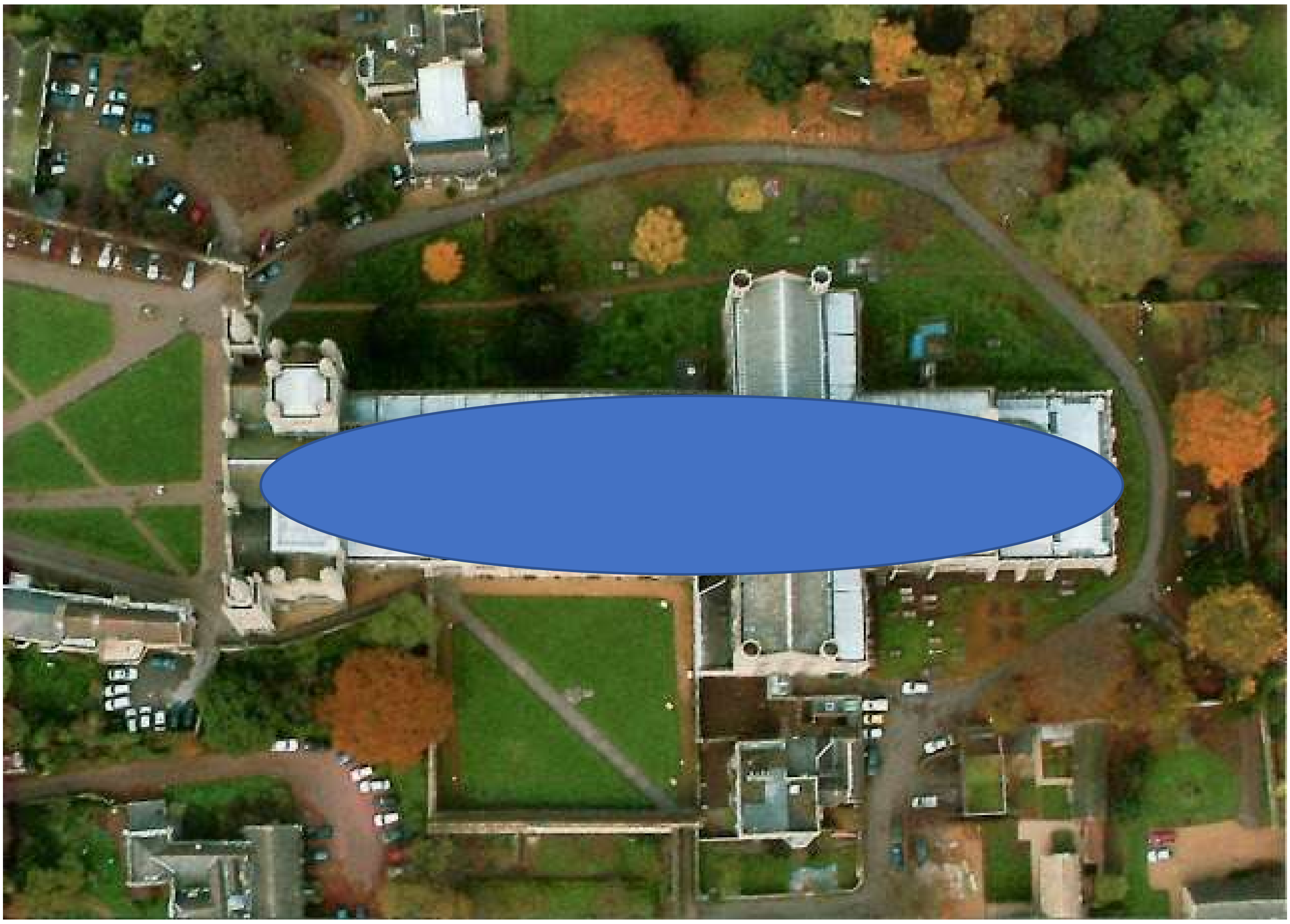
Marco on hand continuously to translate into Italian – thank you for that service Marco.

In order to answer the typical question of size, I superimposed on scale, the airship onto an aerial view of the imposing Peterborough Cathedral. That certainly brought the message home effectively, especially as the Cathedral was visible from the meeting venue.

This potential application is one of those that I will always be disappointed about, for the fact that it became impossible to deliver, for the reasons previously explained.

It leads to interesting speculation how the IEC would be affected by Brexit, a few weeks away as I am writing at the end of November 2020.

In addition, compared with road haulage, the concomitant reduction in the reduction of carbon emissions via IEC, is interesting to calculate. Who knows, with Joe Biden as a new climate change supportive face in the White House, it might just be possible to change the strategic limitations posed on the American VTOL manufacturer.



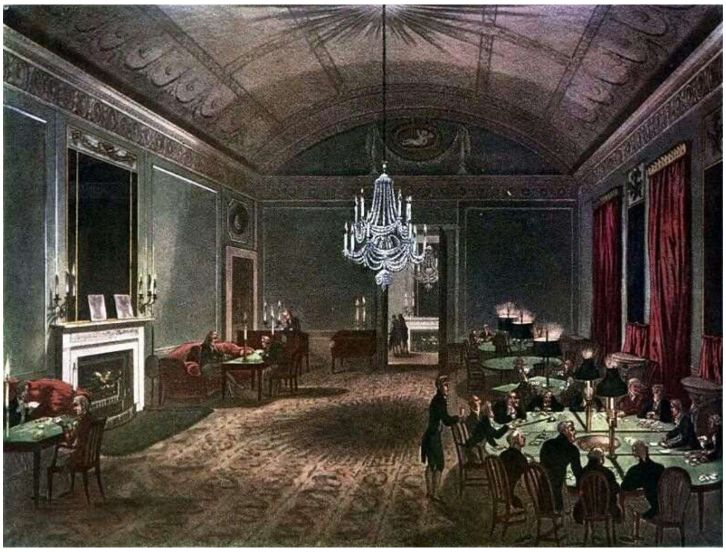
The airship – 152 meter x 48 meter superimposed on the Cathedral -Photo credit - https://pinoyborian.blogspot.com/2011/11/postcard-friday-5-peterborough.html

An alternative view is giving consideration to introducing urban agriculture to the centre of Peterborough growing the equivalent of the lovely Foggia tomatoes.

The next stop during the 2012 journey was a phone call from Sebastian Leslie, a gentleman farmer near Aberdeen in Scotland. The assignment was to unlock some of the considerable natural capital on his estate into a positive cash flow. Easily identifiable biomass (wood chips) was of particular use in producing renewable energy. Following a number of discussions, it was a pleasure to present Seb with an investment proposal. He spent most of his time in London and he was well connected in the City enabling him to approach potential investors.

During our deliberations, Seb kindly hosted a number of lunch meetings at Brooks's, a well-known historical London private members club.

Almack's club resulted from the amalgamation of a number of clubs in the mid-1770's in Pall Mall. In September 1777 William Brooks, a wine merchant and money lender who acted as Master, or manager, for Almack's, commissioned Henry Holland to design and construct a purpose built clubhouse at a site on neighbouring St James's Street. Paid for at Brooks's own expense, the building was completed in October 1778 and all existing members of Almack's were invited to join. Brooks's gamble paid off as all existing members swiftly moved into the new building and the Club then took on Brooks's name as its own. Brooks himself however would not live long enough to enjoy this success, dying in poverty in 1782.



Historic picture of the Subscription Room, Brooks's Club, showing the segmental barrel vault ceiling, with gambling in progress

Lunch was self-help and sitting around a large table with other guests on the day. On one such occasion Seb introduced me to another member, a very fit looking octogenarian, Ken Gardener. At the time Ken, a keen tennis player, was a special adviser to the Chairman of HSBC. Over lunch, after establishing my accent as South African, he lamented to me about the bank losing out on acquiring Nedbank South Africa for four billion pound sterling. With that an opportunity was lost for HSBC to make a banking entrance on the African continent.

I had at the time read about the growth of mobile phones, especially in Kenya, with the futuristic view of mobile being the vehicle to unlock the large volume of people without access to any form of banking, the so-called "underbanked".

In a very cheeky manner I suggested to Ken that I might be able to introduce a way of providing an African based banking operation, "*for considerably less than the Nedbank offer*." No surprise he responded with the name and number of his secretary, with an invite to arrange a meeting.

Our first meeting took place about a month later. However, in the mean time I had the challenge of constructing a robust solution in support of my "shooting from the hip statement". Mobile (cell phone) based banks or digital banks were unknown at the time, but in discussing my challenge with Benno Thompson at the end of May, he put me in touch with a golfing contact at his local club in Sandton.

I discovered that resulting from the need for "banking for the underbanked" on the African continent, pockets of expertise were already fully operational in mobile-based banking, well ahead of anywhere else. One example being Benno's contact Charles Rowlinson and the company he founded – WIZZIT.

On the 11th June I proposed a new banking paradigm, H-SEEB Platform (HSBC Socio-Economic Environmental Banking), with a qualified potential of 500,000 customers, in conjunction with six regional banks across the African continent. This proposed bank would promote mobile based banking services, microfinance services and high profile socio-economic development programs. When making contact with Charles Rowlinson, it transpired that he was on his way to Europe and we managed to meet at Heathrow airport when he indicated his willingness to license the WIZZIT platform. Apart from taking this action, I also consulted with Claude on the potential administration management of the proposed SEEB structure and obtained his support.

Before the scheduled meeting at HSBC in July, I travelled to Bratislava, capital of Slovakia, for another Rothschild Fund Management seminar on the 21st and 22nd June, the theme being – "The Future is Emerging". Our conference hotel, on the banks of the Danube, provided for another memorable setting. More so was the privilege again of renewed contacts with old friends – Claude, Francois, Luigi, and Wolfgang Brueggemans (whom I first met in Lisbon).

Another magnificent gala dinner this time held at the historic and prominent 13th century Bratislava Castle.

View of city with Danube River in foreground and Bratislava Castle on the left with the distinctive four towers

I had a strong feeling that Claude wanted to tell me something important, when we made an appointment to meet in London. This we did a week later when he shared with me the fact that he was leaving the bank and that he will be taking up a similar position, i.e. Fund Administration with another Swiss bank, the Pictet Group. At the time he expressed the view that "Rothschild's DNA has changed" – not that I understood what that meant. However, to me it spelled the end of a wonderful informative era with many memorable moments and contacts made. Bratislava turned out to be my last Rothschild Fund manager conference and in fact also the last time I have travelled overseas for reasons I will explain shortly.

Finally, on 6th July I travelled to Canary Wharf for the scheduled meeting with Ken Gardener, on the Chairman's floor at the HSBC headquarters. I felt thrilled that my remark at Brooks had created this opportunity and I felt quietly confidant to present the SEEB proposal to my host.

HSBC headquarters in Canary Wharf in London

After completion of the presentation, Ken took a deep breath and fired a list of comments and observations, commencing with the fact that the bank and the top management are scared out of their wits, as the bank has recently gone through a period of mishaps in the US with other parties, and ended up paying billions of dollars in fines. A quiet observation to myself – "despite that they were ready to buy an African bank for four billion pounds".

He saw the first challenge in SEEB was to identify the right "champion" for the project within the Bank. This objection I understood, as at that time sustainability finance was typically off the radar for many a top-level manager, within any global bank.

A further problem, Ken continued, was the potential conflict of interest resulting from a "tight" relationship between the bank and a selected mobile phone service provider, at the exclusion of other providers, who could conceivably all be clients of the bank.

Next, concern about the proposed bank-to-bank relationships within the structure and the potential for "blow ups", referring again to the US experience.

Another concern could be the competition between Claude's Fund Administration group in Luxembourg and the equivalent function at HSBC.

Finally, was the "the branding value" of the proposed structure was not ideal – this to me constituted the weakest argument of the lot!

Travelling back to Ascot and reflecting on the disappointing outcome of the meeting, I could only but conclude that after missing out on purchasing Nedbank, they had possibly now potentially missed another opportunity. Personally, I could not think of a better synergy (and branding) than between a global bank and a strong socio-economic strategy being implemented on the African continent with all the resources the bank could muster. But then I am biased after having spent twelve years (at that point) on the subject of sustainability finance.

Shortly afterwards Benno and Julia paid us a visit in Ascot and I had an opportunity to lament to our corporate finance adviser about the short sightedness of large banks.

The Oval has been the home ground of Surrey County Cricket Club since it was opened in 1845. It was the first ground in England to host international Test cricket in September 1880.

I will always associate their visit with Yvonne and me visiting the Oval a day or two later; a cricket ground south of the Thames river in the London suburb of Vauxhall. The South African national cricket team, the Proteas, was playing a 5-day cricket test against the "old enemy", England having "tested" each other since 1888. The Saturday of our visit to the Oval, was when the South African opening top four scored 637 runs with only two wickets down, allowing the Proteas to declare at 637 for 2. Hashim Amla contributed 311 runs, not out, and the Proteas went on to win the test with an innings and twelve runs. We had the pleasure of experiencing Amla's outstanding marathon score first hand with Jacques Kallis at the other end contributing 182 (not out).

Back to Peterborough - One of Marco's many business enterprises was PREL – Peterborough Renewable Energy Limited. Established in 2002 by a group of local businessmen to realise their passion for managing waste material in an environmentally friendly manner and to eliminate the need for landfill sites. The development of PREL's EnergyPark model provided the platform to turn this vision into a reality.

PREL was granted consent by the Department for Energy and Climate Change (DECC) in November 2008 with a strategy to take in mixed waste and recycle and remanufacture it. Through a three-stage process of mechanical recycling, biomass gasification and plasma vitrification, the Energy Park will produce renewable energy, glass, building blocks, metals and compounds. It was estimated that the zero waste to landfill solution will save 600,000 tonnes of CO_2 per year, create green collar jobs in the local community and produce enough renewable energy to power 60,000 homes.

A 2010 computer generated image of the proposed PREL operation

Marco introduced me to PREL CEO Chris Williams and I travelled to Peterborough a number of times to meet and be fully introduced to the inner workings of the PREL operation. Chris was totally transparent about the business, and the business plan presented one of the most comprehensive documents I have ever come across. The company desired an alternative funder in order to replace the existing solution on the table, an overseas investor that simply could not get to completion of the transaction. When the alternative investor that I proposed was starting to get impatient, Marco and Chris decided on the spur of the moment to go on a long distance trip to meet with investor number one. We met at Heathrow, allowing me to review our offer before they took off on a twelve-hour trip for what was going to be effectively a two hour meeting at most, just to fly back to the UK the following day.

Their whirlwind trip turned out to be successful, and while pleasing for them, obviously not to our liking. Forever being the pragmatist, I learned a large amount about the technology, especially the effectiveness of plasma vitrification, a solution I introduced about a year later in a specification for an industrial park in Namibia.

As part of an on-going learning process, there were times when my time was fruitfully occupied being introduced and researching new technology. One such opportunity was an introduction by Jeff Slade, always with an excellent "nose" for "discovering" new technological advancements, when he introduced me to Kevin Archer, the founder of OXFORD Photovoltaics. The company, an Oxford University spin-off, is headquartered in Yarnton, on the outskirts of Oxford. The company exploits solid-state physics using metal halide high efficiency perovskite solar cells and developed to be, a few years later, among *MIT Technology Review*'s top 50 most innovative companies of 2017. High efficiency means that perovskite solar cells convert ultraviolet and visible light into electricity very efficiently, typically in excess of 22%. The low cost material helps in converting windows of buildings and walls to achieve solar power generation. It uses less material in order to absorb the same amount of light compared to silicon. Hence it is cheaper than silicon.

With our interest in the application of solar PV, it was truly a development to watch and to get cautiously excited about. I made a number of trips to Yarnton in the second half of the year, but it was obvious that our optimism was ahead of the curve and we will have to wait a while for a commercially available product. A bit like the airship.

A second opportunity to observe new technology in action was presented by my son Hein and his colleagues at AECOM during 2012.

Hein joined me on one of these visits to Oxford PV, having just completed his dissertation for a master's degree in climate change and sustainable development. A choice and decision I had absolutely nothing to do with, although I was reservedly very proud about his achievement. His work was mostly focused on the potential of energy efficient sport stadia across Europe with primary relevance to the use of solar PV. In the process he produced a range of interesting cost models, at the same time extending the knowledge base at my disposal, required for the various renewable energy investment models in Southern Africa, as previously described.

Having the full support of his employer AECOM behind him, this work led to the development of a concept named STEF – Stadia Total Efficiency Fund. STEF is described in the introductory document "as an innovative special purpose vehicle that provides the means for stadia and arena facilities to improve their energy efficiency and hence reduce operating costs and carbon emissions. A key mechanism will be energy savings performance contracting (ESPC), thus providing the upfront capital to owners of facilities to pay for the desired energy saving measures, so that future savings can be realised. After implementation, these energy savings are used to repay this capital cost".

Hein's career continued in the delivery of various sport facilities, and we had put our heads together on a number of occasions, some of which will be referred to in later chapters.

I indicated at the end of the previous chapter that I was ready to slowly disengage from the relationship with DMP in Stellenbosch and to commence with an independent UK based consultancy. No definite decision was on the table but before I could take any action, nature took charge.

In the second half of August, on a Saturday afternoon, I fell asleep (hard to believe) watching South Africa against Argentina in a rugby test in Cape Town. Waking up a bit later I felt very strange and disconnected and not wanting to upset Yvonne, I told her that it feels like a "flat tyre" in my left leg. I continued very casually over the next few days but typically, she continually urged me to make an appointment with my GP, doctor Prash Patel. Visiting the surgery a few days later, he confirmed that he suspected a TIA – "Transient Ischaemic Attack", the medical name for a mild stroke and immediately booked me for an assessment at a newly created stroke unit at the hospital in Frimley. Prash's suspicion of a TIA was fully confirmed after a full day of tests. Other than being presented with a bag full of tablets I was sent to a physiotherapist for a series of exercises. As I walked into her room, she surprised me with a question "are you sure you had a stroke, as you look fully fit to me?" That alone made my day and I was very pleased that nothing more serious had occurred.

A few days later, I met with dr.Wolfgang Brueggeman in London for a meeting previously scheduled in Bratislava. Wolfgang is based in Berlin and is the managing director of a consulting practice specialising in real estate investment and finance. A very pleasant individual, always urging me to visit Berlin, I focused on an explanation of the objective and function of the agri-energy park concept and tried to determine the potential interest of German investors.

I left the meeting with a clear decision to upgrade the presentation and accompanying numbers, having had the input of his expertise and experience in real estate development.

Nursing an immense headache, following our meeting, and on the train back to Ascot, shortly before arrival, I suddenly experienced an immense cramp in my left arm. By the time I arrived in Ascot, the cramp had slightly released, but it obviously left me on high alert. With the headache still persistent, and having been warned at the stroke clinic that a TIA could be repeated, I "jumped" into the waiting car and said to Yvonne "Frimley hospital and step on it sweetheart".

Straight into A&E (accidents and emergencies) I went through a thorough assessment over the next six hours, with everything seemingly returning to normal. However, one very kind nurse, recognised me from the previous clinic, insisted that I return the next day for a "thorough check-up". Which was exactly what happened and which introduced the start of numerous tests at various hospitals in the area over several months. Still no consultant could provide a definitive answer to my "flat tyre" left leg and life just had to carry on as normal.

Now I felt I had had a warning, and that I had been very fortunate and the series of events certainly identified the need for a lifestyle change. Walking was certainly different and my "flat tyre" left leg has only become "flatter" making walking normally increasingly difficult. However as my GP, Prash Patel put it at one of our regular three-monthly sessions - "Storm be grateful that you are not in a wheelchair". Absolutely Prash and thank you for your care and friendship all these years.

I have included this experience in my story for two reasons:

Firstly, to indicate how nature has stepped in, told me to slow down and consequently put my whole approach to consulting on a new path. As I certainly did not want to go anywhere far away from reliable hospital services, my travelling terminated. Today, as a result of the Covid pandemic, working from home and video conferencing has become the "new normal", with the need for travelling extensively curtailed.

Secondly, I want to use this space to convey a big thank you and a huge salute to the National Health Service (NHS) and all the wonderful staff I have met over the years. The NHS is a truly unique service in the UK and equal to the best medical service anywhere in the world. Other than the Frimley experience, my four eye operations at the John Ratcliffe eye clinic and a dental experiment at Guys's Hospital Dental School over a period of twelve months are worth mentioning.

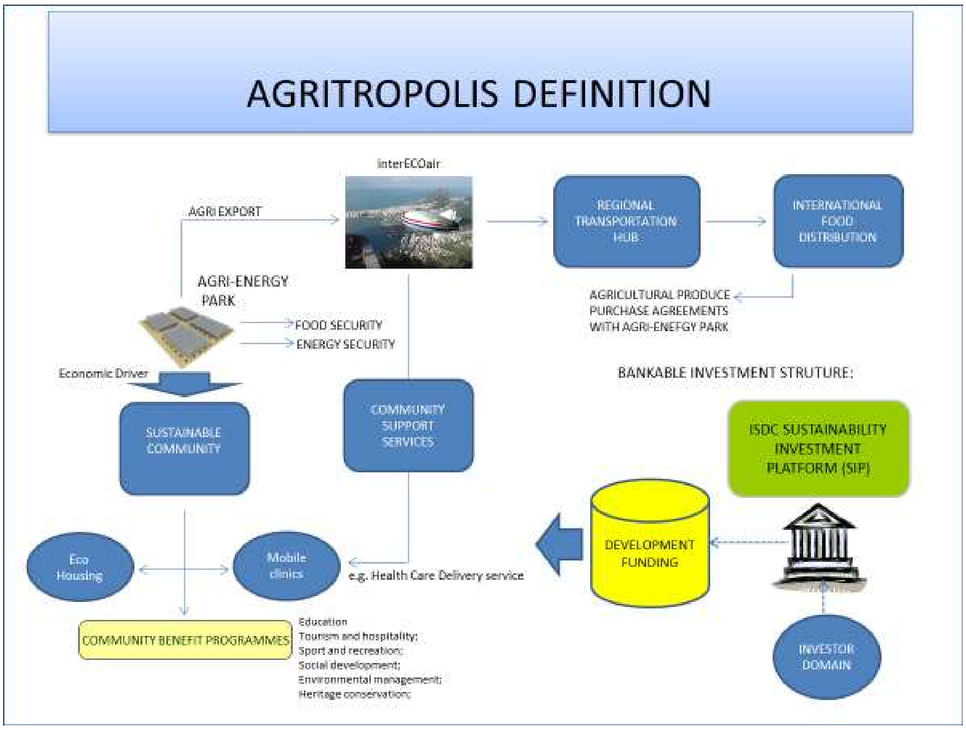
The balance of the year saw a continued, but somehow subdued, development of the Agri-Energy Park model. In the process I discovered the aerotropolis concept; a new urban form where cities are built around airports, speedily connecting time-sensitive suppliers, manufacturers, distributors, and business people to distant customers, clients and marketplaces.

The John Radcliffe Hospital in Oxford, home of the eye clinic

Guy's Hospital Tower (next to the Shard), home of dental school on floors 28 to 32

Described by Time Magazine in 2011, as "one of ten ideas that will change the world", the inventor of the concept, dr. John Kasarda, defined the term and works with airports, cities, and countries worldwide to leverage airports and aviation for commercial development and economic growth. Dr. Kasarda is director of the Center for Air Commerce at the University of North Carolina's Kenan-Flagler Business School, the author of ten books and more than 100 articles on airport cities and the aerotropolis, air logistics, business competitiveness, and urban economic development.

With our own unrealised experience with the IEC (Inter-Eco City) and VTOL (vertical take off and landing) I produced an add-on concept, ***Agritropolis***, representing an agri-energy park, a sustainable community, food security and international trade links and seamless freight handling at a transportation hub transferring cargo from the airship delivery to international freight carriers for early (like next day) delivery to international markets. As previously mentioned, a health delivery to sustainable communities could be added to the daily schedule of the airship.



The observant reader would have noticed that so far no mention has been made of any Boschendal related activities during 2012. This is due to the fact that the estate had undergone a change of ownership during 2012 and the new owners cancelled the DMP consultancy arrangement bringing an end to an era largely focused on integrated development planning. To be honest, I am deeply disappointed about the short sightedness of the previous owners, considering the Climate Neutral Strategy and the renewable energy model (pertaining to the communities around the estate) was never seriously considered or implemented. I have always felt that somehow, I personally failed all those communities in contributing to an improvement in their daily human-wellbeing.

Take away for 2012

 # Timing to be able to introduce the right technology at the right time, is an ideal objective;

 # If you don't get the timing right the first time, don't write the concept off – archive it or take it elsewhere for consideration;

 # Don't be hesitant to be inquisitive and even if you don't always get paid for your services, the experience develops the knowledge base.

CHAPTER 10

2013 – EATING THE ELEPHANT

Summary

In 2013 we participated in a variety of consulting assignments, all largely managed from my office, resulting in a minimal amount of traveling.

Highlights from the list of assignments:

- *Agritropolis*
- *SROPTTC check list*
- *The 24/7 Eco Industrial Park*
- *QATAR IFA 2022 World Cup*
- *Q22 Agri Park Program*
- *Oregon Sustainability Center*
- *Ecodistricts*

"Inspiration – it is less about where the concept originates, but more about where it leads".

Anonymous

First on the agenda was the LANSERIA aerotropolis.

Following the postulation of the agritropolis concept late in 2012, Dennis contacted me in December. He was representing a client, Jonty Sandler, a substantial land-owner near Lanseria international airport, north west of Johannesburg. Jonty was in close contact with the Gauteng province government, and wishing to present them with an unsolicited bid concerning the creation of an aerotropolis, with Lanseria airport as the core asset. Such a development would be in major competition to the proposed aerotropolis at the Oliver Tambo International airport, located in the east of the Johannesburg metropole.

The eventual client was a syndication of current landowners abutting the airport in conjunction with the City of Johannesburg, Gauteng government and other relevant parties. A professional team was required to fully develop the aerotropolis proposal, potentially incorporating an agritropolis. I recommended that it might be worthwhile applying to the AECOM Innovation Fund for seed capital funding for the professional input required from the professional team. For such seed capital to be provided AECOM would logically have to be involved in the project in their professional capacity. It was considered worthwhile investigating the potential of their involvement and also the availability of funding for the initial planning/design/feasibility studies.

For the process to proceed it was necessary to submit an introductory memo to Aecom, briefly outlining the extent of the opportunity and to invite AECOM (with specific reference to AECOM's Johannesburg office), to take part in a process to investigate the merit, potential and conditions of joining and assembling a professional project team.

Following submission of the introductory memo, Hein being my primary Aecom contact, coordinated their potential interest and confirmed a meeting with Chris Choa, the in-house expert on all matters Aerotropolis in London on 7th February, enabling Jonty to make his pitch personally to Aecom.

Jonty's presentation, while being a compelling argument for consideration, highlighted two problems:

An unsolicited bid as the point of departure – this approach in normal practice would lead to a tender process, immediately indicated by Aecom as something that they are not comfortable with;

Viability of Lanseria as an aerotropolis - Chris Choa was unconvinced on this issue. This view unfortunately led to an argument between Jonty and Chris and when you are in a position requesting seed funding, the opinion of the supplier will mostly prevail. Paul Mare always asked the question – are we buying or are we selling today? Maybe we should have given Jonty this advice ahead of the meeting.

Additionally, Jonty in his presentation made use of Aecom logos as if the required co-operation was a fait accompli, a fact not appreciated by our Aecom colleagues around the table.

It therefore came as no surprise when the desired cooperation was rejected in the following few days and it came down to me to convey the disappointing news to both Jonty and Dennis.

The next event to be faced was the "Flame out" at the Desert Star project.

I first discovered the concept of a "flame out" in rubbing shoulders in my air force days with young bright fighter jet pilots, also referred to as "jet jockeys". A "flame out" in a fighter jet travelling at speed, meant one thing for survival – bail out. That is fine if you have the necessary height but at a low altitude, it is a serious problem. Not everyone is as lucky as Tobie Adelaar, a jet jockey from those days, who later became a 747 captain. Tobie experienced a flame out on take-off in a De Haviland Vampire, generally and somewhat respectfully referred to as a flying coffin, a fighter jet still in use in the South African Air Force (SAAF) in the sixties. Tobie managed to crash land on take-off, skidded off the end of the runway, and came to a stop. Climbing back through a barbed wire fence, he cut his hand. No other damage, other than a totally damaged plane.

As the saying goes – "a good landing is one you can walk away from (even with a bleeding hand)".

SAAF 242 – de Havilland DH.100 Vampire FB52 (from Paul de Bois collection)

Rudolf Markraaff, still in take-off mode on Desert Star, proceeded diligently through the second semester 2012 in raising money for the Desert Star project. Part of his modus operandi was to rely on the land as collateral in support of long-term debt. The problem was the land on which the project was being developed, belonged to another party. A party for all practical purposes totally unaware of the project being proposed. A party never consulted for their permission to use their land for the purposes of a development proposal. Unbelievably, everyone seemed to have ignored the first law of property development - to have suitable control or sureties of land ownership.

I have no specific dates in my files but somewhere during the first quarter 2013, two significant events took place. Firstly, the land owner of the Desert Star site refused to sell or have the land in question in any way involved with the project.

Secondly, Rudolph had a “flame out” equivalent and simply disappeared, never to be seen or heard of again.

Simply put, end of project!

I can still hear Dennis’s lamentations in my ears when he phoned to tell me this news. Also, that he had lost “millions of Rands” in unpaid consulting fees.

What annoyed me considerably was the fact that I was letting down the professional advisers I had consulted for their input, specifically with reference to Integrated Renewable Energy System, destined to power the overall site on a 24/7 basis. In this regard I am referring specifically to the many hours spent with Bill Dunster on integrated solar PV systems and with Minoo Patel on the algal bio-fuel solution. In retrospect and to be fair, the knowledge gained was also applicable to many other potential opportunities and was therefore not totally wasted.

With hindsight it might be helpful to some readers to be aware of a useful device at pre-development known as **SROPTTC:**

Developed by the NREL (National Renewable Energy Laboratory) in the USA, it offers the following check list for project development:

- **Site:** Identify the physical location for the physical assets of a project, including property rights, length of tenure, terms and conditions, etc.;
- **Resource**: Characterize and understand the renewable resource being considered;
- **Off-take**: Establish and secure by contract the buyer of both the energy and any other characteristics of output (e.g. renewable energy credits);
- **Permits**: Identify and obtain all permits necessary for project construction and operation;
- **Technology**: Invest in engineering design, equipment selection, and procurement activities of the technology chosen in Project Development related activities;
- **Team**: Assemble a fully qualified team that addresses all business, technical, financial, legal, and operational aspects;
- **Capital**: Attract financial resources necessary for final development, construction, commissioning, and initial operations.

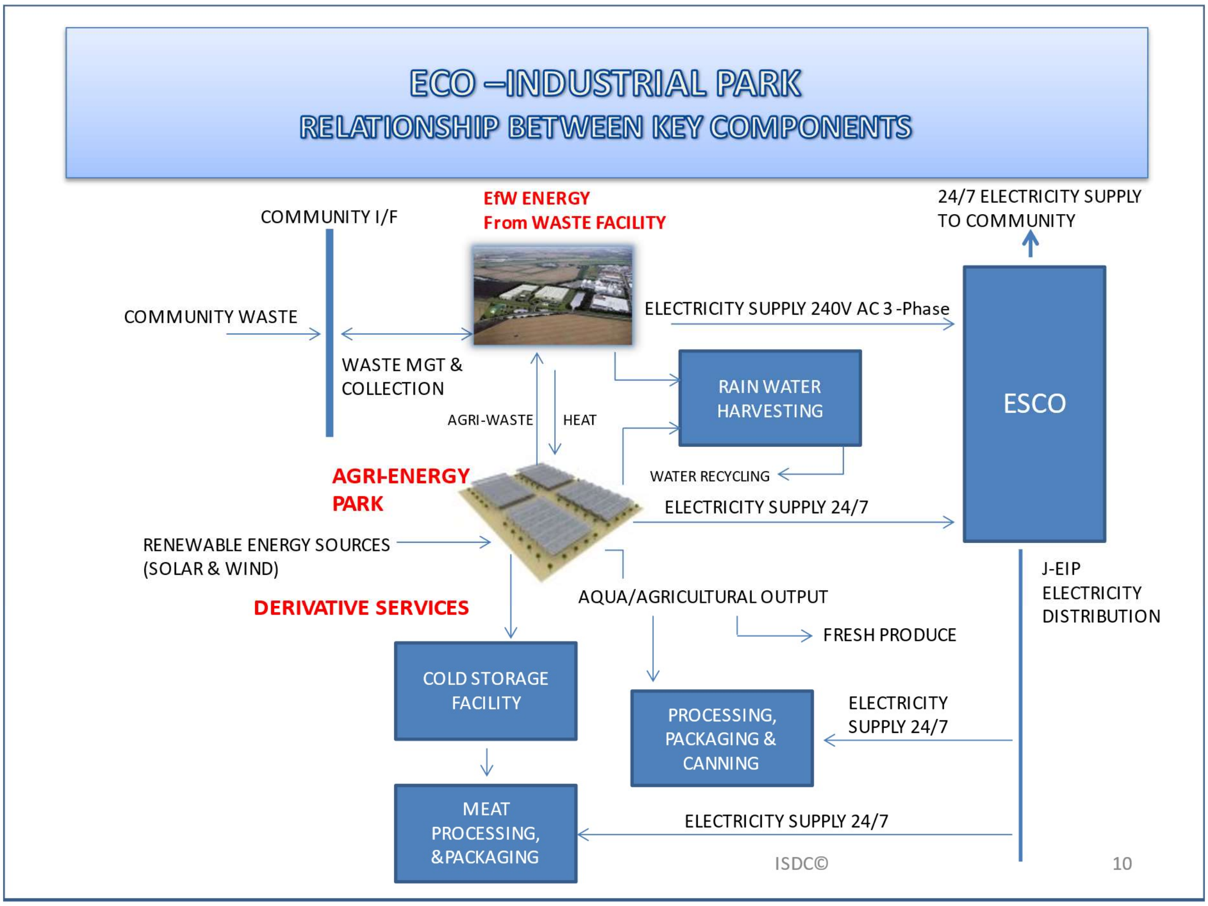
It is not a coincidence that “site” is at the top of the list – no site, no project.

The next project on the table had no problem in meeting the first specification in SROPTTC with a clearly defined site and the opportunity of dealing with the ownership directly.

In early April I gathered that DMP fortunately recovered quickly from the Desert Star disappointment, when Dennis informed me that he had made contact with a dynamic start-up construction company based in Windhoek, the capital of Namibia. The company, Jimmey Construction, primarily involved in housing construction, owned land outside Windhoek and they were interested in developing an industrial park on this property.

Dennis invited me to provide him with some ideas on the potential design for such a development. Despite my intention to distance my practice from DMP, I agreed to do so.

On the 29th April I made a power point presentation using Skype for an Eco Industrial Park. The audience in the DMP office in Stellenbosch included one of the Jimmey directors, dr. Jacko Koen. My presentation integrated knowledge gained from the previous exposure to PREL specifically, and Green Industrial Parks generally, an initiative in conjunction with Marco Cereste and Chris Williams. The presentation also incorporated design elements from the Integrated Renewable Energy System, developed during the Desert Star project.



Following a meeting that was apparently well received (not being in Stellenbosch it was difficult to make a direct assessment), Dennis requested a copy of the presentation material.

Based on previous experience of getting involved with no consulting contract in place, I immediately approached Dennis for a suitable consulting sub-contract but he refused point blank.

However, I stayed in touch with Jacko Koen for the remainder of the year regarding other Jimmey Construction opportunities in Windhoek. However, none of these turned into a proper consulting appointment. It was becoming a one-way street of continuously presenting new ideas, but receiving no corresponding response.

Three pertinent examples of this work included:

Firstly, an opportunity for "twinning" between Portland and Windhoek, largely flowing from the work around the Oregon Sustainability Center, being discussed later.

Secondly, Jimmey's involvement in large housing projects opened an opportunity for BPL Technology – Broadband over power lines.

Finally, we developed an "**Eco Innovation Investment model**" primarily aimed at the construction industry, with accompanying job creation. This model is still widely applicable.

The positive side is that all these concepts are still valid and perhaps even more so today than in 2013, largely due to advances in technology. As I indicated in the take aways at the end of the previous chapter, don't discard good concepts, just archive them.

Incidentally, Jacko Koen surfaced again, when I received a totally unexpected text message in June 2019 – but that part of the story will have to wait for its place in the queue.

The next project, the ***Q22 Agri Energy Program***, represented the first of three consulting opportunities with AECOM during 2013.

The twenty-two member FIFA Executive Committee convened in Zürich on 2 December 2010, voting to select the hosts of both 2018 and 2022 tournaments.

In the end, there were five bids for the 2022 FIFA World Cup: Australia, Japan, Qatar, South Korea and the United States, with Qatar being announced the winner.

The decision to award the event to Qatar had been cloaked in controversy from day one, including issues such as:

- The political intrigue on how Qatar had actually obtained the event, a story on which several books have seen the light of day;
- The extreme temperatures during the typical dates for the event, eventually leading to a change of dates for the tournament to a more temperate time of the year;
- The inhuman living conditions to be endured by guest construction labourers, the source of endless campaigns by human rights groups;

In creating a small think tank with Hein and a selection of his colleagues at Aecom, we felt inspired to present some conceptual ideas to the decision-making powers, in this case the QSC – Qatar's Supreme Committee. The QSC initially announced an ambitious target of twelve new stadiums, later scaled down to eight. At the time of writing (late December 2020), three stadiums had been completed and inaugurated by launching football competitions. The other five stadia are in final stages of completion.

Our way to the ears of the QSC was via the Aecom London office, then via an Aecom delegation in Qatar, reputedly with a strong but tenuous interface and working relationship with the QSC.

The think tank's conceptual thinking eventually presented, can be summarised as follows:

The World Cup is a tremendous event that attracts huge global interest. Qatar has made significant commitments in order to host it, but has not convinced the world that they can deliver it in a truly sustainable manner. There is significant financial benefit to delivering an exceptional solution for QSC and its partners.

What the critics say -
"There is significant doubt over whether a country with a population of 1.6 million will have any future use for a World Cup infrastructure that will cost an estimated $4 billion to put in place"

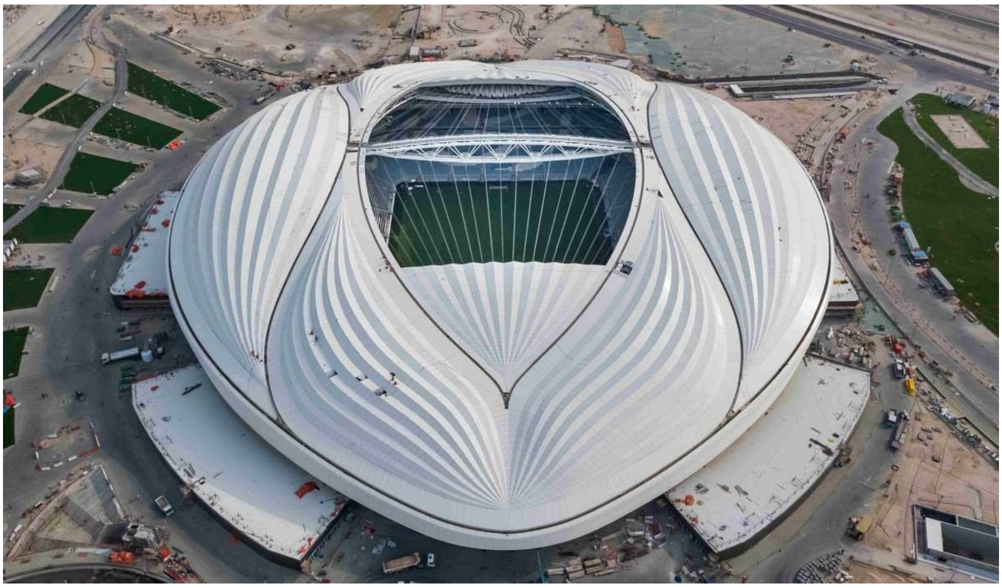
The QSC response -
*"nine of the stadiums being used will be modular, and **Qatar will donate 170,000 seats** (6 small stadia worth) to developing countries after the World Cup, when stadiums are slimmed down"*

Aecom to assist Qatar deliver a truly sustainable World Cup and create a lasting legacy, through:

- *New technology & technology integration*
- *A sustainable finance strategy*
- *A long-term integrated masterplan*

The key Concept drivers:

*Q22 FIFA World Cup serves as the ultimate driver for the **Q22 Agri Park Program**; The initiative is designed as a 10 year program delivering sustainability communities globally, with special reference to developing countries; An Agri-Energy Park serves as the primary economic driver in each of the communities (within the developing countries); Recycle Q22 stadium modular components across 22 stadiums in 22 developing countries.*



Two views of the Al Janoub Stadium in Al Wakrah, designed by the late Zaha Hadid and delivered by Aecom.

We had no input in the decision-making process of taking this challenging (to the QSC) proposal forward, but for reasons of internal Aecom politics, sadly, it transpired later that the proposal never left London.

An opportunity missed for the QSC to deliver a long term legacy, unfortunately not possible to implement, now that the stadia are built.

The experience points to the fact that legacy proposals need to be addressed very early in the design process. This is truly a sustainability finance challenge because the legacy delivery, in this case to developing countries, need to be profitable and not charitable.

The true initiative in specifying a legacy should actually be taken by FIFA (and similar representative international organisations) through their membership, demanding long term sustainable legacies.

A ten-day visit by our Cape Town based daughter Jacqueline from 19 to 29 June, brought welcome relief from the traumas of international sport politics (and may I add corruption). We had pleasure in showing her some highlights in the pleasant part of England where we live, including an organ recital at the Royal Albert Hall, while Yvonne had great pleasure in acting as an "advisor" on numerous bargain hunting shopping trips. I was very impressed with my daughter's detailed budget, fully incorporating the Rand/Pound Sterling exchange rate (which was getting worse by the moment) and comparative prices back home in South Africa. The ten days simply went too quickly.

Following Jacqui's visit, on a quiet Saturday morning in early July, doing some somewhat aimless Googling on my i-pad, I discovered a concept referred to as the Oregon Sustainability Center.

The **Oregon Sustainability Center** was a proposed high-rise office building that would have been located near Portland State University in Downtown Portland, Oregon. The building was meant to be a "living building" that showcased green building designs and sustainability. The entire project was expected to cost $120 million. For some reason the Portland mayor, Sam Adams, decided to end the planning on the project in October 2012.

A computer rendition of the original Oregon Sustainability Center in Portland – SERA Architects

The proposed design of the Center was striking, but what was impressive was the vision – "*a unique partnership (of several organisations in the city and the state i.e. academia, government, non-profit and business) to grow the green economy and make Oregon a world-class leader in sustainability*".

Impressed by all that I read, clearly there was a story behind the fact that the Portland mayor cancelled the planning process in October 2012.

To me it sounds like an exercise in sustainability finance that had gone wrong.

Early the following week I made contact with one of the project leaders, Clark Brockman, a partner at SERA Architects. It transpired that the previous design exceeded the accepted budget in order to achieve feasibility, and at this time they had already commenced with a redesign. Our initial discussion eventually led to a long series of transatlantic telephone conferences with Clark and members of his sustainability design team.

I found Clark very frank and forthcoming in his ideas with a solid knowledge on green building design.

I questioned the possibility of exchanging part of the office block for a vertical farm, combined with an algal biofuel plant in the basement contributing to a potential 24/7 energy supply.

With windows at ground floor level, the biofuel plant could be an excellent showcase for sustainability at work. The tram stop right at the front door could add to the exposure.

The revised feasibility, incorporating the additional design concepts, provided an improved feasibility, but was still challenged by the local energy costs, largely due to the availability of very competitive hydro electrical energy.

The revised design of the Oregon Sustainability Center – SERA Architects

From my very stimulating interaction with Clark and his team two concepts transpired:

Firstly, the role of ***Eco-districts*** in Portland and the immense knowledge base on this subject in their practice.

According to wikepedia - An **ecodistrict** or eco-district is a neologism associating the terms "district" and "eco" as an abbreviation of ecological. It designates urban planning, aiming to integrate objectives of sustainable development and social equity and reduce the ecological footprint of a neighborhood, urban area, or region.

District-scale projects, such as district energy, green streets, smart grid, demand management and resource sharing, are well known. However, the widespread deployment of these strategies has been slow to develop due to a lack of comprehensive policy or implementation frameworks at the municipal level. The Portland Sustainability Institute (PoSI) launched EcoDistricts in 2009 as an initiative to help cities remove these implementation barriers and create an enabling strategy to accelerate neighborhood-scale sustainability. Success requires a comprehensive approach that includes active community participation, assessment, new forms of capital and public policy support.

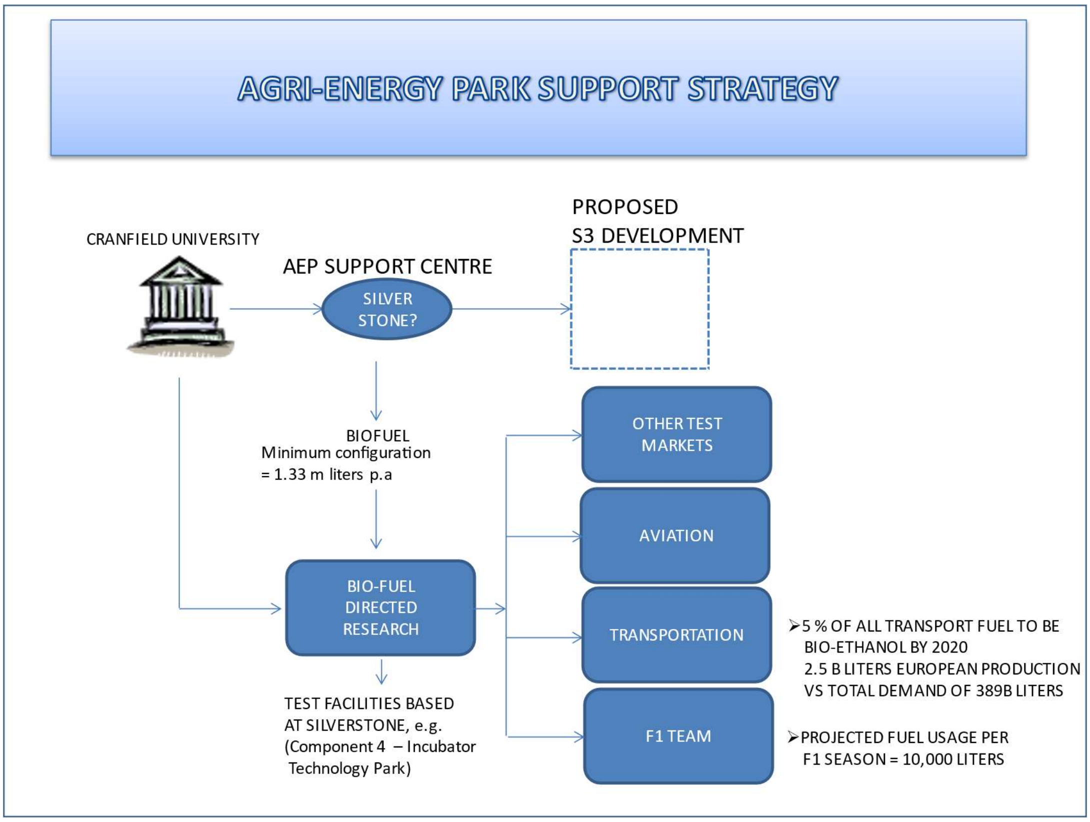
The second concept transpiring from the discussion with Clark, was the Portland/Windhoek twinning concept, previously referred to.

Next on the agenda, the Silverstone Sustainability in Sport project (S3) represented the second of three consulting opportunities with AECOM during 2013.

The opportunity arose from an ownership change at Siverstone, one of the primary race tracks in Formula One, one which Aecom wished to pursue with a development proposal.

Silverstone Circuit is a motor racing circuit in England, near the Northamptonshire villages of Silverstone and Whittlebury. It is the current home of the British Grand Prix, which it first hosted as the 1948 British Grand Prix.

The iconic pits area at Silverstone circuit - Rod Wynne-Powell blog



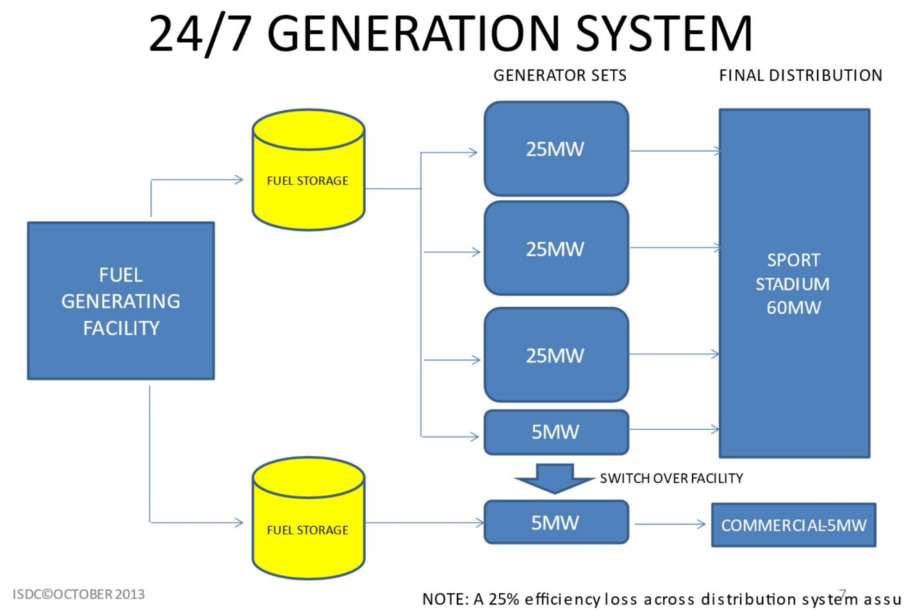
The primary objectives were to develop the proposed S3 Towers, based on the following objectives:

Firstly, leading from the QATAR 22 Concept, to provide a centralised support facility for a world-wide Agri-Energy Park network, each AEP providing an economic driver for each individual site within the proposed Silverstone Sustainability in Sport (S3) global development program;

The potential opportunity of introducing biofuel into the Formula One program, in addition to other application areas, led to the second objective – providing the core facility of a Silverstone wide enabling project within a renewable energy master plan;

The proximity of Cranfield University strongly motivated the third objective - a catalyst for further research and development in renewable energy within the Silverstone development.

The UAE Green Energy development represented the third of the consulting opportunities with AECOM during 2013.



The objective was to establish a ”green” renewable energy site, with central focus on the upgrade of the existing stadium, with projected energy demand requirements for stadium seats as and when events occur, in addition to commercial space on a permanent basis, with parameters as defined below.

STADIUM SEATS - 60,000 seats, at 1 KW per seat, for a time period of 5 hours to keep seat cool, assuming 15 stadium operations p.a.

COMMERCIAL SPACE - 30,000 sq m, Imbedded in stadium design, providing electricity, lighting and cooling/ventilation.

The concept design called for a dual renewable energy system. One for when an event was on, requiring the cooling of the stadium seats and secondly for the commercial operation on a continuous basis. The concept system provided for a bio-fuel generating facility, a set of generator sets and a switch from the stadium system to the stand alone commercial system.

Now for a slight change of environment – going from technology to law. Although I had previously attended CLIFFORD CHANCE Perspectives seminars and as previously introduced and discussed, the 2013 Autumn series represented my first experience of a series. The 2013 Autumn Perspectives commenced on 24th September, running weekly until 10th December.

Covering subjects such as “Securitisation” and “Prospectus Directives”, a broad range of legal and regulatory issues were discussed by a panel (typically 3 – 5) of partners and associates from not only the London office, but also from other Clifford Chance offices, depending on the subject area.

Not being a lawyer, but with a definite interest, I felt somewhat overwhelmed in this first series by the legal jargon. However, I took a definite decision to find a “home” for my primary interest, i.e. sustainability by determining whether a mutual contributory path existed. On the outcome of this exercise I will dedicate some space later.

The TURKEY Conference on MINING FINANCE took place on the 26th and 27th September 2013 at the Lancaster Hotel in London. I was honoured to be invited to participate in a panel of four speakers at the top of the program, each given ten minutes to make a short presentation regarding sustainability and mining.

With the subject "Sustainability Finance in Mining" and only ten minutes at my disposal, inspired by a famous quote by Archbishop Desmond Tutu, referring to the breakdown of Apartheid in South Africa – "*There is only one way to eat an elephant, a bite at a time*", I decided to present the subject as the elephant in the "sustainability finance room". My opening slide (shown below) got the required attention and I carried on explaining the WHY and finally provided the assurance that the solutions are available illustrating the point with some suitable diagrams.

https://5-dimensionz.com.au/2018/09/21/how-do-you-eat-an-elephant/

The conference ended on a positive note, I met some interesting people from the mining world representing many parts of the world.

One further highlight in the year was a visit in mid-October from two old South African friends Ian and Petro Farr. Ian being a specialist in low orbit satellites, aimed at monitoring the environment. We first met when the new South African government in 1994 came under pressure from the US Government to close a research facility, situated in apple orchards about 50 kilometres from Cape Town. This led to 300 highly skilled engineers losing their jobs overnight and with nowhere to go.

My involvement and how I got involved in this sad event is another story for another time.

In any event, Ian being an innovative and very smart mechanical engineer, carved a new career in mining and became CEO of a copper mine in Zambia for a number of years, before retiring in South Africa. Their visit shortly after the Turkey Mining Conference provided an interesting topic for us to chew the fat.

Our final outing for the year was attending CARROLS BY CANDLELIGHT on Christmas eve at the Royal Albert Hall.

The hall was originally supposed to have been called the *Central Hall of Arts and Sciences*, but the name was changed to the *Royal Albert Hall of Arts and Sciences* by Queen Victoria upon laying the Hall's foundation stone in 1867, in memory of her husband, Prince Albert, who had died six years earlier.

The Hall was originally designed with a capacity for 8,000 people and has accommodated as many as 12,000. With present-day health and safety restrictions the maximum permitted capacity is now 5,272 including standing in the Gallery.

https://www.viator.com/en-ZA/tours/London/Grand-Tour-of-Royal-Albert-Hall/d737-33770P1

https://www.time-lapse-systems.co.uk/2012/07/a-year-in-the-life-of-the-royal-albert-hall/

Imagine, singing Carrols alongside more than 5,000 other people! Great opportunity if one is not such a great singer.

Yvonne and I had the privilege of repeating this experience twice.

We certainly recommend a visit to this wonderful facility, completed at a cost of £200,000 in 1871.

Take away for 2013

 # The subjects and conceptual models introduced in this chapter all deserve a re-generation;

 # The eco-districts experience with SERA Architects provided a throw-back to the inter-eco city initiative in Peterborough, previously discussed.

CHAPTER 11

2014 – 2015 - THE END OF THE BEGINNING

Summary

Commencing with an insignificant "event" every time, this chapter describes five different "strings" (journeys) from the event onward, jointly contributing to the completion of the journey.

The five strings are:

 # The Sustainability Community;

 # Clifford Chance;

 # The Strategy CUBE;

 # Sustainability and Law;

 # Aerospace and Climate Change

Logic will get you from A to B. Imagination will take you everywhere

– attributed to Albert Einstein

In 2014 my lifestyle and the manner in which my consulting practice operated had undergone a paradigm shift.

There was little travel away from my desk, other than perhaps a once per week trip to London, mostly to attend a Clifford Chance Perspectives Seminar. Consequently the "travelogue" in describing the overall twenty-year journey is drastically reduced.

There were however a few exceptions, and they contributed to the significant "events" in our journey. We certainly did not recognise the significance at the time, but in hindsight, it is easy to appreciate the subsequent contributions originated by each event, each resulting in a series of modular building blocks, each contributing to a long-term strategy.

The events to be described here, effectively created five parallel "strings" in our journey all to be joined at the SCNiiC launch four years later, in April 2018.

The first string: Sustainability Communities

The ***sustainability community*** concept has been on the radar since the beginning of our journey and had in a way been the reason for the journey. As a matter of fact, it is still in the middle of the radar screen at the time of writing, being January 2021.

At the beginning of the journey, the reader will recall the focus on the Boschendal SDI (sustainable development initiative). Sustainable communities again became part of the discussions with Jacko Koen and the Jimmey Construction group in Namibia during the first half of 2013, eventually resulting, in a detailed conceptual model known as VILLAGE21 . "Village" depicting a defined community, while "21" refers to advanced technology available in the twenty first century, a selection of which contributing to the "industrial symbiosis" and multi-hub achieved in this concept.

The choice of approach is a function of client requirements and of the site, but in all cases a choice is made from the following spectrum of investment finance options: climate finance, green infrastructure, renewable energy, social impact, industrial symbiosis, venture capital and private equity. Project components considered in the concept are: Climate change, biodiversity, infrastructure, housing, industrial parks, water-energy-finance security and social components, aimed at human well-being.

I am not planning to go into further detail on Village21 at the moment – our intention is to produce an essay on the subject and to make it available later.

In subsequent years we came across Sustainable communities being addressed in alternative configurations, such as the Eco-Village, Agri Energy Parks, Agri Industrial Parks, Special Economic Zones - SEZs, Sustainability Eco Zones and SDG model zones.

Through our journey, the Sport Village arrived as a further alternative, underlining the importance of sport in sustainability.

There was unfortunately no opportunity in Namibia to implement the VILLAGE21 concept

However, since 2014, the concept remained at the front of our sustainability think process and at times got co-joined with other models.

Some examples are:

** The **UBEMS - DELIVERY PLATFORM and UBEMS - IMPEADS** systems, the background and development history to be discussed later in this chapter in string five – Aerospace and Climate Change.

UBEMS – UAV based environment management system; and *IMPEADS – Imagery Management, Processing, Exploitation and Dissemination System.*

** The **Sport Village SDI/EPI** Business Plan was realised in March 2015, when the Sport Village was considered, not as an island, but as the core facility of an *eco-precinct implementation (EPI)* connected and networked with other similar communities. The communities jointly create *SDI – Spatial Data Infrastructure.*

Following from this are a number of key issues for further consideration:

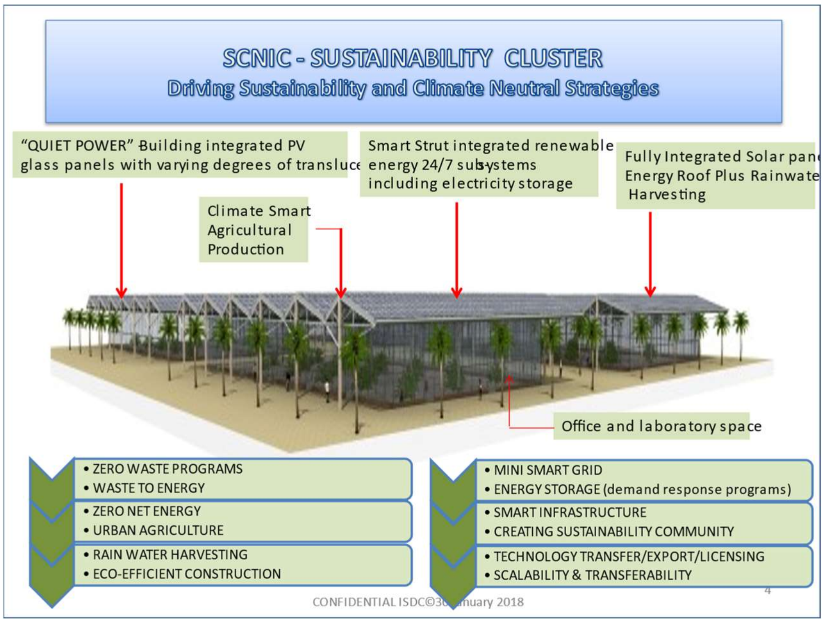
- Translating the needs challenge (such as represented by SDGs) to the community level;
- The economy of scale achieved by the networking of several communities;
- The potential economic drivers resulting from the individual and networked communities respectively;
- The required delivery mechanisms and the delivery framework;
- The potential of the grass roots support at the community level;
- The effect of governmental support policies;
- The potential development of *SEPS – Sustainability Enhancement Partnerships* with private corporates, including potential twinning approaches;
- Availability internationally of training and support programs, primary through NGO (Non-Governmental Organisations) operators;
- The possibility where the Sport Village is delivered as a legacy program in conjunction with major sports events.

** The **AHP GIS MCDA** model, in which case three well-known tools are combined, i.e. *AHP – Analytical Hierarchy Process; GIS – Geographic Information Systems with MCDA – Multi-criteria decision analysis* in order to establish a set of design criteria with relevance to the development opportunity.

** **Drone based models** - Following development of UBEMS during the NATEP program, discussed in more detail a bit later, we became aware of the important contribution of drone technology in the development of rural sustainable communities. An opportunity for further focus arose during participation of a World Bank program in Development Finance, when a short paper was delivered in June 2015 titled – "*Bringing the problem closer to the solution – a tele-medicine based health delivery solution for Sub Sahara Africa countries*"

In October 2019 we produced a desk study on "T*he role geospatial technology in the design of sustainable communities".*

** **Sustainability Cluster**



This integrated configuration serves as the main driver in many sustainability community configurations.

The Sustainability Cluster is a part of the Sustainability Tool and is currently being considered in a new project. There is no doubt that it is capable of being a major contributor to human well-being in rural communities in developing countries.

The second string: CLIFFORD CHANCE

Every product has to have an origin somewhere, sometimes and the same is true for the "Innovation Axis".

On a Tuesday afternoon towards the end of April 2015, Yvonne dropped me at Ascot station for the 15.10 train to Waterloo (approximately 55 minutes), from where the journey would continue on the Jubilee line on the London underground to Canary Wharf (approximately twenty minutes), with me arriving in the foyer of the Clifford Chance building about ten minutes before the registration desk for the seminar opens. The London practice occupies an imposing thirty storey building, situated close to the Canary Wharf underground station.

By now, usually the first to register, my early presence has almost become a joke with the conference team. No one was really interested in my explanation that the next train out of Ascot, thirty minutes later would get me to the destination too late. Certainly unacceptable when considering the cup of coffee beforehand.

I simply enjoyed the outing out of the office, the networking with interesting people in a very prestigious environment, not to forget the coffee and chocolate chip cookies. I always considered myself very privileged to be an invitee.

By April 2015 I had already attended a considerable number of Clifford Chance Perspectives seminars, a body of knowledge that I found very stimulating and educational.

Clifford Chance headquarters, Upper Bank Street, Canary Wharf

I always tried to juxtapose sustainability and law, not always successfully, as the subjects vary considerably, while considering a suitable sustainability finance model based on the seminar subject for the evening.

When Yvonne dropped me that afternoon she asked her normal question - “what is the subject this evening?” like she was going to take me back home if she did not like it, but obviously she was simply showing her interest. However, on this particular afternoon, her good-bye remark was – “enjoy your gallivanting”. As the Oxford dictionary definition is “going around from one place to another in the pursuit of pleasure”, the remark took me totally by surprise. However, I did not respond and while boarding the train, decided to come up with a convincing response.

The seminar subject that evening was “Real Estate” a relatively easy subject on which to write a post seminar note – defining a generic business model with which to translate the seminar content into the generation of further ideas or concepts, with a particular focus on sustainability and climate neutrality.

From the initial post seminar note the idea of the “***Innovation Axis***” developed, effectively a simple methodology to arrive at various deliverables from an initial concept.

I am not sure the result would have been the same if the seminar had an in-depth legal content.

Nevertheless, a day or two later, I could sit my wife down and explain a "typical gallivant" in schematic form. Needless to say, every subsequent drop-off contained the remark - "enjoy your gallivanting". She must have appreciated the diagram very much!

The seminar subject a week later was Infrastructure Finance, allowing again a relatively comfortable post seminar evaluation using the innovation axis.

In subsequent years, the Innovation Axis became a useful addition to the ISDC Sustainability Toolbox.

I had previously expressed my appreciation for being able to attend these Clifford Chance functions. They took place during Spring and Autumn for two to three month periods. I usually attended approximately 25 functions over both seasons, totalling approximately 150 functions over the period 2014 until the end of 2019.

The Spring season in 2020 went virtual following the Covid-19 outbreak and subsequent lock-down, and has remained so. I am still attending the virtual meetings, every Tuesday at 1 pm. No C9, no travel and no networking anymore. The content, however, as good as ever.

I have a record of all the functions attended and without fail met some interesting people. Subsequently a number of important relationships developed.

In this regard I would like to express a special thank you to Clifford Chance partners, James Pay, Christopher Walsh, Michael Dakin and Benjamin Lohr for their time and interest shown in my work.

With regards to general Perspectives networking, two contacts made over this period, contributed to an extension of String 2 in subsequent years.

The first was meeting Professor Ogasha Magasha during the second half of 2015, resulting in the Sustainability and Law String (string 4). The second was meeting with Bruce Garvey in June 2016, discussed in the CUBE string (string 3).

String 3 : The Strategy CUBE

Inspired by the multi-faceted Rubic Cube, the ***"Sustainability Cube"*** conceptualisation was produced as a desk study in June 2014. The Cube provided a multi-dimensional view of a specific problem or opportunity, for which a solution strategy is required, allowing a maximum of six dimensions to be considered.

In most applications however, the Cube is being considered as a three-dimensional matrix.

The initial Sustainability Cube represented:

on dimension 1 - the available knowledge base (such as Intelligent energy, Energy efficiency and the Renewable energy spectrum);

on dimension 2 - sectorial application (such as Transportation, Health and Education with industry partners) and

on dimension 3 - a project dependent view, with parameters such as Investment Partners, Revenue Generators and the Rural Interface amongst others.

With the arrival of the SDGs late in 2015, a selection (if not all) of the seventeen SDGs invariably became one of the typical dimensions in subsequent Cubes.

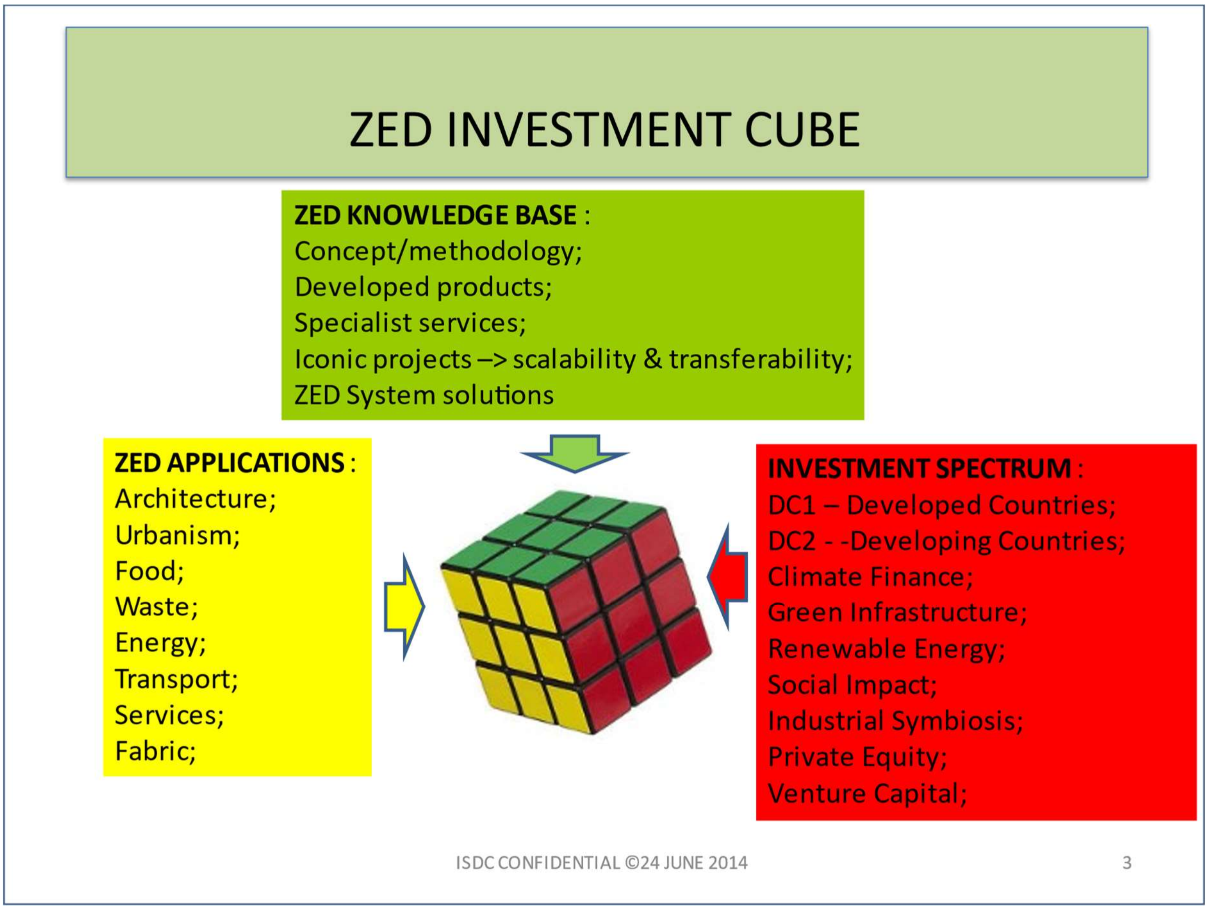
Shortly after the definition of the Sustainability Cube, a request followed from Bill Dunster for a strategic development plan for ZEDFactory. The objective of the exercise was to decide on the best investment strategy and accompanying structure for what was considered overall a comprehensive investment opportunity.

Development of the strategy provided the first application of the Sustainability CUBE, the result delivered in a meeting with Bill at the end of June 2014.

The proposal was presented as the ZED Investment Cube, with "*Applications*", the "*ZED Knowledge Base*" and the "*Investment spectrum*" effectively creating three dimensions.

Each "pixel" of the cube is individually analysed as an investment opportunity.

The resulting Cube is schematically depicted by the following diagram:



This first CUBE application led to it being applied as a strategy planning tool, in over two hundred plus cases in subsequent years. As will be illustrated later, it also has a use as an analysis tool and has been applied several times in morphological analysis, addressing various wicked problems.

Each Cube application is accompanied by a concomitant desk top study, providing a role in most of our consultancy for the period 2014 to early 2021.

It will be appreciated that the material covered is too comprehensive to go into any detail at this stage. How the "Cube story" will be presented, following the completion of this book, is currently being considered.

However, the Cube played an important role in developing a long term friendship with Bruce Garvey, a much appreciated member of the SCNiiC Advisory Group.

We first met over a glass of red wine following a Perspectives meeting on the 2nd June 2016. The subject of the seminar was *Digital vs Human*, presented by Richard Watson, Futurist in Residence, at Imperial College. All attendees kindly received a copy of his book, with the same title, and sub-title "*how we'll live, love, and think in the future*." Following an interesting presentation, I had the additional pleasure of having a further discussion with him on the train back to Waterloo.

However, it turned out that the important contact of the evening was meeting Bruce Garvey.

Bruce, at the time, was about to defend his Ph.D dissertation at Imperial College, where he studied the previous four years at the Dyson School for Design, under the tutelage of Professor Peter Childs.

Bruce introduced me to his dissertation, ***Combining quantitative and qualitative aspects of problem structuring in computational morphological analysis - Its role in mitigating uncertainty in early stage design creativity and innovation and how best to translate it into practice***, introducing me to the exciting concept - morphological analysis (MA). By then we had already produced a number of Cube based strategies and I have always thought that it needed something extra. Our first discussion was sufficient to be convinced that we had that "something extra" and we agreed to meet soon afterwards for further exploration.

The attentive reader will notice the resemblance between the title of my abortive thesis at UCT in 1994 – "the quantification of qualitative issues" and the title of his thesis above. I was pleased to eventually have a solution after twenty-two years!

With Bruce being a member of the IoD – Institute of Directors, we held our first of many meetings there a week or so later. We soon discovered we had a number of things in common, i.e. love for our family, rugby (we both opposed the All Blacks in rugby) and a love for wine. Bruce has a preference for a Provence Rosé, and with me being in full "d'accord", having a bottle after an exhaustive discussion became a standard "item on the agenda" for future meetings.

The IoD headquarters c/o Regent street South and Pall Mall in London

At the first meeting I presented Bruce with a number of Cube strategies and after further discussion, the potential role of the Cube in setting up the dimension variables in a morphological analysis (MA), was becoming clear.

The one strength of MA is in decision-making under uncertainty, Bruce's primary area of research and as indicated in the title of his thesis. Another strength of MA is that it fits synergistically as an analysing tool into the qualitative aspects of sustainability finance.

Following a number of stimulating discussions, I produced an essay "*Potential objectives and opportunities in applying the sustainability cube with MA methodology*", effectively producing a road map for many future consulting assignments.

At the time of our first meeting, I was about six months into my (supposedly) two-year stint as a Visiting Fellow in the School of Law at the University of Essex (to be discussed in String 4 – Sustainability and Law), and I invited Bruce to join me at one of my monthly visits, using the opportunity to introduce morphology in my lecture. Having a coffee with two Law School Professors afterwards and trying to explain the process of determining Cube dimensions, I looked up and noticed two Rubic Cubes on a shelf – obviously placed there for bored clientele to amuse themselves – and borrowing a Cube - voila – problem solved. Bruce and I had a good laugh on the way back about the power of visualisation.

Subsequently, one of the alternative dimensions in using the Cube for strategy formulation is a Digital Transformation Platform dimension, with typical dimension variables chosen from a range of advanced digital technologies, with AR/VR (augmented reality and virtual reality) firmly on the list – all the way from the coffee shop on the Essex campus.

In the subsequent years, Bruce became an appreciated member of the SCNiiC (to be described in string 5 – Aerospace and Climate Change) team, always contributing at all our workshops and meetings.

A big vote of thank you to a valued colleague.

The fourth string: Sustainability Law

"Sustainability law" encompasses a variety of inter-related disciplines, the common theme of which is the constitutions imperative of securing "ecologically sustainable development and use of natural resources while promoting justifiable economic and social development"-

IMBEWE Sustainability Law practice, Johannesburg, South Africa.

The ***sustainability and law*** string commenced with an invite from an old contact, Simon Gall, to a conference held in late November 2014 at the London offices of the Canadian law firm, Fasken Martineau (FM).

A few weeks prior I got involved in a discussion with Hein's think tank group at Aecom concerning an approach received from an agent, purportedly representing the Cameroon government. The proposition offered, suggested a comprehensive involvement by Aecom with regards to the delivery of a sport stadium development in preparation for Cameroon hosting the Africa Cup in 2019. In return for this opportunity Aecom was expected to raise the required project finance. Normally, professional consulting companies such as Aecom are approached by clients having already secured the required funding. Regardless of the unusual nature of the proposition, the Aecom team decided to take a stab at the opportunity.

The request on my desk was to advise on the development of a possible investment solution.

One of the potential solutions in the forefront of my mind at the time of attending the conference at Fasken Martineau in late November, based on the Gabon experience, was to consider collateral based on mining concessions.

The FM practice was totally unknown to me, but when one of the partners, David Smith, while delivering the closing address made a reference to their interest in mining infrastructure, my interest was piqued. So was David's when I approached him after the close and enquired whether FM has any problem with Africa based projects.

We met again a few days later in early December, the first of many meetings during the remainder of 2014 and most of 2015. It transpired in the first meeting that FM could claim extensive experience in the drafting of mining concessions.

After mutually exploring our areas of expertise, we came to the conclusion that the issuing of a Sustainability Investment Bond, with mining concessions as collateral was one route to consider. David further offered a contact with Deutsche Bank (DB) to test the bank's appetite for such an issuance.

Reporting to Aecom, David and I, Hein and his immediate senior Alf Oschaz met on the 8th December with three DB bankers, respectively representing Corporate Finance (middle east and Africa), Professional Practices and Africa Coverage and Advice. The attendees at the meeting representing a broad base of experience and one that should be able to map an immediate strategy.

The DB contingent recently successfully issued a bond for one Billion US dollars in a comparable African country. This bond was based on a sovereign guarantee and they immediately suggested a similar route in Cameroon.

By sheer coincidence I happened to know the background of the development that led to a sovereign guarantee in the referenced African country and expressed a view to the meeting that I am not convinced that the same approach will succeed in the Cameroon case. My further suggestion was that we need to return to the drawing board consulting the Cameroon government directly in addition to checking on the country credit status, before the project could constructively consider the DB "offer" of issuing a sovereign guarantee. No doubt my suggestion and the fact that we could not speak on behalf of the Government considerably reduced the meeting temperature.

It was clear to the project team that the presence of the "agent" whom first approached Aecom, was a sizeable elephant in the room. Solving this problem was a ball in the Aecom court.

In an immediate follow-up with Hein and Alf, I tried very hard to convince Alf of the sensibility of him travelling to Cameroon in order to obtain a Memorandum of Understanding (MoU) from the Government.

In a meeting with David and David Manny, a FM colleague specialising in Infrastructure, I presented an alternative approach i.e. a Sustainability based Financial Master Plan. This was the first time I tabled this approach, which corresponds to the development of a master development plan in the case of urban development, an area that David Manny, Alf and Hein were familiar with. I presented them with a corresponding Fund Raising Model and suggested the need for a MoU with the Cameroon government, a requirement they fully agreed with.

At this point our respective endeavours on this opportunity, effectively split us into two teams:

Alf and Hein finding ways to determine the legitimacy of the agent and whether he was in fact acting on behalf of the government as he claimed; and

David Smith and me, developing a definition of a "Cameroon legacy", where a legacy program was to be anchored by a series of sustainable sport hubs (villages), especially considering the underlying reason for the project. Each sport hub comprising the following major components: Housing, Economic generators and the sport connected connectivity. The design took full cognizance of the "challenge", especially in terms of long-term planning, whereas the immediate challenge is the required financial structure that will ensure long term sustainability. The challenge defined by climate change, sustainability, water-energy-food security and human well-being, are today fully defined by the seventeen United Nations Sustainable Development Goals (SDGs).

Additionally, FM and ISDC commenced work on an outline agreement moving forward with a specific goal of executing a consulting MoU with Aecom. It was obvious that unless Aecom sort out the mystery arrangement with the "agent" we will be wasting our time.

It was clear that we needed to contact the Cameroon Government, before we could go back to Deutsche Bank for further exploration of their suggested solution.

In this regard our endeavours included making use of a FM legal contact in **Yaoundé,** the capital of Cameroon, and two visits to the Cameroon High Commissioner in London to arrange an interview.

Despite a detailed letter (including extensive support documentation from all the parties involved) to High Commissioner Nkwelle Ekaney, fully explaining the background and our interest in the matter (i.e. arranging the finance for Africa Cup in 2019), we got stonewalled each time by his officious aid and never received a reply to the letter.

In preparedness in the event of a response from the Cameroon government, I used the interim waiting period to review the prospectus used by Deutsche Bank with the referenced Africa country, but made no startling discoveries.

Convinced of the establishment of sport villages as part of a legacy program following the Africa 2019 Cup, I also spent time on the relationship between sport and sustainability. In this regard I found impressive input from work done as part of a project named Sustainability Stellenbosch. I made a note to return to this subject at an opportune time and the announcement of the SDGs in late 2015 provided the opportunity to develop a presentation which explained the relationship "SDGs in Sport". Today the presentation has become a guiding component of the Sport Village concept.

The on-going development of the Cameroon legacy and the role of sustainability became of increasing interest to David and some of his colleagues at FM, while at the same time an increased "radio silence" developed with our Aecom friends, while they were sorting out their relationship with the agent and the government.

Suffice to say it eventually transpired that the agent acted purely on his own, without any legal standing and he disappeared from the scene. Aecom eventually got appointed as project managers to the project due to the involvement of a Turkish construction company who arrived in Cameroon with the necessary financial backing.

The relationship with FM continued to develop on the sustainability and law theme and I presented fifteen presentations to the practice during the rest of the year. In addition, the developing relationship included two external interventions - in both cases I involved relevant FM partners, partly for their legal view and partly as part of our sustainability and law exercise:

Firstly, at the EcoBuild Exhibition in London, while visiting the Accenture display on the Circular Economy, I was introduced to Ida Auken, a Danish politician and member of the Folketing for the Social Democrats political party, where she has been a member of parliament since 2007. She served as Minister for the Environment of Denmark from 2011 to 2014. She is an ordained priest in the Church of Denmark.

Ida raised the question of the Danish problem of excessive wind energy and the economics of supplying the excessive energy to other Scandinavian countries. For once I was delighted to get involved with a European based problem and our discussion led to a concept study titled DEWETS - DANISH Excessive Wind Energy Transformation System.

I was quietly chuffed with the acronym as DEWET (without the s) is a well know South African surname. The name of one of the famous generals in the Boer War and also the name of my mentor at the University of Stellenbosch, Gideon de Wet, introducing me to the world of system thinking and system engineering.

The DEWETS concept was defined as "*Deliver a system solution capable of transferring excessive electricity output generated by Danish wind farms into the existing District Heating systems, taking cognizance of supply/demand energy balances whilst producing socio-economic and direct monetary advantage (i.e. lower energy tariffs) for the local communities and the Danish tax payer*".

The DEWETS proposal not only addresses a 2015 challenge pertaining to the Danish renewable energy economy, but is also applicable, with climate related adjustments, to many cities globally.

Incorporated in the concept is a 24/7 Black Box, comprising a combined set of standalone solutions, jointly integrated and addressing the primary and secondary project objectives. The 24/7 black box has principally been developed as part of a solution addressing rural communities in developing countries, but is equally applicable to developed countries.

What is required here is to set an implementation benchmark in a leading environmentally progressive country, where the necessary skillsets exist for a global roll out program.

The second intervention in the developing FM/ISDC relationship occurred when Ruida Pool-Stanvliet contacted me in June 2015 with news about an announcement in South Africa by President Zuma of a ZAR45 million per district municipality being made available for a program of establishing 44 Agri-Parks (APs) at a total of ZAR 1,890 million = $158 million (exchange rate in 2015).

I first made contact with Ruida, in the post Desert Star period, looking for alternative input from DMP on bio-sphere reserves. Although we have never met, we always enjoyed interesting discussions. She participated in our NATEP application, described later in string five.

Ruida, has been a passionate conservationist all her life. She has a Doctoral degree in Natural Sciences of the Ernst-Moritz-Arndt University in Greifswald, Germany. Currently she holds a scientific position with the Western Cape Nature Conservation Board and is based at the Scientific Services section in Stellenbosch, South Africa. Working in landscape conservation, she has been involved with land use management and implementation aspects of the UNESCO MAB Programme for more than 25 years. She is a registered Professional Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP). Since 2014 UNESCO has recognized her on their International Roster of Experts.

I spent time with the FM team on Agri-parks as we recognised the scalability and transferability of the concept to other developing countries. At the time the Cameroon legacy program was still very much in contention.

In addition, I spent time with Ruida considering a potential site outside Stellenbosch. The highly experienced Michael Dakin at Clifford Chance provided a detailed proforma on the potential use of High Yield Bonds on the Stellenbosch project.

The use of Private Public Placement was also considered but Ruida unfortunately experienced a lot of head winds from the local authority in progressing an Agri-park development.

The on-going discussion with FM had progressed considerably on sustainability and law, with me encouraging the two Davids (Smith and Manny) to consider introducing the subject into their practice.

This never happened due to the shock decision made by the FM Canadian headquarters late in 2015 to close the London office. This was disappointing news as we were making excellent progress on developing the parameters of a law and sustainability practice.

David Smith left to become a partner at Druces, a law firm established in 1743 and still operating! We had lunch once after David joined but we lost contact for a while until mid-2019 when I called him for assistance after being contacted by Jacko Koen in mid-2019 with the Ghana housing opportunity.

On 22 September 2015, at a Clifford Chance Perspectives meeting, I met Professor Agasha Mugasha, a Professor in Commercial Law at the University of Essex, based in Colchester.

This was at approximately the same time as the discontinuance in the Sustainability and Law discussion with the two Davids at FM.

Professor Mugasha, originally from Uganda, showed real interest in continuing our discussion once I disclosed my interest in exploring the strong link that I perceived between law and sustainability, in addition to a brief overview on the experience gained in the discussions with Fasken Martineau.

Agasha and I commenced a series of discussions on the subject, meeting for about an hour prior to a Perspectives meeting. This was most convenient for both of us, as we each had more than an hour of travel to Canary Wharf, coming from totally opposite directions. Additionally, the huge foyer space in the Clifford Chance building was definitely far more convenient than meeting in a coffee shop.

One of several foyers at Clifford Chance headquarters in London

In the course of our discussions we arrived at the concept idea – *SULAFI – Sustainability Law and Finance Initiative*.

Towards the end of 2015, Agasha indicated that he would be interested in arranging for me to be appointed as a Visiting Fellow at the School of Law at the University of Essex. Agasha explored this idea with both his Dean and the Vice-Principal. This led to a meeting in December 2015 with me presenting to Agasha and a small working group representing the School and the University. The venue for this meeting was in fact the FM offices in central London. The FM office, offered one floor with several superbly furnished and electronically equipped committee rooms, catering for a range of meetings of different sizes.

To what extent the group were impressed by the FM offices, I don’t know, but on the 29th January 2016, I found myself, a formally appointed Visiting Fellow, on the Colchester campus of the University of Essex for a meeting with the Professor.

Our first stop was a lunch at a hotel, converted from the original homestead on the estate (now the campus), conveniently positioned at the edge of the campus. Once I was registered, he took me on a short tour of the very compact campus, including the library.

Our immediate agenda was to agree on an agenda for the first SULAFI workshop scheduled for 1st February. Most importantly I presented him with a summary for a twelve-lecture series that I had prepared in accordance with previous discussions. These lectures represented the components of a system approach taken from the Qualitative Bankability concept.

QUALITATIVE BANKABILITY – A NEW VISION FOR SDGs, LAW, FINANCE, TECHNOLOGY AND REGULATION INTERFACE

I had put considerable effort into preparing this lecture series and was extremely disappointed when Agasha showed no interest in the subject at all.

University of Essex, Colchester campus

I had a simple arrangement with the Law School, in that I would have one visit per month, with no fees paid except for my travel. The appointment as a Fellow was for a period of two years.

To me the attraction was the opportunity to test the results from my professional consultancy with staff members at the Law School, staff members from other faculties and also with students in the faculty. I would further contribute to a small team that would jointly develop the SULAFI concept.

Without making it a long story, I came to a very early conclusion that the Professor wanted my services for a totally different purpose than for what I signed up for.

I delivered the first lecture on the second visit in February to a group of faculty members. Following the lecture, Agasha sat me down in his office and went into some detail about his personal objectives. It became clear that he was suggesting the use of the SULAFI initiative as a tool for financing an extensive sabbatical, away from any academical commitments, allowing him to complete a book.

It became immediately clear, why I had no response from him regarding the lecture series or why he showed hesitancy when I suggested that I would like to introduce myself to the Dean, something I considered a common courtesy.

I gave him an unsupportive response to the idea of using SULAFI in the manner proposed.

University of Essex: – A view across the lake at the campus

No surprise then that subsequently his whole manner changed significantly. This was particularly manifested in receiving no support in using the available faculty mailing list in forwarding invitations to either faculty members and/or students.

A further red light went on when I discovered a call for papers on the office door next to his. The Conference theme was: "*Safeguarding the planet – meeting the Sustainable Development Goals*" and to be held in conjunction with Writtle University College, on the Colchester campus on April 29th, 2016. Writtle University College is a university college located near Chelmsford, Essex. It was founded in 1893 and obtained University College status in May 2016.

I would have thought that Agasha would have made me aware of this conference, and even encouraged me to participate.

Given the one idea behind the SULAFI initiative was to promote sustainability across the campus, and as the UN Sustainable Goals were core to our overall initiative, I immediately responded to the call and my proposal was accepted.

I based my presentation, with some modification, on the paper already accepted for the Singapore International Week to be held in July – *"Project Aqua: A financing framework for the delivery of global water sustainability".*

By this stage I had made the decision to spend my time on campus making my own contacts. Attending the conference provided the first opportunity when I met a fellow speaker, Diane Holt. I subsequently met with her at the May meeting. Very interesting and experienced in sub-Sahara Africa issues, Diane was at the time a Reader at the Business School, where she subsequently became a Professor. She now holds the Chair in Entrepreneurship at Leeds Business School, University of Leeds. My thanks to her for a stimulating discussion on African supply chains and the challenge of the underbanked across the African continent. She certainly made my disappointing Essex experience worthwhile in one afternoon.

Another contact at the Conference was Professor Karen Hulme, the chair of the session in which I presented my paper. At the end of the session, she expressed her surprise for not knowing about my "status" as a Visiting Fellow at the Law School. Karen joined the School of Law at Essex in 2001, with her particular interests in environmental law, the laws of armed conflict and environmental rights. We certainly made an immediate connection with a number of mutual interests – a thank you to her for making me feel welcome at the School.

I explained to her in a subsequent meeting in June that I accepted the Visiting Fellowship in order to convey to law students some practical experience on sustainability along with my views on the role of law in different circumstances. As a consequence she attended the June meeting with Agasha, fully supporting my quest to deliver the lecture series. The professor took great umbridge to her supporting an issue that he knew about since I first arrived and exploded with an interesting remark – "this initiative is certainly not amongst my top five priorities".

With that I knew our relationship had gone and the July visit became my last, when I made a presentation with Bruce Garvey, Diane Holt, Karen Hulme and a few other faculty members being present, but needless to say, no Agasha!

Shortly after the meeting I received a note from Karen that Agasha cancelled my "sponsorship"- without me receiving any formal notification from either him or the University.

Although, technically, nothing stopped me from continuing the role of a Visiting Fellow. I decided to call it a day. That was a decision I sometimes regret – I should have persisted and created something around the opportunity given.

Despite the disappointing Essex experience, the subject "Sustainability and Law" is still of definite interest on my agenda, and I hope to further explore it in future.

Now, let's roll back our journey to 2014 and continue with the last of the five "strings" commencing in that year.

The Fifth String – Aerospace and Climate Change

Visiting the 5-day Farnborough International Airshow (FIA) in July 2014 and given my "flat tyre" left leg, it became hard work by day five (Friday).

FIA in full swing on Farnborough Airport - AGES

In the early afternoon, I had completed all my targeted visits, across all five exhibition halls, and decided to call it a day while in hall 5.

I clearly remember, that although being exhausted, I was convinced of the potential of applying aerospace technology to produce climate change solutions. Although not having been exposed in this large exhibition to any specific examples, my engineering background assisted me in conceptualising new solutions.

I decided to make my way back to the front entrance through the halls to Hall 1, where, with no logical explanation, I decided to turn left in the last isle, away from the exit, instead of right leading to the exit.

A few yards down the aisle a gentleman was playing with a small quad-rotor UAV, largely to attract attention to his exhibit. My stop resulted in a long discussion and with him finally introducing me to his neighbour exhibitor, being NATEP - ***National Aerospace Technology Exploitation Programme.***

Hosting the exhibit was dr. Tim Ward who provided me with a concise overview on NATEP*:*

NATEP is an Aerospace Growth Partnership initiative led by ADS (Aerospace, Defense, Security and Space) and delivered with the support of Regional Aerospace Alliance organisations in England (Farnborough Aerospace Consortium, Midlands Aerospace Alliance, North West Aerospace Alliance and West of England Aerospace Forum) and in the devolved regions by Invest Northern Ireland, Scottish Enterprise and the Welsh Government.

As well as grant funding, the programme provides high calibre technical and management resource to help companies accelerate the technology development towards market readiness.

It equips companies to win new business with existing customers and to diversify their customer base. It is an industry-led programme. Panels of aerospace industry professionals and technology advisers throughout the English regions, Northern Ireland and Scotland are contributing their time for free to support the projects.

NATEP represents a tremendous opportunity, particularly for small and medium sized companies. By developing a supply chain with a high rate of innovation, rich in new technologies, the UK will be better able to offer the right products and services, at the right time and ahead of competition. This will ensure that market opportunities are exploited, with high value manufacturing work retained in the UK. Innovative product technologies supported by NATEP will find applications on current and future aircraft platforms. New or improved manufacturing process technologies will enhance the productivity and competitiveness of the UK aerospace manufacturing sector as well as finding applications in other industry sectors such as Energy, Automotive or Rail.

The NATEP model of providing grant funding to the aerospace industry is summarised in three stages since 2013:

NATEP 1 funded 112 projects through Advanced Manufacturing Supply Chain Initiative and was a £36.5million programme;

NATEP 2 is an Aerospace Technology Institute (ATI) Programme that funded 35 projects through Innovate UK and was a £13million programme;

NATEP 3 is an ATI programme that will fund approximately 55 projects through InnovateUK and will be in excess of a £20 million programme.

In this success story, Technology Managers, such as Tim Ward, performed an outstanding support function and can be truly proud of what they have achieved.

Tim Ward, with his colleague Alan Maskell, was one of two Technology Managers, associated with the Farnborough Aerospace Consortium (FAC), the local Regional Aerospace Alliance organisation covering South -East England.

Shortly after the air show, I attended, by invitation, an introductory meeting in Farnborough on NATEP grant programs, led by Tim Ward. For me the meeting was sufficiently encouraging to want to do something special. In early September I had the opportunity of delivering a presentation to both NATEP and the FAC – "*Biosphere Reserves and Unmanned Aerial Solutions: A delivery strategy*".

On left, dr. Tim Ward and right - Alan Maskell- registering

The presentation was well received and I was strongly encouraged to move forward on preparing a grant application, with a deadline of March 2015.

Now the real work started where "The sky is not the limit anymore".

I reviewed the approximately 230 FAC member organisations in order to identify suitable members for a potential consortium. Following up on an invitational letter to a selected short list, we ended up with a list of appointments for presentations and detailed discussions.

I would like to mention that both Tim and Alan went way beyond their duty in supporting the exercise, in providing transport to the meetings and participating in the discussions, while providing a definite level of credibility to me as an outsider.

An early breakthroughs in assembling a consortium came with the confirmation of participation from Prof. Jim Scanlan at the University of Southampton, putting their impressive UAV (unmanned aerial vehicles) capabilities behind the consortium.

Professor Andras Sobester was appointed as the leader of the Southampton team. It was interesting that his father was a pilot specialising in providing medical supplies to remote parts of the world. This fact provided Andras with the appropriate spirit for the task ahead and he became an appreciated contributor in the consortium.

Other confirmed participants were 23D SENSING in Oxford, providing Image-based 3D modelling, and the Stellenbosch based BSR Trust led by dr. Ruida Pool Stanvliet, a world renowned specialist on bio-sphere reserves (BSRs). The focus on BSRs provided a generic introduction to a vision of "*geo-information as key to unlocking social challenges of 21st century*"- an earlier essay.

By early November we had arrived at the final product to be submitted as a grant application, proposed as :

"# A *detailed design of a water monitoring system, including remote sensing and visualisation technology, capable of operating over large geographic areas, using UAV support and supported by a geo-information based decision making support system, providing a tool for planners within local authorities to be able to deliver acceptable water utilisation standards, with both urban and rural areas;*

 # A feasibility study for a pilot project covering a geo graphic area in extent of 320,000 hectares;

 # An investment plan, leveraging initial seed capital and guided by achieved results achieved in the feasibility study, that will introduce a fund structure enabling scalability and replicability of the pilot project across the African continent".

Clearly the potential product was in need of a suitable name and it came down to using an acronym:

UBEMS – UAV based environment management system; and

IMPEADS – Imagery Management, Processing, Exploitation and Dissemination System.

Subsequently the project was presented in two parts being UBEMS - DELIVERY PLATFORM and UBEMS - IMPEADS.

What will we do without acronyms in this world?

By early December I submitted a draft proposal to NATEP for Tim and Alan's attention and received a prompt detailed response. Clearly Tim and Alan wanted to make sure we do it correctly and we now had a guidance template on which to prepare the final proposal.

The proposal application document is greatly simplified in that a lengthy questionnaire had to be completed, but the process becomes time consuming with the need for constant coordination between the consortium members.

However, with a bit of sweat we managed to make the March deadline for submission reasonably comfortably.

Now the wait started before the result was announced.

I do not have a record when I was finally contacted by Tim Ward with the news that our proposal was rejected. The main reason given was that NATEP do not want to support UAV developments which was a total surprise to the team at Southampton University and me.

Our proposal suggested that the UBEMS water monitoring solution offered might be able to play a contributory role in restricting the further spread of the ebola virus in future. We obtained intelligence at a later stage that some committee members objected strongly to this statement. One of our subsequent assumptions was that the ebola suggestion is what really sunk the proposal as it was perceived to be very arrogant! I personally had the view point that our delivery model was too Sub Sahara focused, despite the projected job creation in the aerospace industry in the UK.

If any consolation at all, I got the impression that Tim and Alan were more disappointed than the consortium team and this observation will be borne out by the rest of the journey as will be described.

The relationship with the FAC then went through a hiatus period until March 2016 when, still inspired by the theme: "*aerospace – climate change – net zero challenge",* I met with Tim Ward in Ascot.

During this hiatus period, and in parallel with the developments as described in Strings 1 to 4 before, a number of "interventions in the journey", worth mentioning, took place, adding their own contributions later on.

The brief period after submitting the NATEP proposal and while waiting on the result, was usefully used through participation in a World Bank course in Development Finance. The subjects of Donor Finance, Philanthropy and Public Private Partnerships were well covered with a specific focus on developing countries. This challenging course required the submission of an essay on a subject of the participant's choice.

Inspired by the opportunities offered through application of UAV technologies and inspired by the experience gained from our NATEP proposal, I submitted an essay – "*Bringing the problem closer to the solution – a tele-medicine based health delivery solution for Sub-Sahara countries*".

The reader will notice that I am still endeavouring to fill the gap left by potential airship applications.

A few months later, I was pleased to observe a World Bank sponsored project with a similar objective.

In June, I attended a one-day seminar on "*Unravelling the mystery – UAVs* (unmanned aerial vehicles)", held at the RAF Museum in Collindale, North London. No real mysteries were unravelled, other than the main message from the conference described UAV viability as three overlapping circles, being Air Space Regulation, the Market (investment size and economics) and Technology (including sensor capability and platform capability) – a sensible approach to consider.

The conference ended mid-afternoon allowing a walk around the exhibit of well-known names in aviation history.

The museum was officially opened at the Colindale site (originally site of the Hendon airfield during World War II) in north-London on 15 November 1972 by Queen Elizabeth II. The hangars housed 36 aircraft at the opening. Over the years, the collection increased, and aircraft not on display at the Colindale site Hendon were temporarily stored or displayed at smaller local RAF station museums.

RAF museum in Collindale, North London

As of 2010, it had close to 100 aircraft, including the Avro Lancaster S-Sugar, which flew 137 sorties. It also includes the only complete Hawker Typhoon. Added later in 2018, as part of the RAF Centenary exhibitions, were a Westland Sea King helicopter (once flown by Prince William, Duke of Cambridge), a Gnat fast jet trainer from the Red Arrows, and a full-scale mock-up of the F-35 Lightning II stealth fighter.

Part of display at RAF Museum, Collindale, North London

The Lancaster bomber, WWII workhorse, on display

To continue - a further “intervention” during the hiatus period:

On recommendation from Ruida Pool Stanvliet, and with an invitation from a friend of hers, Judy Lin Wong, Yvonne and I attended a function in mid-July in London – the launch of “*The Greater London National Park City*”. This initiative, aimed at getting Greater London to be declared a National Park, was started by Dan Raven Ellison, a national Geographic journalist and ably assisted by a team of volunteers such as Judy – herself an experienced practitioner in biodiversity.

From the word ‘go’ we were hit with some astonishing facts about London:

- ✓ 1,572 sq km in area with 47 per cent green space;
- ✓ home to 3.8 million gardens, 8.3 million trees, 3,000 parks, 300 farms;
- ✓ 13,000 species of wildlife;
- ✓ and the world’s largest urban forest.

Interestingly enough it is also home to 50 + canoe clubs!

We could not help being inspired by Dan’s vision. It turns out that within London – which he describes as a place of ‘hope, opportunity and potential’ – there lies an inexhaustible desire to power a notional park into a real one.

“The National Park City will promote, signpost and celebrate opportunities that already exist in the city. It will help people unlock the capital's natural potential by increasing biodiversity and the quality of its urban fabric. These improvements will in turn improve people's lives,” he said.

The interesting evening certainly brought home to me, amongst others, the importance of *urban forests*. An area where I subsequently spent a considerable time of research, hoping that one day the opportunity might occur to consult on a compelling project.

Following the meeting, I continued receiving regular updates from Judy until on Monday 22 July 2019, London was officially confirmed as the world's first National Park City. Along with the Mayor of London, organizations and individuals signed a **London National Park City Charter** demonstrating their support for making the city greener, healthier, and wilder.

Well done Dan for shaking up London and showing that there is an enormous global opportunity for urban settings to be places with thriving ecosystems and sustained biodiversity.

The last intervention occurred late in July when I came across an invitation for papers to the International Water Week to be held in Singapore in July 2016 , with the magnificent Marina Sands Hotel as the venue.

I first visited Singapore in August 1979 to lead a workshop on Computer Aided Design (at the time, receiving the invitation, I had to consult an atlas to locate Singapore). Subsequent to the workshop I spent several years consulting with the Sime Darby Group. The first task was primarily a restructuring of the Sime Darby IT group in Singapore and also developing a long-term development strategy for Singapore Telecommunications.

I could spend another chapter on my experience in Singapore, the admiration I developed for former prime minister Lee Kwan Yew (generally credited as the Founding Father) and the incredible growth of this small city state over the years. My colleagues in South Africa kind of laughed at me when I returned home after my first visit with a 35 mm. slide presentation (no Power Point then) and declared – "watch this space!" What a success story Singapore turned out to be.

I submitted my paper proposal to the International Water Week in early August, based on consulting work on my desk – *"Project Aqua - A financing framework for the delivery of global water sustainability".*

Marina Sands Hotel in background and Theatres on the Bay in foreground (Fine Art America)

The picture above combines two different eras in my life – the Marina Sands Hotel as the venue of the International Water Week in 2016 and the Theatres on the Bay, the design of which I first saw on the drawing board at the architectural practice in 1996.

The paper summarised and presented six water related case studies in which the real options analysis (ROA) methodology is applied, analysing the key parameters to be considered regarding bankability. The paper was accepted and I started looking forward to another Singapore visit after a considerable period since my last visit in 2000.

Bringing the aerospace hiatus to an end and in preparation for renewed contact with the FAC and specifically with Tim Ward, I initiated in mid-March 2016 a desk study on "*Sustainability and the aerospace industry*". The discovery of some interesting results enabled the creation of the Aerospace Sustainability Cube following which I felt sufficiently prepared to meet shortly afterwards with Tim Ward in Ascot in order to share my vision with him.

We discussed the CSR (corporate social responsibility) of the FAC membership and the potential contribution of member companies in this area. The meeting delivered fourteen key questions, the addressing of each individually effectively constituted a future strategy. Tim offered FAC assistance to develop the strategy and expressed interest in seeing a specific follow-up proposal.

The strategy essentially proposed the unlocking of capital in advanced technology in FAC membership companies, along with the development of a growth strategy in each case, primarily focused on contributing to sustainability and climate neutrality.

In hindsight we had absolutely no idea on the future reach of this discussion, and that it will be taking us forward over the next two years towards the SCNiiC launch on 4th April 2018 and beyond.

We both recognised that we had limited resources to deal with and agreed that the FAC's only contribution will be by contributing some of Tim's time – a gesture I certainly appreciated.

In concluding the discussion of string five, I will briefly discuss a number of highlights in order to cover the subsequent two - year period. Our modus operandi during these two years, was to move forward under an informal FAC umbrella with me providing a continuous stream of output in the form of brief strategy notes and presentations while Tim (supported by Alan Maskell and some members of the FAC executive) contributed as a continuous sounding board. Tim and Alan as experienced technology managers were well positioned for this role and I appreciated their time and highly insightful input.

Summarising the highlights of the two-year period from the re-start strategy meeting in March 2016 until the SCNiiC launch in April 2018:

A visit to the Farnborough International Air show 2016 with an action list focused on UAVs.

Attending two NATEP report back meetings with Tim and Alan – grant recipients were obliged to provide reports from time to time – leading to regular NATEP conferences:

Firstly , in early September 2016 at a conference in Belfast hosted by the Enterprise Northern Ireland regional NATEP group – the Conference held at the Stormont Parliament Buildings; and

The impressive Stormont Parliament building in Belfast, Northern Ireland

Secondly, a FAC review meeting in Basingstoke 20 September 2016 where I briefly met David Barnes the FAC CEO for the first time.

Participating with an ISDC exhibit at the FAC Annual Conference in October 2016

The Burford Bridge Hotel, North Downs – FAC 2016 Conference venue

The Burford Bridge Conference facility

The importance of this event was not so much the participation in the event but in the development of suitable presentation material, aiming at representing the sustainability finance philosophy of our consulting practice.

In order to produce a product focus on our exhibit, and based on a review of previous ISDC consulting, we defined the *5SB model - Smarter Solutions – Smarter Sustainability – Smarter business*.

The model is still a part of our Sustainability Toolbox.

A challenge, was to present the model on a large free- standing poster, whilst proving a compelling (we hoped) summary of our professional offering.

The additional presentation material aimed at introducing ISDC in five stages, with a two-page essay of each stage, answering questions like:

- ✓ WHO ARE WE? – The ISDC Group – Sustainability Finance at your fingertips
- ✓ THE SUSTAINABILITY CHALLENGE – The What, Why and How of sustainability
- ✓ 5SB IN A NUTSHELL – the delivery process
- ✓ 5 SB TRAINING – with a summary of six training courses available
- ✓ STRUCTURED COLLABORATION – The strength of a team – Decision making under uncertainty (a generous input supplied by Bruce Garvey).

Yvonne introduced a Business card raffle, offering a bottle of French Champagne as the prize. It was quite funny and almost embarrassing when Tim Ward won the prize – however, an independent party did the draw!

Yvonne and me proudly displaying ISDC 5 SB poster:

Tim receiving his prize from Yvonne

In the two year period, from the commencement in March 2016 to the SCNiiC-FAC workshop in April 2018, Tim and I conducted twenty two detailed planning meetings, with the aim of developing a suitable growth strategy for FAC membership companies.

Our deliberations produced the concept – **Initiative for Applied Climate Neutrality (IACN)**, defined as *"creating an iconic and unique combination of physical infrastructure and a digital transformation platform that, jointly with a dedicated investment fund, will facilitate, using appropriate assets, the development of growth strategies, focused on climate neutrality and sustainability, for start-up, small and SME level aerospace companies."*

Finding IACN difficult to pronounce, the name was changed in February 2018 to SCNiiC – Sustainability and Climate Neutral Innovation and Integration Centre. The name was subsequently again changed to ***Sustainability and Climate Neutral Impact Investment Consulting*****,** pronounced as "Sea Nick".

Tim made me aware of the Advanced Engineering Exhibition at the National Exhibition Centre (NEC) outside Birmingham on 2/3 November 2016.

The one definite highlight of attending this exhibition was meeting Tim Evans and Chris Vaissiere, the owners of a system development company – e- Stress, based in Bristol.

We have subsequently journeyed together, both of them now appreciated members of the SCNiiC Advisory Committee. Our journey justifies another string in the journey and I will continue describing that string in the next chapter.

The IACN definition led Tim Ward and me to believe that we should aim for a physical delivery of the concept. A concept design was presented to FAC management with chairman Sir Donald Spiers, CEO David Barnes (both experienced former pilots), Tim, Alan and Operations Manager Kim Yeomans present.

I presented a concept proposing the development of a 10,000 square meters facility, in addition to the challenge of finding a suitable site near an airfield, capable of handling UAVs and low-level airborne platforms.

A suggestion from Sir Donald was considering Lasham Airport where a FAC member company, 2EXCEL is located. I remembered meeting the CEO Chris Norton briefly following his presentation at the 2016 Annual Conference the previous year. He presented a detailed presentation on the turn-around progress made at 2EXCEL, a typical MRO providing Maintenance and Repair Operations to client airlines, business aircraft and charter operators.

Chris spent 22 years in the Royal Air Force and was awarded the Distinguished Flying Cross for operations over Kosovo. He commanded No 1(F) Squadron, an operational Harrier squadron, and was awarded the OBE for his 14 years as an operational Harrier pilot.

Lasham Airfield is an aerodrome located 3.6 miles (5.8 km) north-west of Alton in Hampshire, England, in the village of Lasham – 2EXCEL facility in the right foreground -wikipedia

Lasham was built in 1942 and was a RAF Station during the Second World War, many significant operations being flown from it. The RAF ceased operations at Lasham in 1948, but a military aircraft company, continued to fly from the airfield. From 1951 the main activity at Lasham airfield became recreational gliding.

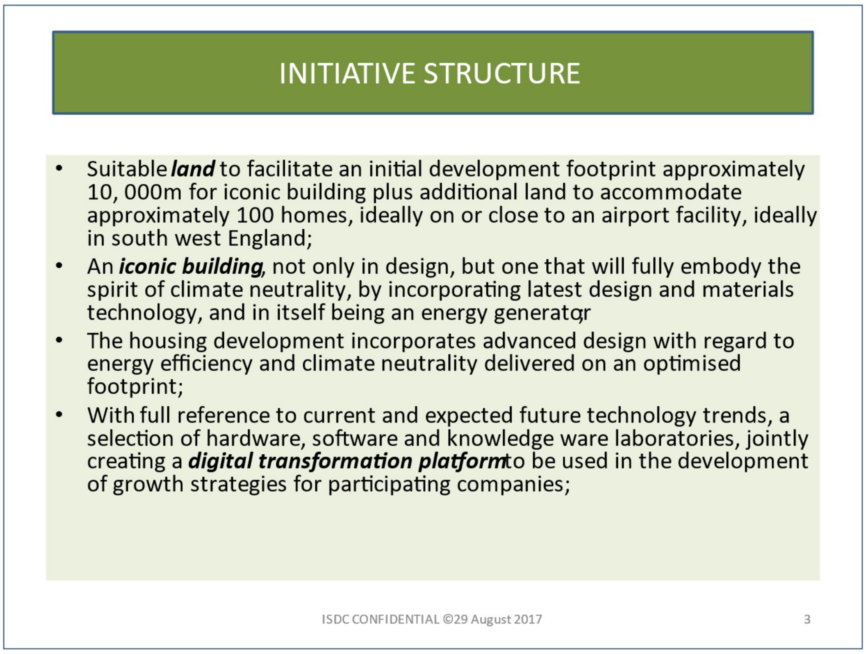
The airfield is now owned by Lasham Gliding Society (LGS). the largest British gliding club, also one of the world's largest. In addition, it is the location for 2Excel Engineering Ltd.

The 2EXCEL facility at Lasham airfield

Tim facilitated a meeting with Chris Norton and the first meeting took place on 30th August 2017.

I used the same presentation as for the FAC management and stated our required space projection of 10,000 square meters upfront in a statement on proposed initiative structure.

Chris expressed his support for an integrated development, combining a new IACN facility with a renewable energy focused re-development of the existing 2EXCEL facility. The redevelopment needed to provide accommodation for visiting staff, waiting while their aircraft is being serviced, a major expense item for 2EXCEL.



Our presentation provided an example of a modular housing concept, designed by Bill Dunster. I always liked the swallows in the left-hand corner – whether departing or arriving?

Following our initial discussion Chris took us on a detailed tour of the facility and Tim and I left with a view that we have taken a major stride towards establishing a home for the IACN concept.

It was now left to Chris to obtain permission from the landowner, being the gliding club, to enter into this proposed re-development.

The 2017 Annual FAC Conference took place on 23 November at the Tylney Hall Hotel in Hampshire.

The Tylney Hall Hotel, venue for 2017 Annual FAC Conference -- The Bossard Quartet

At the Conference I met Jim Heathfield – consultant system engineer and product line manager at the French aerospace giant THALES, also very active in UK aerospace and defence systems. Jim presented an interesting paper -"*Airborne sensing and Intelligence Management Solutions*"- and given my own interest in this area, we had a stimulating discussion afterwards, with an invite to visit him at his office in Bury St Edmunds. This invitation was followed up in early 2018, resulting in Jim as a speaker at the SCNiiC Workshop later in April.

I also met Emily Teesdale, a partner at law practice Abel and Imray, who delivered a clear analysis of the patent application process- "*Practical patents – a guide for Innovative Aerospace businesses*". I mentioned to her our forthcoming workshop and she invited me to contact her with the details.

I was scheduled to present a paper at this conference aimed at promoting the concept of a growth strategy based on unlocked intellectual capital in aerospace companies.

Tim, David Barnes and I met prior to the Conference regarding the structuring of the presentation and the time available. I strongly expressed the view that the content developed by that stage could not justifiably be presented in a fifteen-minute presentation.

I suggested the proposed paper is removed from the program and replaced by a one-day workshop, jointly presented by the FAC and SCNiiC in early 2018 and to my surprise this suggestion was accepted.

The workshop format provided for a much broader approach and allowed us to design the content to not only reflect the work, largely done by Tim and me during the two-year period from March 2016, but also considering SCNiiC's future role.

The workshop format allowed us to introduce eight speakers with ample Question and Answer time during the day, including sufficient time for networking during a buffet lunch.

The workshop now substituted the paper - effectively a report back on two years of planning and developing a strategy "unlocking intellectual capital/growth strategy for aerospace companies with a sustainability/climate neutrality focus".

Workshop title – "Aerospace Technology – Climate Change – Capital Markets"

David Barnes (FAC CEO) wrote an effective and focused letter on the importance of addressing climate change in the aerospace industry, which accompanied the workshop invitation to FAC members.

Although we were not exactly overwhelmed by attendees, we managed to end up with a good number and a lively constructive discussion.

Jim Heathfield, Emily Teesdale, Tim Ward, Tim Evans and Chris Vaissiere, Bruce Garvey, Robert Styles and I made presentations and Sir Donald Spiers, the FAC chairman eloquently presented the closing remarks.

The agenda allowed Robert Styles (to be introduced in the next chapter) and me the opportunity of presenting the physical implementation of the IACN concept and the proposed location at Lasham airport solicited a positive response from the audience.

In the next chapter, we will briefly explore the three-year post-workshop period from April 2018 to March 2021 and pose the question Que Vadis SCNiiC? – where are you (we) going?

CHAPTER 12

2016 – 2020 – POST-SCNiiC LAUNCH

Summary

The penultimate chapter provides a summarised review of all the workshops conducted over the period November 2016 to March 2020, including the SCNiiC-FAC (Farnborough Aerospace Consortium) workshop in April 2018 and beyond. We managed to develop a core body of knowledge focused on various aspects of sustainability and climate neutrality, the highlights of which will be summarised in the final chapter 13.

"To get to the future, you must build it day by day" – Vijay Govindarajan

"We need a new global platform to seize this moment, to get things done, solutions not white papers, action not words" - Bloomberg New Economy Forum

The SCNiiC – FAC workshop in April 2018 effectively presented a report on the initiative that Tim Ward and I started in March 2016 referred to as - "*Unlocking intellectual capital in aerospace companies with a focus on sustainability and climate neutrality*."

It was immediately clear that the post 2018 workshop period will measure the success of the initial framework. Our simple strategy was to continue with small but focused workshops. These workshops originally started after the November 2016 Advanced Engineering Exhibition where I met Tim Evans and Chris Vaissiere .

In this chapter I will provide a short overview of 2018 and then summarise the 2018/2020 SCNiiC related workshops and detailed discussions, involving Bruce Garvey, Tim Evans, Chris Vaissiere and Jim Heathfield. In order to avoid confusion between the two Tims, I will refer to Tim Evans in full or as Jigsaw Structures, when referring to both Tim Evans and Chris Vaissiere.

Firstly, 2018 events unrelated to the workshops:

The IACN (Initiative for Applied Climate Neutrality) project development in conjunction with the private company, 2EXCEL, based at Lasham airport. The initiative had been introduced in the previous chapter and continued after the SCNiiC-FAC workshop in April. In the process of assembling a suitable development team, Robert Styles and I visited the site and met with Chris Norton.

Robert was the UK based CEO of the Spanish renewable energy company Norvento. Being primarily a supplier of wind turbines, they have recently completed their Spanish headquarters as a net zero design, using a combination of renewable energies. They are a pro-active operation and I felt they had the capability to successfully address the renewable energy aspects of the proposed Lasham development. The visit would give Robert and Norvento a measure of the scope of the task. Indeed, I received a detailed report from them shortly after the visit – one box ticked.

Robert was fairly familiar with Bill Dunster and they had no objection, working with him being the architect. Whether the reverse was applicable, I was not sure of. My decision was driven by the fact that Norvento was willing to finance their entire subcontract, whereas Zedfactory would be fee based from the onset. The Zedfactory PV roof was an important component of their contribution, confirmed by Bill during a site visit later in the year.

By now I was pleased that the technology components, required for the development, were in place except that we still not had a single drawing of the existing structure. Chris Norton kept indicating that they had a complete set of drawings and I in turn made it clear that I am not going to spend funds to redraw the 2EXCEL core facilities, which include offices, two large hangars and the additional support buildings. To make matters difficult, Chris had now delegated his position to a new general manager, Marko Halla from Finland, who kept promising to do something about it "as soon as I get a chance".

The final step was to get the local authorities on side and in this regard I called on the FAC for their facilitation. On the 9th July I met with FAC top management (sir Donald Spiers and Kim Yeomans) and Robert Watson, leading Business Growth at the Hampshire City Council to formally introduce the proposed development while soliciting advanced comments from the Council. While Robert was highly supportive, he also informed us that he was on his way out, leaving the council to take on the challenging position as director of the Marine Business Technology Centre in Plymouth, where subsequently, has been very successful. He offered to introduce us to someone senior in the planning department, which he did.

The 2018 Farnborough International Air (FIA) Show came next on the agenda, and as active MRO (Maintenance, Repair and Operations), is an important event for 2EXCEL. My own visit to FIA 2018 was highly productive with material obtained for 24 aerospace/sustainability essays and/or concept designs in support of the IACN project. The intention was for these essays to guide future aerospace focused climate change projects.

Bruce and I were invited to visit the 2EXCEL hospitality suite. There we had an extensive discussion with the new General Manager, Marko Halla, again reminding him about the need for drawings. The comfortable air-conditioned environment of the suite was an ideal opportunity to explain and review with Marko the importance of completing an investment proposal before any funds will be flowing.

Rob Watson kept his promise and on 28 August Bruce and I met Dan Grindley, responsible for Economic Development at the Hampshire Council at Alton railway station for another Lasham site visit and for a specialist planning assessment.

For Dan's benefit, as this was his first introduction to the proposed project, I had prepared a full presentation. The delivery of the presentation proceeded smoothly, despite Chris and Marko Halla having heard it before - or so I thought. Suddenly, as if awakened from a deep sleep Marko jumped up and declared "*there is no way we can support this development. Firstly, we do not have space on site for a 10,000 square meter development and secondly, we do not like the potential "security risk" between our staff and the IACN staff*". Too late reminding him that the footprint requirement was declared in line 1 of the very first presentation and the security issue was never raised before.

In my career as a consulting engineer, I certainly had my share of clients suddenly changing tack, but this quite frankly was an absolute insult, especially in front of an important official such as Dan Grindley that took some time to set up.

Ambrose Pierce once said "*Speak when you are angry and you will make the best speech you will ever regret.*"

Hence, my best first action was to cut the power on the presentation, my second action was to apologise to Dan Grindley for wasting his time and thirdly I declared "Chris and Marko, a great shame that you could not have told us this before".

We immediately took leave, Bruce and I then treated ourselves to a good lunch in a pub in Alton, while Dan decided to go back to his office.

Honestly, not desiring a depressing moment of review, that meeting represents one of the low points of my professional career. The project was aimed at assisting a small struggling aerospace company in line with Tim Ward and my original objective while unlocking intellectual capital and providing a climate change focus through the IACN project. A huge number of man-hours had already been expended by many supportive professionals and all we received was a nasty rejection.

My only explanation to Bruce over lunch, was that Marko, a new man in a demanding position, under a lot of pressure, simply could not face the additional complications from us and the IACN project, but did not have the courage to speak out. I am not convinced that he even discussed this with Chris, as Chris had quite a surprised look on his face with Marko's "declaration" and experienced pilots do not very often get surprised looks on their faces!

Subsequently, our one option would have been to obtain use of land adjacent to 2EXCEL, belonging to the Gliding Club, for the design and development of a bespoke development. In fact, we designed an octagonal building, with a central core, capable of expanding over time along each of the octagonal arms. The relative remote position and difficult access to the site, something that always bothered me, led to a decision to can the project. In hindsight we were fortunate, because we could have got stuck in development eighteen months later with the subsequent outbreak of Covid-19. The steel beam was still in place!

The 2EXCEL experience at Lasham, caused us to seriously re-consider the physical IACN model and to replace it with the "*structured collaboration*" approach, which we are now doing. In this model each specialised knowledge contributor remains at his own facility, allowing modern communications technology to play their role.

In hindsight this implies a thank you to Marko!

The other important events and highlights in 2018 were:

Attending on 24 October 2018 – Gibraltar International Fintech Conference at Queen Elizabeth II Conference Center in Westminster – my first proper introduction to crypto currencies and the origin of a path that led to our design of the financial instrument, "*SDG Crypto Basket*", in 2020.

Not knowing what to expect from the Gibraltar jurisdiction, this turned out to be a highly stimulating conference, supported by informative exhibits, providing useful material for the newly introduced to the subject.

The state of the art was further advanced than I realised, however it was clear that it still had a long way to go. This was particularly relevant to crypto regulation in various jurisdictions globally.

I was reminded of the anonymous quote – "*In God we trust; all others must bring more data*".

The key question was to determine how the SCNiiC ecosystem had to interface with this opportunity. In order to find direction, a few days later I found myself, totally absorbed in a book by Andrew Romans – "*Masters of Blockchain & Initial Coin Offerings (ICOs)*".

My first introduction to blockchain was the bestselling "*Blockchain Revolution*" by Don Tapscott and his son Alex two years earlier, and subsequently in early 2018 – *The Truth Machine* – by Michael Casey and Paul Vigna. However, I found that Romans's book took a practical hard look at ICOs from an investor's viewpoint, as to be expected from a hardnosed venture capitalist.

Now there are virtually hundreds of offerings on all aspects of blockchain and cryptocurrencies available. There were aspects of crypto currencies that reminded me of our philanthropic bond all those years ago and not for the first time, I was impressed by the role of technology (in this case blockchain) in disrupting the norm.

Using the CUBE as a strategy development tool, we were able to propose the *ICO Climate Neutral SCNiiC Coin* by end October 2018, using the SDGs as one of the reference frameworks in this particular CUBE. Having developed a variety of sustainability focused financial instruments over preceding years, a range of options became available for consideration.

It would, however, take another eighteen months and many workshop discussions before we moved closer to a potential implementation during the Ghana Housing Project.

Given my understanding of the important role of regulation, developed through those many Clifford Chance Perspectives seminars, it was clear that the ICO solution operated in a totally unregulated environment. This worried me and it was not long before we saw the start of, and what unfortunately became a flood of ICO scams, throwing an immediate shadow over the credibility of the crypto currency market.

The onward and on-going crypto road is an interesting "event" to be following and has become integral in our SCNiiC strategic thinking, as will be indicated later.

Following the scandalous ICOs, the next logical step in the crypto currency evolution was the beginning of the security token offering (STO) and the concept of tokenised assets. Security tokens are defined as "*any blockchain-based representation of value that is subject to regulation under security laws*". In other words, they represent ownership in a real-world asset, whether equity, debt or real estate.

It goes further.

Consider Concept System Architecture today one of our professional services. As each deliverable is a form of intellectual property it hence becomes tokenizable (as possibly a STO), from where an appropriate investment could be structured.

The three-year period since the Gibraltar Conference is well summarised by Forbes magazine predicting at the end of 2018 that 2019 will be the year of tokenized securities, where 2017 was the year of the utility token (ICOs), while 2018 was the year realising the mistake of the utility token.

Now for the latest development, the *Fractional Non-Fungible Token (F-NFT)* is stepping forward with Cointelegraph, in an article on 18 March 2021, declaring:

"*Non-fungible tokens and crypto art have taken the industry by storm in 2021 and a number of projects aim to fractionalize pieces of NFTs to give collectors' partial ownership rights.*

Projects that break apart, or fractionalize, non-fungible tokens are gaining interest, following a number of ground-breaking sales that are beyond the reach of most investors.

With pieces such as Beeple's "Everydays: The First 5000 Days" (Digital world of art by Mike Winkelmann) fetching a record-breaking $70 million, not everyone has pockets deep enough to bid on such extravagances. The buyer, known by the handle "MetaKovan", purchased the piece for an NFT fund."

How this potentially applies to sustainability and climate neutrality, we will have to wait and see. In the meantime we will continue and complete the story of our journey.

The Jigsaw Structures string - In order to introduce Jigsaw Structures properly into this 2018/20 overview, we commence this aspect of the journey at the 2016 Advanced Engineering Exhibition, held at the National Exhibition Centre just outside Birmingham. Tim and Chris had the strut on display, at the time presenting a solution looking for a problem. It had originally been developed based on a wing box strut used in Airbus commercial aircraft.

Our first mini-workshop took place at their office in Bristol in early December 2016. As expected, we explored the unlocking of the intellectual capital theme, and discussed a likely growth strategy for their company, called e-Stress, later to be changed to Jigsaw Structures.

At this first meeting, the CUBE again contributed as a strategy planning tool, showing in the order of 1,700 potential applications for the products of the company. An external consultant was already involved with regards a suitable strategy for the wind turbine blade, being one of the e-Stress products. Consequently, our workshop focus was on potential strut applications, one of which was the use of the strut in constructing a quad-copter. This led to further research on potential applications and arranging a visit to the Bristol Robotics Laboratory .

A further workshop in Bristol followed in early February 2017. This workshop was then extended with a visit to the Bristol Robotics Laboratory, from where to obtain expert advice:

The **Bristol Robotics Laboratory** (**BRL**), established in 2004, is the largest academic centre for multi-disciplinary robotics research in the UK. It is the result of a collaboration between the University of Bristol and the University of the West of England in Bristol and is situated on UWE's Frenchay Campus. An internationally recognised Centre of Excellence in Robotics, the Bristol Robotics Laboratory covers an area of over 4,600 sq. metres (50,000 sq. feet). The Laboratory is currently involved in interdisciplinary research projects addressing key areas of robot capabilities and applications including human-robot interaction, unmanned aerial vehicles, driverless cars, swarming behaviour, non-linear control, machine vision and soft robotics.

The visit to the Bristol Robotics Laboratory and observing the applied research cooperation taking place, contributed greatly to developing further ideas that led to the IACN (Initiative for Applied Climate Neutrality) concept as described in the previous chapter.

Our next step in developing a strut strategy was a visit to Foster + Partners, world leading architects. We were calling for expert comments from Roger Ridsdill-Smith, with whom I previously consulted on the MVCS (Modular Volumetric Construction System) at Arup, described in chapter 2.

Roger was now a partner at Forster + Partners and Head of Structural Engineering. He had joined the practice in 2011, to establish a structural engineering group, bringing integrated engineering design to all the practice's projects. The visit offered comments on issues we were already familiar with, except for one surprise when a colleague of Rodger, pulled a long bamboo "strut" from a shelf in the display area where our meeting took place. While our discussion was previously focused on complex composite materials, this alternative choice of material suddenly brought a totally new view into the discussion.

I was reminded of many construction sites in Hong Kong and Singapore using bamboo in the support scaffolding. Subsequent to the meeting Tim Evans bought a selection of bamboo products to experiment with. In fact, the potential use of bamboo has recently been introduced in a project currently under evaluation.

A typical bamboo construction scaffolding in Hong Kong

In late April I had the first opportunity to discuss with Jigsaw Structures the practical implications of the IACN approach, when we explored the Strut and the Blade in the proposed applied research environment. Being based in Bristol, they pointed out one distinct problem, i.e. the difficulty in having to have a staff member away from "headquarters" for long periods of time, especially for a small company. That objection pointed to the solution of introducing a delegated party on site, representing the product, and performing the required research against an agreed specification.

In the meantime, Jigsaw introduced a potential strut-based project in France – providing structural support for a PV cover on water canals, simultaneously serving as a source of electricity for required water pumps.

By adding battery storage within the strut, enhanced cooling of attached PV panels became possible, increasing panel efficiency while serving as an additional source of income.

It had become clear that innovative design, based on an existing product, could quickly lead to a new solution or sets of solutions. The integration of technology (strut, battery technology and GAV (generic added-value technologies) in addition to existing strategy tools (CUBE and Innovation Axis) served as the drivers to make this possible.

Our next workshop in early June took place at Chris's home in Nailsea outside BRISTOL. Looking at my notes, that was the day the "strut" became the "smart strut" with the introduction of an imbedded microprocessor. No need to explain how this excellent example of GAV technology, had the potential to immediately add immense value to the basic product and broadened the potential list of applications.

The energy generated in the workshop in Nailsea on that day, will certainly remain with me, as one of those pleasant moments when the collaborative effort of a workshop, produces an amplified result far outweighing the input.

An essay produced shortly afterwards – "*The smart structural battery and the global climate neutrality challenge"* – underlines the point.

To me, these workshops conducted with Jigsaw Structures, provided an excellent case study illustrating the process of unlocking of intellectual capital, to then be accompanied by a growth strategy.

Autonomous robotic garden driving itself in search of sun

Our workshop discussions led to the consideration of “green robots”, as illustrated in the picture above, showing a “fun” example of the integration of digital and physical infrastructure.

In a follow-up workshop (the Plan B workshop) held again in Nailsea, the value of the introduction of digital applications in our strategic thinking was accentuated. The smart strut was now enabling broader thinking and the introduction of the subject of digital twinning.

“*A digital twin uses data from sensors installed on physical objects to represent their near real-time status, working condition or position. A further definition – a digital twin can be defined, fundamentally, as an evolving digital profile of the historical and current behaviour of a physical object or process that helps optimise business performance.”*

My use of “Plan B” originates from Lim Soon Hock, a colleague during my time at Sime Darby in Singapore in the late 1970’s (mentioned in previous chapter). Soon Hock in later years became highly respected in IT circles in South East Asia and one of a few people Bill Gates consulted before Microsoft decided to enter the market in China. Meeting Soon Hock again years later in Singapore, he told me that he was about to start a venture capital company, to be called PLAN B – “*because Plan B is the plan that always works”!*

The next workshop took place in early August 2017 in Ascot and this was the first occasion that Bruce joined the workshop group of Tim, Chris and me. It was pleasing to observe how his presence positively contributed to the dynamic of the group. I am grateful to be able to say that it has remained unchanged ever since.

Important items from the workshop agenda:

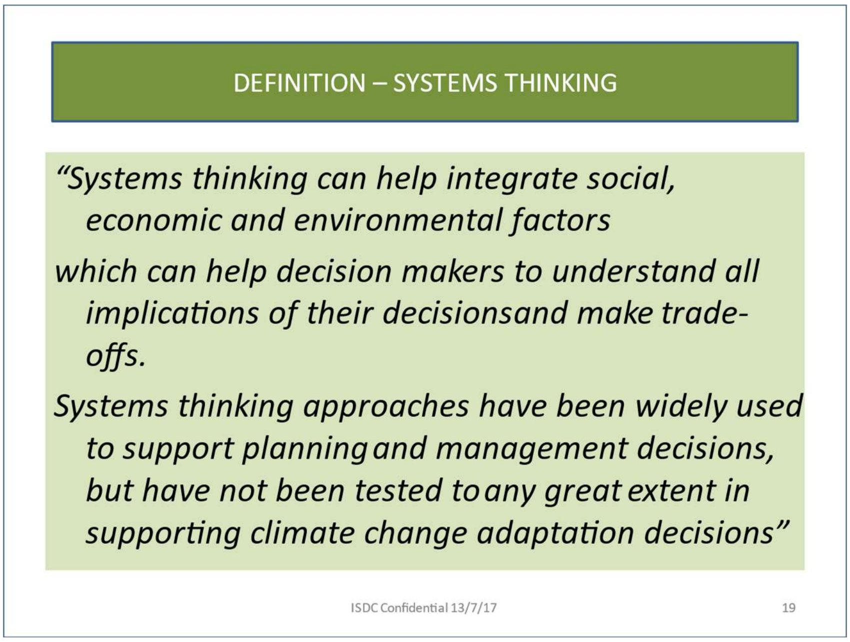
The introduction of a “*smart infrastructure generic multilayer investment model*”;

Review of the IACN – Initiative for Applied Climate Neutrality;

A discussion on the importance of System Thinking, briefly defined in diagram below:

The last two lines serve as an important indicator for the future direction and has subsequently become part of the SCNiiC core focus.

By now a decision in principle had been made to further promote the smart strut by participating in an InnovateUK sponsored project. Tim and I met in mid-August with Ian Brooks, Senior Lecturer in Sustainable IT Department, Faculty of Environment and Technology (FET) at the University of Western England (UWE) in Bristol. One of our primary objectives, other than promoting the Smart Strut, was to invite him to become the required “named advisor” in the proposed InnovateUK bid.



Ian is an experienced management consultant and we had a stimulating discussion, primarily on the promotion of the Smart Strut.

Our bid failed, apparently because we could not name a compelling “killer” application, despite providing a list of potential applications. Tim Ward, a qualified InnovateUK judge, revised our application beforehand, and gave us a thumbs up, but unfortunately not enough to get us over the line.

In a critical examination, I had subsequently pondered whether the introduction of a detailed “growth strategy” and the concept “decision making under uncertainty” did not inhibit the application rather than enhanced it? In other words, the proposal became too comprehensive.

However, preparing the bid served as an excellent platform to improve intra-group communications and stood us in good stead subsequently. I am also pleased to mention that Jigsaw Structures participated in a number of successful grant applications subsequently.

Shortly before our late September workshop in Bristol, a mid-week visit to the Camberley shopping centre prior to a movie, inspired a further potential application for the Smart Strut.

Camberley’s “The Square” shopping mall indicating potential for strut application in design

The experience rekindled memories of the Bugis Junction precinct development in Singapore, where a number of streets in the precinct were covered with glass panels, effectively creating an atrium, seamlessly integrating all the existing shops.

Bugis Junction was completed in July 1995, successfully integrating a mixed development comprising a retail mall, integrated with an office tower and the InterContinental Singapore Hotel. The development also comprised 3 blocks of preserved pre-war shophouses incorporated into the mall's development. Upon completion, it was the first glass covered shopping mall in Singapore linking the three streets - Bugis Street, Malay Street and Hylam Street.

As PV (solar panels) technology was not available as a solution at that time, glass was used in the atrium cover. However, subsequently, in a press release dated May 2015, solar energy firm REC, announced covering a roof area of about 1,000 square metres.

Read more at https://www.todayonline.com/singapore/bugis-junction-installs-1000sqm-solar-panels

A “street scene” at Bugis Junction in Singapore – Christopher o’Grady – Architectural photographer

A few days after our movie visit in Camberley, I walked and measured all the outdoor areas of the overall shopping precinct to obtain sufficient input to develop a potential feasibility study for the development of a covered area.

Two street scenes in the Camberley shopping precinct

Being regular visitors to our neighbouring village, Windsor, I soon realised that the main shopping area, Peascod Street, offered a similar "precinct challenge" as the one in Camberley. A further opportunity was also identified at the new and upmarket Lexicon shopping centre in Bracknell.

The question being addressed is –"*what is the economic value to be gained as a result of covering open walkways between shops?"*

Addressing the question led to the completion of a concept feasibility study incorporating two desktop studies – "*Mini-eco-districts*" and "*CPEEP- City Precinct Economics Enhancement Program*". In the process of producing this work, the response of a street fruit vendor in Peascod Street stayed with me, when I asked him about a permanent cover over the street – "*Hi Gov, wonderful idea, one that will change my life. I will be able to work and sell my fruit and veg every day of the year".*

A similar positive response received from bread/cake vendors (informal patisserie) normally operating from outside stalls. Such a roof cover will also allow restaurants and coffee shops to operate outside tables all year.

These responses, my dear reader, is at the core of sustainability thinking. Finding a solution to finance the solution, in my modest opinion, constitutes sustainability finance. The correct application of which, could lead to impactful socio-economic development. Or simply put, improving people's lives and human well-being.

The workshop in Bristol on 28th September, focused on these desktop studies, and addressed the engineering challenges, installation practicalities (such as variation in surrounding building heights) and the inevitable politics (local authorities need to be convinced). We are still searching for an entrepreneurial developer to pick up this ball. Unfortunately, one does not find the innovative thinking that is so prevalent in Singapore, everywhere.

In the period between workshops, Bruce received a notification about participation in an Early Warning Systems Conference, to be held at Imperial College in March 2018. After some careful investigation, including a discussion with Tim Ward, on the subject *"the role of UAV's in early warning systems*", we submitted our intent to participate with the title – *"Integrating Aerospace Technology with Early Warning Systems".* The paper was accepted and I later delivered it at the Conference.

After meeting Hamish Watson, CEO of Cambridge-based Polysolar in London in early August, we scheduled a workshop for 25th October. Polysolar is a successful business specialising in PV building facades, based on their own photovoltaic material manufactured under license in Taiwan. We signed a non-disclosure and confidentiality agreement (NDA) and Polysolar joined the consortium that applied for the InnovateUK development grant, based on the Smart Strut, previously mentioned.

The October workshop took place at the Polysolar London offices on the 39th floor of the One Canada Square tower in Canary Wharf and was attended by all members of the consortium.

The workshop proceeded smoothly with me presenting "mini-Ecodistricts" to the consortium members. Bruce then proceeded with his presentation on "The role of morphological analysis in strategy planning", when halfway through his presentation the lights suddenly went out. Hamish suddenly remembered that there was a time limit on the use of the conference room.

Our only option was to continue in the public canteen, obviously totally unsuitable for a workshop.

Not much of a workshop but at least we had the benefit of all the pre-workshop material. We unfortunately never gave Jigsaw Structures a turn for their presentation. I felt empathy for our colleagues that had to travel all the way from Bristol, but hopefully the view from the 39th floor somewhat compensated.

One memory of the workshop was the tabling of an explanation for the SMART acronym being– Sustainable-Measurable-Achievable-Rewarding (ROI)-Time (project term).

One Canada Square towering above neighbours in Canary Wharf London

Our next "workshop" took place at the Advanced Engineering Exhibition in early November 2017, again taking place at the NEC in Birmingham. One of the objectives was for me to meet a client of Jigsaw Structures – dr. Sarah Nicolls, in order to discuss potential strategies for the funding of the development of a vertical grand piano, to be called The Future Piano.

Sarah, an accomplished composer, musician and concert pianist, obtained her Ph.D at the School of Arts, Brunel University in July 2010 with her dissertation– "*Interacting with the Piano Absorbing technology into piano technique and collaborative composition: the creation of performance environments, pieces and a piano."*

The vision set by Sarah for the 'Future Piano' was not insignificant: "*replace the traditional cast iron frame & underlying timber framework with an assemblage of materials that reduces the weight of a typical grand piano by over a half."*

In short, design a portable acoustic grand with similar acoustic qualities!

The innovative Jigsaw-Strut product, in combination with the proposed radical frame re-design offered an opportunity to meet the "Future Piano" challenges, in particular the management of thermal mismatch between the metallic strings and the supporting composite frame. The Strut exploits an elegant and simple design assembly concept, giving it distinct pricing and technical advantages over both conventional all-metallic and advanced all-composite struts.

It was expected that in order to meet Sarah's expectations, Jigsaw Structures's skills will be well tested. The building of a full prototype of the Future Piano is currently in progress, but the considerable design achievements are subject to a patent application and cannot be expanded upon.

One memory from our discussion that day was that Sarah was clear in her vision of what she was aiming for. Given the "smart" within the smart strut, she was also clear that she did not want a digital piano. However, everyone at the mini-workshop agreed that the programmability within a Grand equivalent will be a definite USP when combined with the sound quality of the Future Piano.

The Future Piano

By end November the Springbok rugby team was on their autumn tour in Europe and scheduled to play Wales on Saturday 2 December 2017 in Cardiff. Tim Evans very kindly obtained tickets for him and Chris, Yvonne and me. It was obvious that we will use the opportunity of being close to Cardiff, to have a further workshop. Hence Yvonne and I travelled to Bristol on Friday morning before the test-match, and checked in at the Double Tree Hilton in Bristol, where I met with Tim and Chris in the afternoon for an extensive discussion.

Our discussion was concentrated on the memo, previously issued – "*The Smart Strut – The Way Forward"* in which we explored several potential applications. We also reviewed the agenda for the forthcoming workshop with the FAC, discussed at the end of the previous chapter. It was important to us that the Smart Strut specifically and Jigsaw Structures generally, should enjoy their moment in the sun at the forthcoming workshop.

Yvonne and I met Tim and Chris (both already on the train) at Temple Meads station on the Saturday morning and together we travelled to Cardiff. My deal with Tim, as payment for our tickets, was to supply him with as much beer as required before the game, but his rate of consumption turned out to be somewhat disappointing. This despite the fact that the Wales supporter jersey that he was wearing has a big BRAINS logo across the front, the name of the sponsor, a leading brewer in that part of the world. For us the fun to be dressed in our Springbok supporter outfits, and again experiencing the wonderful, almost emotional, ambiance during the singing of the National Anthems. History will show that Wales won 24-22, surviving a remarkable comeback from South Africa. That was a nail biter to be remembered for ever, resulting in a Wales victory that Tim regularly reminds me of. This is despite me pointing out that the one Wales try came from an off-side position (we were obviously perfectly aligned to see what the ref did not) and that the disallowed South African try, being in front of us, was a try! Unfortunately, the referee did not ask for my opinion.

The score board had the final say and that was that. For sure the one workshop that will be remembered!

Moving into 2018/19, what became the workshop years, the primary aim was to effectively build a robust knowledge base around the core subjects. This knowledge base results from one of the deliverables of a successful workshop i.e. the detailed post-workshop review when back at the drawing board.

I will now summarise, from January 2018 to January 2020, the twelve workshops in conjunction with THALES, the global aerospace and defence conglomerate. All of which greatly contributed to the enhancement of the SCNiiC Knowledge base and future strategy.

#1 The first 2018 Thales workshop was with Jim Heathfield, in follow-up to our discussion at the FAC Annual Conference at the end of 2017. As previously mentioned, Jim, a Cambridge masters in mechanical engineering, is a Product manager within the Thales group. Specialising in intelligent sensors and data acquisition on airborne systems, his group is based in Bury St Edmunds, one of many Thales locations, situated approximately 32 miles from Cambridge. However, the overall train trip from Ascot is several hours longer but usually provided ample time for reading and final preparation.

This workshop was very much an introductory meeting, but Jim showed great interest in the application of airborne systems applied to the environment generally and bio-sphere reserves in particular. We explored how the SCNiiC consultancy could work in conjunction with a global Thales. We came to the conclusion that Jim's group in Bury St Edmunds should be considered similar to a small medium enterprise (SME), offering the same opportunity for the unlocking of intellectual capital with an accompanying growth strategy as any other SME. The only difference is "big brother's" potential availability when it could make a real difference. This is referred to as the P3 factor within Thales and we conducted eleven more workshops until 15th January 2020, developing the P3 factor with reference to a number of selected themes and potential pilot projects.

The P3 factor encompass a number of factors: Overall contract value; probability; business winning budget – while meeting criteria of transversity (between business units in company), re-usability and suitability as building blocks.

We were requested to prepare a potential list of P3 compliance projects for consideration by Jim's manager (a Thales Business Lead), to be reduced to a short list. From where to finally arrive at a pilot project.

This group's particular skill was in the bespoke design of intelligent sensors.

At this first meeting, Jim agreed to being a speaker at the forthcoming SCNiiC-FAC workshop in April.

Bury St Edmunds with Cathedral prominently in foreground

Charles Dickens liked Bury - plaque at the Angel hotel

A few of the Thales workshops took place at Imperial College in London, but mostly took place at the large Thales facility at Green Park, in Reading, with our final meeting before lockdown in January 2020 again in Bury St Edmunds. Bruce participated in most of the meetings, while the Reading meetings made it easier for Tim Evans to participate, travelling from Bristol.

The second Thales workshop scheduled for late February in Bury St Edmunds unfortunately got "snowed out" - I turned around in Cambridge, travelling back to London, in order to "flee" an approaching snowstorm. Fortunately, the weather was kind to us, with regards to our other scheduled workshops and travelling, for 2018 and 2019.

#2 Meeting 6/6/18 Imperial College – Focus on Biodiversity strategy for AOSIS (Alliance of Small Island States) representing a total of 44 states as potential end-users.

Cognizance taken of need to consider Early Warning Systems (EWS) and general vulnerability of island groups. Opportunity to assemble a suitable environmental intelligent sensor package within an overall environmental protection strategy.

A useful input to this meeting was 21-point feedback following an earlier meeting with Professor Matt Piggott at Imperial College Earth Science Engineering. Matt was a contact made at the Early Warning Systems (EWS) Conference in March, where I presented – *"Integrating Aerospace Technology with Early Warning Systems".*

#3 Meeting 11/6/18 – Reading – An interesting remark from Jim - "*Thales is strongly in support of good news stories*", encouraging comment for the challenges faced by consultants active in the highly qualitative sustainability zone.

Thales UK headquarters at Green Park in Reading

A further encouraging remark from Jim during the first Reading visit: "*I'm very much looking forward to applying some strong system engineering and the full force of Thales problem-solving to some of the multitude of scenarios you have identified*".

The Workshop further produced a strategy document: *Specialised air borne sensors with climate change and sustainability focus".*

#4 Workshop 23/8/18 - Dyson School of Engineering Design, Imperial College Bruce, Tim Evans and I met with Professor Peter Childs to discuss the school's battery storage program and potential integration into the smart strut.

We also initiated discussions on creating a Thales/Imperial College/SCNiiC nexus, which proposed incorporating a Ph.D program for a number of selected candidates, potentially sponsored by Thales and generally linking with the overall SCNiiC Sustainability and Climate Neutral strategy.

#5 Workshop 29/8/18 – Thales - Reading

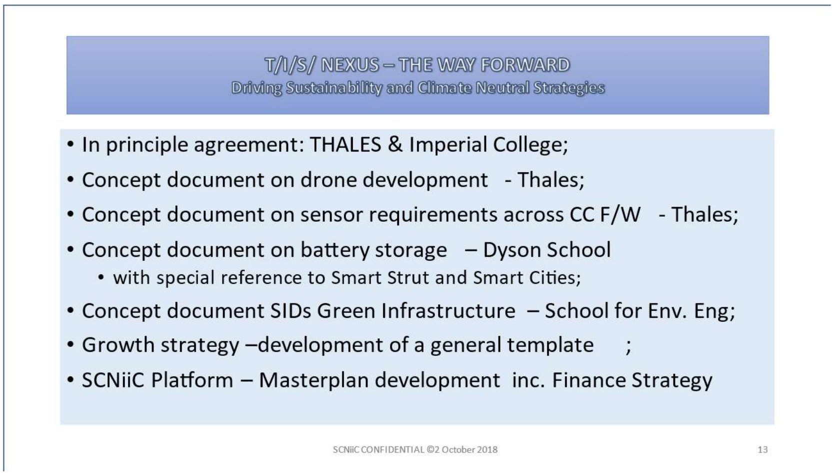
The theme for this workshop was – "A roadmap for financing infrastructure in the new climate economy" with definition of a SCNiiC deliverable: "*specialised airborne sensors with a climate change and sustainability focus, with infrastructure delivery in various geographic areas*".

From this resulted a definition of "*System components for green infrastructure*"

In between the various Thales workshops, we conducted a number of SCNiiC workshops, largely providing a preparatory platform for the on-going Thales program, in addition to fine tuning the long term SCNiiC strategy.

 # SCniiC workshop in Ascot 21/9/18

The Thales/Imperial College/SCNiiC nexus arrived at a definition of responsibilities:



#6 Workshop 2/10/18 Thales – Reading

Key to this workshop was a presentation and discussion on the proposed Thales/Imperial College/SCNiiC nexus and a discussion on the potential implementation challenges.

#7 Workshop 17/12/18 – Thales Reading

We were starting to home in on the meaning of the "Thales P3 objective" in detail.

 # 7/2/19 SCNiiC Workshop Ascot

This workshop, in preparation for Thales meeting scheduled 11 February 2019, reviewed 72 SCNiiC concepts generated during 2018 and arrived at the Thales required initial list. In order to produce this list 842 documents (32,000 pages) in our library were reviewed.

Judgement of concepts was based on the main criteria:

- In support/demand of SCNiiC individual expertise;
- Thales as "user" and in synergy with Thales capability;
- As input to Thales-Imperial-SCNiiC nexus in support of deliverable financial strategy.

#8 Workshop 11/2/19 Thales - Reading

Given the importance of the reality to win a contract, we reviewed our initial list against the P3 concept before returning to the drawing board.

#10 Thales Reading 15/4/19

After several revisions we now presented nine defined development themes, in no order of importance, each of which a challenging problem:

- Green Insurance
- Green Pensions
- Sustainable Infrastructure
- Health of Planet
- Social Housing
- SIDS – Sovereign Independent Development States
- GHG Reduction in Cities
- GHG Reduction in Oceans
- NDCs – Nationally Determined Contributions

SCNiiC workshop in Ascot 1/5/19

This meeting again served as a preparation for the next Thales workshop and introduced a number of considerations, all being part of a long-term strategy.

How does the Fintech ecosystem enable us to consider a "blockchain based sustainability focused investment bank?".

How do we connect GHG emission reduction to infrastructure assets and subsequently to STOs?

As an answer "The Digital Tree" resulted as part of an Urban Digital Transformation Platform (UDTP) concept proposal.

It is assumed that the central core of the digital tree will be based on a smart strut. No surprise there!

Another anecdote on our journey:

Due to the Covid lockdown, the last time we saw our old South African friends, Calvin and Wendy Fabig was in June 2019.

This opportunity to enjoy an enjoyable dinner, became an annual event, with London as a stop-over on their way to the USA, where they were coordinating South African touring groups, varying from karate to vintage planes (and pilots).

In the years following Scientific Cybernetics, Calvin left the data processing industry and successfully morphed himself into an international tour operator.

Our careers touched from time to time and shortly before departing from the wine estate, we had Calvin and Wendy, David and Judy Moore for lunch. (David used to be the Univac account manager at Scientific Cybernetics). Calvin, impressed with Yvonne's gold medal winning dessert wine, Chapel d'Or, purchased several cases.

With our move to the UK we somehow lost touch. Later, on one of our subsequent South African visits from the UK, I mentioned to Yvonne that I would like to make an effort during the visit to contact them. My words were hardly cold, when during a trip to the supermarket, I noticed Wendy going down an aisle, I called her name (despite Yvonne trying to quiet me) and I turned out to be correct.

We immediately invited them to join us for lunch later that day. Calvin arrived with two bottles of Chapel d'Or as a present. A gesture we appreciated tremendously as it represented a link with a happy past of successful wine making. We drank one bottle and Yvonne was pleased on how well it had aged after twelve years. We are still keeping the other bottle unopened, now a twenty-three year vintage.

It is a pleasure to realise how much this modest product contributed to a friendship lasting forty- eight years.

#11 3/6/19 Thales Reading

Shortly before the workshop, the devasting fire in the Notre Dame cathedral destroyed the iconic roof and spire while the cathedral miraculously escaped permanent damage.

Bravely and totally unsolicited, I presented the "*Notre Dame Socio-Economic Model*", for Thales consideration and possible action in conjunction with the French government.

The model was aimed at creating a potential iconic model of how technology could be applied creating socio-economic benefits.

The underlying principle is to apply revenue generated from a renewable energy power structured (based on smart strut replacement) roof as seed capital for development of a long-term socio-economic program, addressing the principal protests forwarded by the "le gilet jaune" movement, active at the time. This not to condone the street violence but to recognise the underlying problems in society today. The SDG goals could be used as a framework from where to decide on a long-term investment program.

Despite Thales being a huge corporate in France there was unfortunately no easy mechanism to forward the memo to top management directly.

At the workshop Jim suggested he could submit the memo to the Thales Chairman, during the latter's expected visit to the Thales exhibition at the forthcoming Air Show at Le Bourget airport in Paris. Only if an appropriate opportunity happened to present itself.

Well, as typical in large corporates, the chairman did not think it necessary to inform Jim when he would be stopping at the Thales stand. As it happened Jim took a quick lunch break at the time when the charman happened to visit and voila – no opportune moment!

In addition to the memo, at this workshop Jigsaw Structures was given a slot to present/promote both the strut and the wind turbine blade. This was appropriate as two proposed Thales pilot projects were the Digital tree and the Jigsaw Wind Turbine blade (as part of a remote airborne sensor system for off-shore turbines), in which these two clearly would perform a significant role.

The workshop reviewed the nine development themes again – interesting to note that an investment model is now available where any of these themes will be considered as *wicked problems* and handled accordingly from methodologies already available.

We again reviewed the strategy for a blockchain based sustainability bank and a required modus operandi.

Resulting from these discussions and adding to the "SCNiiC arsenal" is a seed capital funding endowment structure, where the returns on an endowment fund will fund seed capital for the development of deserving concept projects.

The endorsement received for the digital tree led to an extensive and informative "Urban Forest Digital Tree case study", now being one of the twenty-year highlights, as listed in the final chapter.

A very interesting aspect of this study entailed the eye-opening quantification of financial value to be derived from urban forests.

#12 15/1/20 Thales Bury St Edmunds

Bruce and I travelled to Bury without knowing that the meeting will turn out to be the last meeting with Jim for the time being. Shortly afterwards the Covid-19 lock down occurred in the UK and in a subsequent telephone discussion Jim informed us that he had been furloughed.

I want to use this opportunity of thanking Jim for his workshop facilitation over this period and his time dedicated to producing the "*Thales P3 short list*". My SCNiiC colleagues and I wish him well during this lock down period and beyond and sincerely hope that we will be able to jointly return to the drawing board.

In the meeting Jim disclosed that as of that very morning, a Thales-internal sustainability fund became available, calling for investment proposals from staff members. We agreed to support him using the pilot project short list already available through our previous workshops.

No one could blame Bruce and I for returning from Bury St Edmunds with "mission accomplished" smiles on our faces, not having any idea what was around the corner.

We can only but present our condolences to all those many losing loved ones and jobs in the subsequent months while expressing our deep appreciation to the thousands of medical staff at all levels for their incredible resilience in fighting the virus.

THE COVID LOCK DOWN AND BEYOND

This period turned out constructive for the SCNiiC team, for which we are grateful.

Our regular workshops might have terminated in early 2020 with the advent of the Covid-19 lockdown and the status of Jim Heathfield, if not for an unexpected text on the 2nd July 2019 from dr. Jacko Koen, still based in Windhoek, Namibia. His contact was regarding an affordable housing project in Ghana.

We last had any contact in 2013, and I was surprised but pleased he still had my contact numbers.

He was still CEO with Jimmey Construction, the Namibian property development and construction company. Their client was the Ghana Government, Ministry of Housing, with whom they recently signed a contract for the delivery of 20,000 affordable apartments, to be delivered over five years, with a sovereign off-take agreement against delivery. The all-inclusive contract price was set at US $920million and Jimmey Construction wished to raise US$200 million for purposes of construction finance, to be rolled over in five delivery stages.

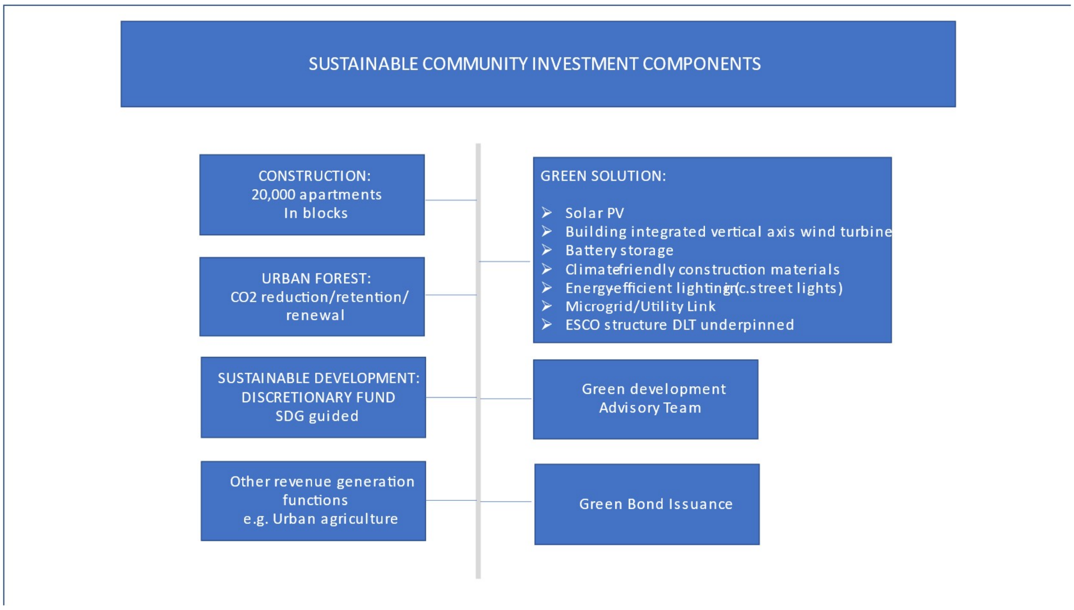
At face value, the project offered a considerable sustainability finance opportunity and accompanied with a sovereign guarantee, appeared to be potentially straightforward. Using Jacko's words (translated here) in a note a few days later "this is a definite opportunity for innovative, sustainable solutions". This is further summarised in the self-explanatory concept diagram we drafted for the project, shown below.

My immediate response to Jacko was that we will need a quantified investment proposal, translating the concept in bankable terms for consideration by potential investors. Within our normal philosophy and advisory approach, we realised that there were far more at stake than the construction of 20,000 apartments.

However, a far more immediate question was "*how sovereign is sovereign*" because the credit rating of the Republic of Ghana immediately came into question. I also had a general question mark about the signed contract, and not being a lawyer, I decided to approach David Smith with whom I had walked some distance in the Sustainability Law environment.

I last had contact with David in January 2016 when we had lunch close to his new office at Druces, a law partnership established 1767, he had recently joined. He responded positively and indicated a definite interest to be involved.

This started a process of developing an investment solution with most of these meetings, pre Covid-lockdown, taking place at the Druces offices in the City – as the financial heart of London, is normally referred to.



Reviewing some of the highlights of the Ghana opportunity, will effectively lead us to the close of the Blackgoo to Blockchain journey – for the time being anyway. We might have more to say on another occasion as will be discussed in the closing chapter 13.

The development of the GHP (Ghana Housing Project) came to an inevitable, Covid driven, close in mid-March 2020, as is still the case one year later, at the time of writing.

The events defining the GHP period combined an in-depth consideration of securitisation, an evaluation of blockchain and SDGs and tokenisation of real estate. In the process, the products developed and aimed at providing an investable solution had become important components of the SCNiiC Sustainability Toolbox.

"Securitisation" was an early consideration, given the question mark about the level of sovereignty and I contacted Suleman Baig requesting a meeting, him being co-author with Moorad Choudry, of the book "The Mechanics of Securitization".

Quoting from the cover of the book (2013) – "Securitisation is a well-established practice in the global debt capital markets. And while the market in structured finance securities was hit hard by the 2007-2008 financial crisis – when investors shunned asset-backed securities – interest in securitization has resumed as the global economy recovers."

A question for consideration was whether we should consider securitisation at all – "*is there in fact an asset-backed security available, given that the asset in this case - available land for the housing development – belongs to the government?"*

David joined me at Suleman's office in Slough, relatively close to Ascot, where we had an informative meeting. I took a copy of his book with me for his signature. His note added "good luck with the modelling". I always felt that there was some kind hidden message in that note.

I was reminded of a remark by David Abrahams in Oxford, years ago, "Storm – have you ever seen a financial projection that came true?" Recognising that the investment model is simply the quantitative guideline from where the other "system components" in the total investment system is assembled.

While signing my book, Suleman told us how there suddenly appeared a dent in the pile of his book being stored in his garage at home. On close inspection he discovered his son was using it as a swop instrument at school obtaining something desirable from his school buddies (his counter parties). No doubt, there are many securitisation-smart young people now walking the streets of Slough!

Exploring the potential of pension funds as investors, at a subsequent meeting we presented the financial model (under development) to and consulted with dr. Georg Inderst, a highly respected adviser to many pension funds across the UK and Europe.

I first met Georg a few years previously at one of many interesting seminars staged over the years by the Centre for Climate Finance Investment, based at Imperial College Business School and ably led by dr. Charles Donovan. Charlie being the Executive Director of the Centre for Climate Finance and Investment at Imperial College Business School and Academic Director of the MSc in Climate Change, Management and Finance. He is also a Professor of Practice in the Department of Finance.

I would like to use this brief intervention to mention Charlie and to pay tribute to their many high-quality seminars over the years. Not forgetting the excellent networking afterwards, where I had the pleasure of meeting many interesting people, such as Georg.

Main entrance to Business School, Imperial College, London

Georg was most sceptical about any potential interest from pension funds in a project of this nature and strongly felt it is simply a finance opportunity for local banks in Ghana. While we agreed with his sentiment, the problem arises (for local banks) when the project takes on a broader scope, incorporating sustainability communities and therefore proceeding on a much broader plane than simply mass construction, as depicted in the concept diagram above titled “Sustainability Community Investment Components”. This is where the need for sustainability finance becomes clear. What needs to be considered is the required infrastructure and the application of both sustainability and climate neutrality considerations, hence the strong relevance of the UN Sustainable Development Goals (SDGs) in the overall concept, as depicted in the diagram above.

The bottom line is that projects such as these need specialist consideration and that is where I am not convinced that the capital markets are ready yet. “Ready“, in terms of firstly fully understanding the challenge and secondly, having the capability and/or appetite to deliver (invest). The financial press is lately showing a growing interest in ESG (environment social governance) issues, but there is still a long way to go. This is where the programs offered by Charlie and his team are important.

Following the meetings with Suleman and Georg, and carefully considering their advice, we decided to alleviate an extended financial institution “dog and pony show” and to focus on developing an innovative “in-house” financial approach.

As a result, our next step was considering the unlocking of business value and revenue generation opportunities in SDGs.

The first step was to consider SDG 7 – Affordable and Clean energy - The generation of surplus energy, generated from PV solar, wind and other possible renewable energy resources, combined in a power purchase agreement (PPA) with the local utility was an obvious “go for the low hanging fruit” approach.

Our recommendation to Jacko at this stage was to consider an increased project term to ten years and his agreement to proceed with the SDG 7 solution, both to which he agreed. Following our suggestion, he instructed his agent in Ghana to make contact with the local utility, in order to determine their interest in entering into a PPA.

It did not take long for the agent to revert with a disappointing response from the government owned utility company: ”there is no interest of entering into PPA at this time”.

We now had to consider, ”*thinking out of the box, without falling out of the box*”.

Our response developed, based on past experience with the definition of the *G-SiiP–Ghana SDG Impact Investment Platform.*

The G-SiiP approach was initially inspired by a report dated November 2018 by the financial assessment firm Trucost, basically stating that “*SDG alignment generated $233bn in business revenue last year*”. The encouragement was clearly there to seriously consider unlocking the SDG opportunity as a potential revenue source within a mass housing development.

In addition, we also had access to previous research conducted in 2005 by the WBCSD (World Business Council for Sustainable Development) coining the tangible solution – *Inclusive business* – referring to ventures that go beyond philanthropy by integrating low-income communities into companies’ value chains as customers, suppliers, retailers and distributors.

Extracting from a WBCSD report:

“*As an engine of economic growth and employment and a source of technology and innovation, business has a critical role to play and a self-interest in contributing to delivering the SDGs. First and foremost, business cannot succeed in societies that fail and therefore has a vested interest in stable and prosperous societies. By developing a better understanding and proactively addressing the SDGs, companies will be able to better manage their risks, anticipate consumers’ demand, secure access to needed resources, differentiate themselves from competitors, and strengthen their supply chains.”*

We were hugely encouraged to stay with the SDG route, when Jacko made us aware of the following report, extracted from the official Ghana Government website, dated 30th August 2018:

“*President Nana Addo Dankwa Akufo-Addo has said Ghana would become an example in the implementation of the 17 United Nations Sustainable Development Goals (SDGs) – Agenda 2030. Speaking at the Junior Chamber International’s 2019 symposium, on the sidelines of the 7th Tokyo International Conference on African Development, on Thursday, 29th August, 2019, President Akufo-*

Addo indicated that his government was pursuing the implementation of the SDGs with "a strong sense of urgency, and an unparalleled commitment to act now."
Speaking on the theme, "Ghana as a role model for the attainment of the United Nations Sustainable Development Goals 2030," the President stated that Ghana has a history of being first among her peers when it matters most."

A strong statement from the President at the end of the extract!

Perhaps the proposed G-SiiP strategy could give the President an opportunity to put "his money where his mouth is" – so to speak.

In early December we were in a position to table the *GHP Investment Proposal* working towards delivery of the ultimate G-SiiP design.

At this stage the housing project got expanded through an invitation to Jimmey Construction to consider the development of a precinct of land abutting the Accra International Airport. This opportunity would allow the geographic connection of the housing project and the Airport development into the introduction of a concept - *Sustainability-Smart City Precinct*. This approach allowed increased opportunity for SDG unlocking and value generation.

Additionally, the extended design resulted in the definition of a number of new and forward-looking products, using a range of generic added-value technologies.

We briefly described the initial interest in blockchain eventually leading from the Gibraltar Conference in October 2018 towards an understanding of Security Token Offerings (STOs), allowing us to deliver as part of the G-SiiP a document "*The STO process – An eighteen-step summary*.

Not so welcome news arrived in early January 2020 when Jacko received, totally unexpectedly, a significantly revised agreement from the Ghana Housing Ministry, requesting his signature forthwith.

Reviewing this new agreement and not understanding the motivation behind it, we immediately expressed serious concerns and promptly provided a counter draft for Jacko to forward via his agent.

The process of getting traction in discussions with government went very slowly, despite the fact the housing minister and the agent were old friends from their university days but there was no doubt that the new agreement introduced uncertainty into the planning process.

In early February we learned, via a notice forwarded to Bruce, that the London-based Chatham House Think Tank will be hosting the Ghana President as a speaker in late February.

Given the President's previous statement on the importance of SDGs, Jacko immediately made contact with the Executive Director of Ghana UK Chamber of Commerce in order to facilitate a personal meeting for us with the President during his forthcoming London visit. This approach was supported by a memo directly addressed to the President, motivating the meeting.

All communication with the President taking place at high speed via the said Jimmey agent in Accra.

A prompt reply from the agent in contact with the President's office - "Unfortunately the President's schedule did not allow for the proposed meeting. However, he would like to meet and his assistant has proposed that we meet in Accra on a later date."

Towards the end of February, I listened to the President speaking at Chatham House, broadcasted on livestream, as it was too late in the day for either Bruce or me to attend in person.

Very noticeable in his excellent address was the concerns he expressed about the corona virus and its possible effects on people and the markets. In hindsight he was well ahead of the curve in respect to many other international leaders.

At this stage, and prior to the initial contact with the President, we had produced a new financial instrument, as part of the G-SiiP, named ***Sustainability-Smart Wrap***, summarised as:

We are addressing the global challenge nexus of urbanisation, climate change and sustainability through the design and delivery of sustainability-smart communities, being defined as either an eco-district, precinct or city of any size. According to the ODI (Overseas Development Institute – a 60 year old London based think tank) by 2050, 6.5 billion people will live in urban centres – two-thirds of the projected world population.

We believe that the construction of housing alone is insufficient for the creation of a sustainable community.

What is required is a self-funding "sustainability wrap" comprising a range of development themes, each combined with one or more SDGs, effectively creating an investment model.

The combined revenue generated through each of the resulting investment models constitutes the "wrap" applied in discretionary projects towards the well-being of occupants and their natural environment, without an additional call on the project finance.

The objective is to create a detailed design template; including housing, sustainable infrastructure, urban master planning, fourteen investment models and a portfolio of sustainability products.

While we were struggling to get the agreement sorted by the end of March, Ghana was coming to a standstill and went into lockdown. Not knowing what to expect, we initially thought this was all temporary but here we are a year later with no end in sight. I still have the invitation to meet with the President to discuss unlocking SDGs and STOs, depending on how long he stays in office. Having listened to him in the broadcast from Chatham House, I will certainly promote a vote for him at the next election.

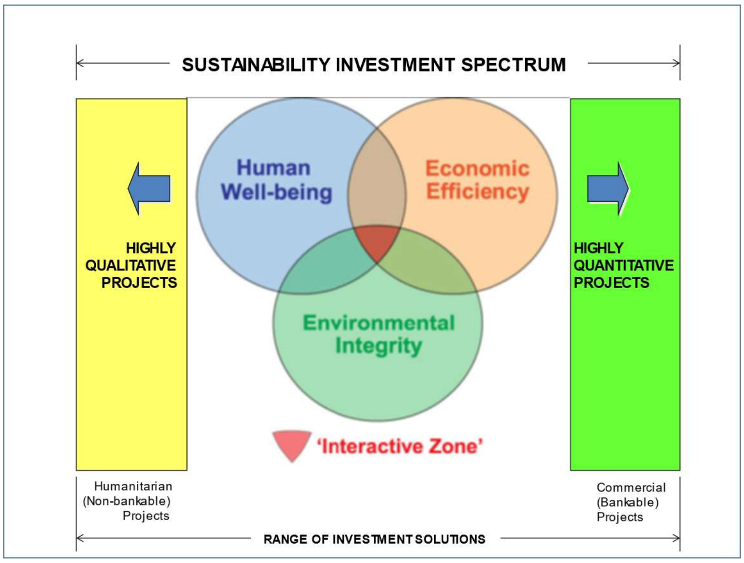
Lockdown is still continuing but the G-SiiP, and the Sustainability-Smart Wrap in particular had given us a strong blockchain basis to continue with on a number of projects in various stages of development. Jacko has now joined our SCNiiC workshop group as a liaison for Namibian based projects he is involved in. The highlights from this highly rewarding post 2018 period will be presented as part of the final chapter.

We have now arrived at the end of our commentary on the "Blackgoo to Blockchain" journey, discovering and sometimes, inventing, various sustainability finance solutions.

In the effort of explaining sustainability finance in simple terms, I drafted the diagram below shortly after arriving in London. It has been used many times and, in my opinion, will remain applicable.

The challenge had always been to effectively structure the project in such a way, that by using a suitable financial instrument, a move along the investment spectrum towards bankability, is enabled.

The objective is to define the required financial instrument each time.



Our interest in blockchain, encouraged by my attendance of the crypto conference in October 2018, led to the development of the SCNiiC SDG/Cryptobasket.

This instrument, meeting the sustainability finance requirements depicted by the diagram, had been launched in September 2020.

At launch it was priced at US$495 and today, 33 weeks later, is valued at US$2,589.45.

Our expectation is that this new instrument will greatly assist in projects to achieve an easier move across the investment spectrum, as schematically depicted in the diagram.

I sincerely trust that this new tool will put blackgoo as a distant memory and enable us to strategize for a blockchain-based future, the beginning of which is discussed in the last chapter.

As Orson Welles said: *"If you want a happy ending, that depends of course on where you stop your story."*

Following that advice, I am stopping here with an optimistic expectation about the future.

CHAPTER 13

2021 – LOOKING BACK AT THE FUTURE

Summary

In the final chapter we provide a summary of twenty highlights accumulated over twenty years, referred to as the 20/Twenty framework.

Also presented is an action list, accumulated over the time of writing.

"Hindsight is easy. What is challenging is developing a positive, innovative and inspiring strategy on which to build the future."

Yours truly

Arriving at the conclusion, I can categorically state that I have thoroughly enjoyed the experience and challenge of telling our story from the beginning of my career via the vineyard in Paarl to the heart of the city of London.

It was a pleasure reliving the high points but equally to assess the low points, especially for the lessons they offered.

I met the most interesting people along the journey and it is a pleasure to thank them directly and sometimes indirectly. They all contributed to a memorable experience.

There was much to tell and unfortunately, as happens over such a long period, I had to leave a lot of material on the drawing board.

THE "20/TWENTY FRAMEWORK"

I decided to compile a list of the Top Ten highlights over this twenty-year period. This difficult challenge eventually became a Top Twenty Framework and might have to be extended further.

The primary intention is for this framework to be considered and incorporated into a future SCNiiC strategy.

It is satisfying to note that, ***despite the inevitable age of some of the highlights, none are dated***.

The intention now is to update each of the twenty items appropriately, applying some revision and with the possible "injection" of up-to-date technology driven considerations. What is encouraging is the increasing interest in Sustainability and climate related issues amongst all categories of investors. Also, do I have to say it, the challenges that we have been touching on along the journey, have not disappeared. On the contrary!

There is no reason that this framework could not form the "chassis" in the structure of a future SCNiiC.

Here is the list in alphabetical order.

A short overview will be prepared for each item on the list, to be published separately at a later date.

The top twenty highlights after a twenty-year journey in Sustainability Finance:

- ✓ Bioregional Planning
- ✓ Blockchain based SDG Crypto Basket
- ✓ Carbon Finance, Digital Tree and Urban Forests
- ✓ Climate Neutrality Strategy
- ✓ Digital Transformation Platform
- ✓ Decision making under Uncertainty/Risk profiling
- ✓ ESG/SDG Mapping
- ✓ Green Technological Solutions
- ✓ ISDC Knowledge Base
- ✓ Library of financial solutions and Investment models
- ✓ Smart agriculture including Vertical farms
- ✓ Strategy CUBES
- ✓ Sustainability and Law
- ✓ Sustainability-Smart Wrap
- ✓ Sustainability Toolbox
- ✓ Thales model
- ✓ Tokenisation
- ✓ Unlocking intellectual capital with growth strategies
- ✓ Village 21 - Sustainability Community Initiatives
- ✓ Wicked problems- blockchain based investment model

A FINAL QUESTION

Arriving at this stage of the journey, we are inevitably asking the question – was it a successful one?

In 2001, commencing the journey with only the Tuscany Village dream foremost in our minds, we had to develop a strategy on the fly as we cautiously approached the future.

One thing was clear - in order for Sustainability to have practical value, it has to be delivered, and in order to be delivered, it has to be financed.

Shortly after landing in London and once we formulated the "*Sustainability investment spectrum*" (see diagram on pages 38 and 194) – the beginning of a strategy on which to develop future design concepts was established.

It was clear that a "special" form of finance was required.

From this conceptual diagram it became easier to define sustainability finance and why it was essential in delivering on socio-economic and environmentally driven needs, to mutual benefit of both investor and recipient.

What initially surprised me, was how little attention this subject – sustainability and climate neutrality - received (circa 2004) in both the commercial and financial press, in published papers or at trade exhibitions.

The first question is whether we gained better answers with regards the delivery of sustainability finance?
The answer is a definite YES, as we experienced many varied opportunities to develop new practice, some of which is hopefully reflected in this story.

The second question is whether we have distributed the experience gained in an acceptable manner?

The answer here is a definite NO. This despite the range of projects we have been involved with. However, from the beginning, we aimed at creating a certain awareness of the subject area. By delivering this story we may consider the 20/Twenty framework as a road map for future development.

We are proceeding by publishing the manuscript as a pdf and will initially be distributing it as a draft to a selected group of individuals, whether family, friends, or professional contacts.

In the meanwhile the manuscript is undergoing a typographic design review for formal distribution.

We are looking forward to receiving many questions and comments from our initial readers.

We are aiming for the 20/Twenty framework, representing the core of the knowledge base, to be developed as one or two additional manuscripts, potentially ending as possible reference material on the subject of sustainability finance and climate neutrality.

With a focused professional approach, we would hopefully manage to create a bridge between our story and the broad sustainability finance spectrum.

In addition, SCNiiC has recently become involved in a number of challenging new projects, with the 20/Twenty framework serving as a useful reference framework. These opportunities are providing an excellent test bed for application of the framework.

In summary, the story of the initial journey has ended, but the quest to define and implement best practice in delivering sustainability finance has not stopped.

AN ACTION LIST

I set no specific targets when writing the story, but now after seven months and 83,000 plus words, a few thoughts have occurred to me, all expressed here as a somewhat ambitious, action list.

To find an investment bank with a soul and an interest in sustainability and sharing the climate change challenge, interested in taking the 20/Twenty framework and putting it into a specialised sustainability impact investment “platform” within the bank, capable of

- Providing seed capital as an introduction to appropriate project finance for selected projects;
- Issuing financial instruments such as the *Sustainability-Smart Wrap,* in order to raise project finance for a selected project.

For the same bank to appoint SCNiiC as a specialist consultant, especially with regards to the interpretation of the 20/Twenty framework.

Translate a selection made from 200+ Cubes, each possibly into an applicable STO, from where to create a portfolio of STOs?

To convert the available 200+ cubes into a portfolio of case studies for use by business schools and (here my tongue is in my cheek) make the accompanying story compulsory reading – the latter effectively serving as a broad introduction to the case studies.

To complete, based on the foregoing, a comprehensive long-term strategy for SCNiiC and to find a suitable candidate to take the wheel taking the consultancy forward.

DON'T QUIT

I consider it apt before acknowledging a debt to many people below, to provide you with the following poem given to us many years ago by our neighbour Beverley Williams, who has always been interested in our progress on the journey:

When things go wrong as they sometimes will,
When the road you're trudging seems all up hill,
When the funds are low and the debts are high
And you want to smile, but you have to sigh,
When care is pressing you down a bit,
Rest, if you must but don't you quit.
Life is queer with its twists and turns,
As everyone of us sometimes learns,
And many a failure turns about
When he might have won had he stuck it out;
Don't give up though the pace seems slow-
You may succeed with another blow.
Success is failure turned inside out –
The silver tint of the clouds of doubt,
And you never can tell how close you are,
It may be near when it seems so far;
So stick to the fight when you're hardest hit –
It's when things seem worst that you must not quit.

ACKNOWLEDGEMENTS

- To everyone one who had the patience and time to read the story or part of it;
- To everyone I personally met on the journey and had contributed in different ways to the discovery process during the journey;
- Our neighbour Beverley Williams who made us feel welcome in Ascot, helped us find our feet and over the years remained a close and trusted friend;
- Our South African and UK friends for their friendship and support;
- Members of the SCNiiC Advisory Council – Bruce Garvey, Tim Evans, Chris Vaissiere, David Smith and Jacko Koen for their contribution to positive and constructive sustainability thinking;
- Our children Mason, Jacqueline, Hein, Lawson, Ross and Lesley-Ann and their families, for their love and support shown and given in so many different ways.
- A special thank you to Hein for encouraging me to start writing this book and for his valuable comments along the way.
- Yvonne - My wife, partner and my best friend for her patient editing and endless love and support.

APPENDIX

LIST OF ACRONYMS

24/7 – Twenty four hours per day/Seven days per week

AfDB - African Development Bank

AHP – Analytical Hierarchy Process;

ALEF **-** Agri-Life-Export-Model with Life being – “Lifestyle Improvement for Farm Employees within the Agricultural Sector

ALFI - Association of the Luxembourg Fund Industry

AOSIS - Alliance of Small Island States

BPEDR) - Banque Privee Edmond de Rothschild

BEDIA - Botswana Export Development and Investment Authority

BEDZED - Beddington Zero Energy Development

BSRs - Bio-Sphere Reserves

C4 - Cape Town Cultural and Convention Centre

C9 – Chocolate chip cookies and coffee at Clifford Chance with conferencing, canapes and cocktails.

CAD - Computer Aided Design

CCCEP - Centre for Climate Change Economics and Policy

CDB - China Development Bank

CEO – Chief Executive Officer

CERES - **C**oalition for **E**nvironmentally **R**esponsible **E**conomie**S**

CLOs - Collateralized Loan Obligations

CNS - Climate Neutral Strategy

COP – Conference of the Parties

CPEEP- City Precinct Economics Enhancement Program

CSSA - Computer Society of South Africa

CSR - corporate social responsibility

CTBR - La Compagnie Benjamin De Rothschild

DARPA – Defense Advanced Research Projects Agency

DB - Deutsche Bank

DEWETS -DANISH Excessive Wind Energy Transformation System.

DMP - Dennis Moss Partners

EWS - Early Warning Systems

EDI - Economic Development Initiative

EIF - Eco Innovation Forum

EIB – European Investment Bank

ESCOs - Electricity Service Companies

ESCOM – Electricity Supply Commission

ESG - Environment Social Governance

FAC - Farnborough Aerospace Consortium

FET - Faculty of Environment and Technology

FIA - Farnborough International Air

FM – Fasken Martineau

FIFA - Federation Internationale de Football Association

FAO - Food and Agricultural Organization of the United Nations

FT - Financial Times

FMP - Financial Master Plan

F-NFT - Fractional Non-Fungible Token

GDA -Gabon Development Agency

GDI - Gabon Development Initiative

GAV - Generic Added-Value

GCCA - Generation Connection Capacity Assessment

GCF - Green Climate Fund

GHP - Ghana Housing Project

GHG – Green House Gases

GIS - Geographic Information Systems

GP – General Practitioner

HLPR - High Level of Eminent Persons Report

HP - Hewlett Packard

HRH – His Royal Highness

HSBC – British multinational investment bank and financial services holding company

IBM – International Business Machines

ICL - International Computers Limited

IFIP – International Federation of Information Processing.

IMPEADS – Imagery Management, Processing, Exploitation and Dissemination System.

ICOs - Initial Coin Offerings

IACN - Initiative for Applied Climate Neutrality

IIGC - Institutional Group on Climate Change

IEC - Inter Eco City

IoD – Institute of Directors

IPCC - Intergovernmental Panel on Climate Change

ISU - International Sustainability Unit

ISDC - Investment Sustainability Delivery Consultancy

IT – Information Technology

LGS - Lasham Gliding Society

LRA – Le Roux Associates

LII – le Roux International Inc

LSE - London School of Economics

MAB -Man and Biosphere

MA - Morphological Analysis

MCDA – Multi-criteria decision analysis

MD – Managing Director

MSTMP- Mali Sustainable Tourism Master Plan

MI5 - United Kingdom's domestic counter-intelligence and security agency

MIT – Massachusetts Institute of Technology

MoU - Memorandum of Understanding

MVCS (Modular Volumetric Construction System)

NATEP - National Aerospace Technology Exploitation Programme

NDA - Non-disclosure and confidentiality agreement

NEC – National Exhibition Center

NEMA - National Environment Management Authority

NHS – National Health Service

NPV - Net present value

NSA – Neil Stewart Associates

OBE – Order of British Empire

OECD - Organisation for Economic Co-operation and Development

OPIC - Overseas Private Investment Corporation

P3 - The P3 factor encompass a number of factors: Overall contract value; probability; business winning budget – while meeting criteria of transversity (between business units in company), re-usability and suitability as building blocks.

PACE Bond - Property Assessed Clean Energy Bond

PFI - Public Finance Initiative

P-Bond - Philanthropy-bond

PoSI - Portland Sustainability Institute

PPA - power purchase agreement

PRP - Prince's Rainforests Project

PV – Photo Voltaic

Q22 – Qatar 2022

QSC – Qatar's Supreme Committee

RAF – Royal Air Force

REIM – Renewable Energy Investment Model

REIPPPP -South Africa's Renewable Energy Independent Power Producer Procurement Programme

REDD - Reducing emissions from deforestation and forest degradation

ROA - Real options analysis

RWC – Rugby World Cup

S3 Project - Silverstone Sustainability in Sport project

SAA - South African Airways

SAAF - South African Air Force

SACNASP - South African Council for Natural Scientific Professions

SAFUES -South African Federation of University Engineering Students

SAR&H - South African Railways and Harbours

SCNiiC - Sustainability and Climate Neutral Impact Investment Consulting

SDGs - Sustainable Development Goals

SDI – Sustainability Development Initiative

SDI/EPI – Spatial Data Infrastructure/eco-precinct implementation (EPI)

SICAR -an investment company in risk capital

SEEB Platform - Socio-Economic Environmental Banking Platform

SEIN – Sustainable Energy Investment Note

SEP - Sustainability Enhancement Partner

SESCO – Sustainable Energy Service Company

SIB - Specialised Investment Bank

SICAV - investment company with variable capital

SIDS - Small Island Development State

SIF - Specialized Investment Fund

SiiP – SDG Impact Investment Platform.

SMAs - Special Management Areas

SME – Small and Medium Size Enterprises

STO - Security Token Offering

SULAFI – Sustainability Law and Finance Initiative

TRH – Their Royal Highnesses

UAV - Unmanned Aerial Vehicle

UBEMS – UAV based environment management system

UCITS - Undertakings for Collective Investment in Transferable Securities

UCT – University of Cape Town

UN – United Nations

UNESCO - United Nations Educational, Scientific and Cultural Organization

UNFCCC - United Nations Framework Convention on Climate Change

UN SDGs – United Nations Sustainable Development Goals

UWE - University of Western England

VAWT - Vertical axis wind turbine

VTOL -vertical take-off and landing

WBCSD -World Business Council for Sustainable Development

ZAR - South African Rand