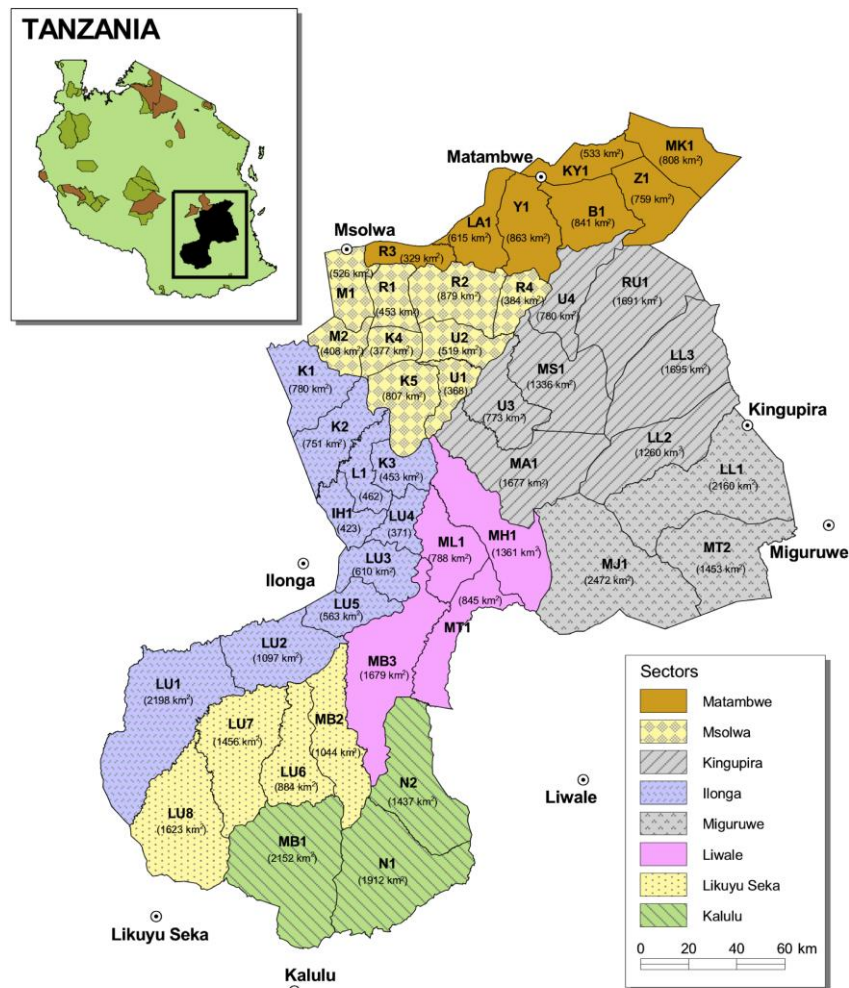


# STIEGLER'S HYDROELECTRIC DAM IN THE SELOUS GAME RESERVE, TANZANIA

Dr. Rolf D. Baldus

## Part 1

The Selous Game Reserve in Tanzania, covering some 50,000 square kilometers, is Africa's oldest and largest contiguous, uninhabited nature reserve. Due to its universal importance, it was declared a World Heritage Site by UNESCO in 1982. After that a combination of poor management and poaching caused the elephant population to drop from over 100,000 to less than 30,000 (1989). A German-Tanzanian development project, the Selous Conservation Program (SCP), was established in 1988 and continued until 2003. This proved to be a turning point. Poaching was brought to a standstill, and the elephant population recovered to over 70,000 (2003).



Several large-scale, environmentally destructive projects were also blocked during that time. Previously, the game reserve was totally dependent on meagre funding from the Tanzanian government's general budget but the SCP implemented a scheme that retained fifty percent of the revenues earned by the reserve. Ninety percent of those funds came from sustainable safari hunting which ensured that good conservation practices were implemented.



It took around twenty years after the poaching crisis of the 1970s and 1980s for big tuskers to appear again. This **photo** near today's construction site at Stiegler's Gorge was taken around 2005 **by Sean Lues**, a tourist guide at the Beho Beho lodge, Selous Game Reserve. The animal was most probably later killed by poachers.

## The Killing Fields

When German support ended in late 2005, the head of the Wildlife Authority immediately reduced the retention scheme payment from US \$ 3 million annually to US \$ 500 000. The park administration collapsed like two decades before, anti-poaching efforts were greatly reduced and the slaughter began once again.

Looking back one can only conclude that this was a well-prepared and collusive action. According to official counts more than 60,000 elephants were killed. The ivory was smuggled through Zanzibar, Pemba in Mozambique and other ports as well as by air to Southeast Asia, principally China, by Chinese cartels in collaboration with corrupt officials. More than US-\$ 100 million changed hands along the value chain, from the bush to the Asian markets. The business was worthwhile for all the parties involved.

Global seizures showed that the Selous-Niassa ecosystem was the poaching hot spot for savanna elephant for several years. An aerial elephant census in 2013 found that only about 13,000 of the pachyderms had survived in the Selous ecosystem.



Poached elephant in Selous Game Reserve (2014)

## “World Heritage Site in Danger”

UNESCO consequently declared the reserve a World Heritage Site in Danger not only because of the poaching but also for the planned mining developments and other large-scale projects. An area of three hundred square kilometers was cut out of the reserve in the south-west for a Russian uranium mine. A particularly environmentally-harmful bleaching process will be utilized to wash the uranium-containing rock from the soil with water.

The fall of the price of uranium on the world market has delayed this project. However, other prospecting concessions in the reserve have been awarded. Mining is in contravention of the UNESCO World Heritage Convention, which Tanzania has signed. When the World Heritage Commission of UNESCO gave green light to the deregistration of three hundred square kilometers this was done with the common understanding that Tanzania would not undertake further major development projects without seeking agreement with UNESCO first.

The results of the 2013 elephant census were a wake-up call. The Tanzanian government vowed to combat poaching and the revenue retention scheme was reintroduced. Benson Kibonde, a retired former reserve manager who had had great success in managing the park, was brought back.

In addition, an ad hoc program was initiated by the International Council for Game and Wildlife Conservation (CIC) and supported by German development cooperation, and the Frankfurt Zoological Society (FZS). It provided about 400,000 Euros as emergency financial assistance mainly in the form of equipment. Poaching decreased, and a census in 2015 showed that the elephant population was stabilizing.

## A New Cooperation Project

In 2013, the German Government, through the German Development Bank (KfW), was invited by the Tanzanian Government to come to their assistance once again. An aid program worth eighteen million Euros was initiated.

The idea was to emulate the direction and approach of the earlier SCP involving both the Frankfurt Zoological Society (FZS) and the World Wildlife Fund (WWF). The FZS has been operating in the Selous for quite some time. The project is only now getting off the ground after many years of delays.

In Germany, there are politicians and top-level civil servants across party lines who support conservation efforts in Tanzania, especially in the Serengeti and Selous. KfW instruments are not really suitable for conservation projects and are extremely lengthy. At the same time, many of the delays in the project preparations are due to Tanzanian Government. One can't help wondering whether the state authorities have any interest in rehabilitating the Selous.

Currently there is the impression that the Tanzanian government is renegeing on its long-standing commitment to conservation. Ownership is being lost. Still, wildlife tourism remains one of the most important industries and foreign exchange sources in the country.

President Magufuli, an increasingly autocratic ruling populist, is more and more pursuing a policy reminiscent of Nyerere's African socialism.

With a strong hand, he tries to ensure order in a land shaken by corruption scandals. Whether he will be successful remains doubtful. Wildlife tourism, to date the country's second most important economic sector, is losing political priority. Magufuli dreams of state-controlled industrialization. Under Nyerere the same political vision failed miserably. Without regard for environmental concerns, President Magufuli has approved plans for a road to be built in the middle of the Selous (from Ilonga to Liwale). There is also a plan for a dam on the Ruvu River on the northeastern edge of the Selous near Kidunda. This dam, which has been in the planning stages for twenty-five years, would have disastrous effects for the wildlife in the Northern Selous and in a wildlife management area north of the boundary. Mining is also set to continue.

The biggest threat to the Selous, however, is the decision to build a mega dam (2,100 megawatts) in the heart of the reserve at Stiegler's Gorge. The economics of the project are unclear as it is not known who will pay for the project and the ecological consequences will be devastating.



## Part 2

### The First Attempt to Build a Dam at Stiegler's Gorge

Tanzania's largest river, the Rufiji, cuts through the northern part of the Selous Game Reserve and forms the southern boundary of the photographic tourism sector. The whole area south of the river is earmarked for sustainable hunting tourism, which was by far the greatest income earner of the reserve in the past. At Stiegler's Gorge the huge river passes through a narrow gorge.

Around 1900, the area had by then already been protected by the colonial Government and the Germans planned some infrastructure, including a road and some type of river crossing. A Swiss engineer by the name of Stiegler was surveying the land in 1907. His habit of hunting elephants in his free time caused him trouble. He wounded an elephant and followed it. The beast suddenly charged, which induced his gun bearer to disappear, unfortunately taking the gun with him. That was the end of poor Stiegler.



Stiegler's Gorge

When I started to work in the Selous in 1987 under a Tanzanian-German Government Agreement, the north bank of the river above the gorge consisted of many deserted buildings and a couple of square kilometers full of rubble and rubbish. There was even a cable over the river and a left behind cable car. We managed to get the VW-engine running again and several of the more courageous game wardens (not me) crossed the river halfway with the cable car before they lost courage to continue. These were the leftovers of surveying the Gorge to determine whether it was suitable for a large dam that could have been a source of electricity.

## The Norwegian Stiegler's Survey

Shortly after Tanzania's independence Norway had fallen prey to the elaborate writings and sweet words of President Nyerere and had selected the country as one of its main recipients of development aid. Despite having the policy of „self-reliance“ as official development strategy, Tanzania accepted such help gladly and became one of Africa's major aid recipients.

One of the many Norwegian projects was the preparation of a gigantic dam at Stiegler's Gorge. The Norwegian Agency for Development (NORAD) spent over 24 million US-Dollars in the 1970ies up to 1983 in preparing the project. The idea was to have a dam of maximum size with the single purpose of producing electricity.

It soon turned out that the enormous costs of two billion US-Dollars would put Tanzania into debt for many decades to come, and it was also found out that such a big dam could not be economical. 27 major studies were carried out between 1979 and 1982, and many additional serious negative and far-reaching consequences were identified. To mention a few:

- High sedimentation resulting in a short lifetime;
- Seismic disturbances with serious consequences for the dam and the downstream country;
- Excessive downstream erosion;
- The Rufiji delta, one of the most fertile agricultural areas in the country, would no longer be naturally flooded and fertilized;
- Destruction of mangroves with respective consequences for fish and prawn stocks and severe reduction of fishing, timber cutting etc. for the local population;
- Salinization of agricultural areas;
- Only a very special design of the dam could cater for major floods that occur from time to time;
- Introduction of non-indigenous floating plants;
- Complex drastic and irreversible effects on the vegetation and wildlife in the protected area;
- Infrastructure development and population influx would endanger the reserve including poaching.



The Gorge with the old Norwegian cable car of the early 1980s

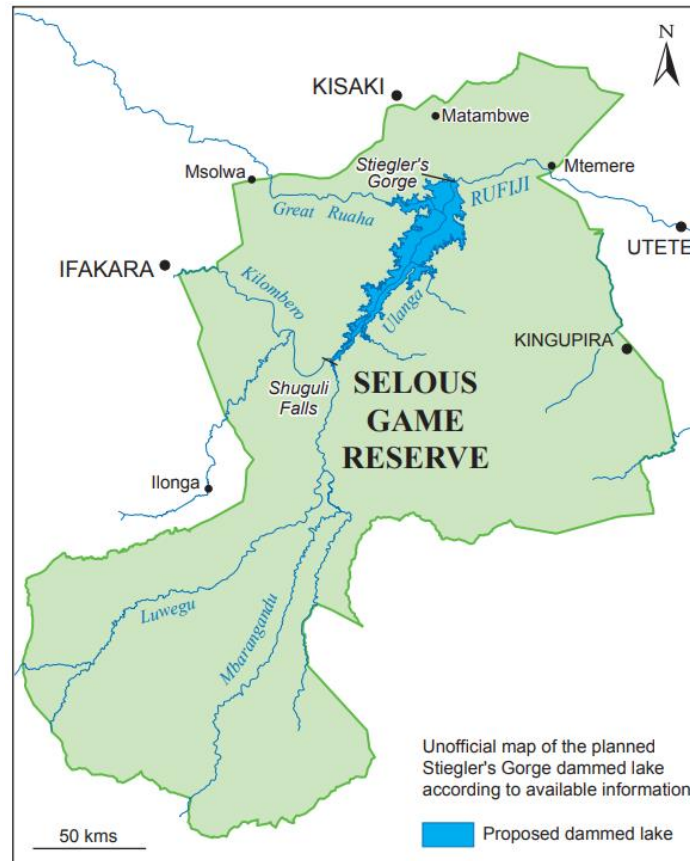
Soon the opposition from scientists at the University of Dar es Salaam grew. Even NORAD staff voiced increasingly criticisms that were aimed at the socio-economic and ecological impacts of the dam. Their concerns centered around health problems, insufficient electricity-needs of the country, negative economics of the dam and technical issues of the construction and the management of the dam that could overburden Tanzania. The World Bank refused to co-finance the project.

It is reported that critics of the project were marginalized and that their access to the project site and the existing studies and plans was prohibited. This referred even to the official Tanzanian research agencies. More and more it was understood that the dam, if realized, would become a national economic, social and environmental disaster. In 1988, NORAD itself stated that the dam would have become an economic disaster, if built.

Finally, the project was shelved around 1983 and the workers and engineers left. Meanwhile in 1982 UNESCO had declared the reserve a World Heritage Site. The dam was noted as a threat to the integrity of the Selous in the IUCN technical review of the 1982 World Heritage Nomination document, but it was then clear already that it would not be built. Despite this new status nobody cared to clean up the enormous amount of buildings, trash and scrap materials that had accumulated at the site over the years.

I remember to wade in 1987 through many thousands of medicinal ampoules in and around the dispensaries that catered for the once 2000 workers at the site. We wrote to the Norwegian Embassy to draw their attention to this scandal, but there was no response.

When the last workers had left, the Wildlife Division found out that almost all the rhinos in the area had been poached and that the elephants had been drastically reduced. In the 1981 aerial census report it was stated that the density of elephant skeletons was „highest along the lower Rufiji River“. Together with major rhino and elephant poaching that occurred at the same time in the Southern Selous during oil exploration, the downfall of the pachyderms in the reserve had well started.



## RUBADA Keeps the Plans Alive

In 1975 the Government established the Rufiji Basin Development Authority (RUBADA) in order to develop the area along the river. The main objective was clearly the construction of the dam. When this project stalled, the parastatal continued to exist, comparable to the Ministry of the Colonies in Italy that also managed to survive the end of the Second World War.

Whereas the Italian Ministry was at least closed down eight years after the country lost its colonies, RUBADA continued to exist for another 35 years. A high two-digit number of staff inhabited a massive four-story-administrative building in Dar es Salaam's Shekilanga Road. Since its foundation, the parastatal did very little except paying large salaries and administering itself.



In 1988 it was clear to me that RUBADA's director and his staff would do anything to keep their offices, duty cars and allowances and that they therefore would wait until their chance came to bring the Stiegler's Gorge plans back to life. I tried to support the Selous taking over the dam site again, but this was not possible. RUBADA held firmly on to the site.

RUBADA's only Selous related activity in those years was to lease out a couple of buildings close to the Gorge to quickly changing tourist operators. None of them had any visitors worth to mention, although one owner even brought a witch doctor to the site in order to improve his entrepreneurial success. He also asked to be allowed to bring in a live goat, which was to be slaughtered by the medicine man, but the warden declined. In the 1990ies RUBADA also started to "extort" money from the lodge operators along the Rufiji, even though only the Selous Game Reserve Administration had the right to grant leases for tourist operations in the reserve. It is said that several lodge owners paid significant amounts.

RUBADA kept the dam topic alive and found finally an ally in the person of the Minister for Water, Edward Lowassa. This Minister liked big projects. He had already convinced Japan to build a dam at Kidunda, at the northeastern edge of the Selous. A rational justification for the dam at that site was absent. The only logical explanation for this undertaking were the fringe benefits that its construction would bring about for those members of the Tanzanian elite, who would be close to the project.

There were much better options to supply Dar es Salaam with water, and technically the site was completely unsuitable for a dam, as the area is completely flat and has other disadvantages. Fortunately, we could convince the Japanese Government and later the World Bank not to finance the project. It would have flooded the so-called Gonabis Pan, a flat Wildlife Management Area that was indispensable dry season grazing of the reserve's northern sector antelopes and buffaloes. Today, 15 years later, not a single probe with a spade has been done. Lowassa would not have benefited anyway. He became Prime Minister in 2005 and was one of the very few Tanzanian politicians who were kicked out of a high office because of a corruption scandal. He later moved to the opposition party and run for President, however lost against the present President.

## Odebrecht/Brazil Enters the Scene

During his time RUBADA and the Brazilian Odebrecht Company joined hands to have a second attempt to build the Stiegler's dam. Two soul-mates had obviously found each other. We do not know how much the Prime Minister was involved. We do know now, however, that Odebrecht bribed Governments and politicians all over the world, and it is difficult to believe that Tanzania was the only exception.

Newspapers wrote that Odebrecht created the world's biggest bribery ring, and a US-court imposed a multi-billion-fine. In Tanzania Odebrecht consultants advanced the construction plans. Ecological considerations or even an Environmental Impact Analysis were unheard of. Selous management, UNESCO, Conservation NGOs and foreign Governments, notably Germany and the United States, which tried to support the Government in saving the remaining elephants could follow the developments with disbelieving amazement only.

In the course of the Odebrecht scandal the company disappeared from Tanzania as silently as it had entered the scene, however. The CEO and the top management of RUBADA also disappeared. They had had been involved in major embezzlement of company funds and lost their jobs. In late 2017 RUBADA was finally closed down, and the responsibility for building the dam has been transferred to the parastatal electricity supplier TANESCO, another company known for inefficiency and major financial scandals, by accident even for the one that was responsible for Lowassa's end as Prime Minister. The plans to build the dam had been meanwhile been taken up by the highest authority of the country, the President.

The World Heritage Committee (WHC) observed with "utmost concern" the different major projects, including the Stiegler's dam, which were being pushed by the Government in the Selous. It made clear that big dams and mining were incompatible with the World Heritage status, as they would "cause serious and irreversible damage to the property's Outstanding Universal Value." WHC urged therefore at every opportunity, for example during its Conference of Parties in St. Petersburg in 2012, "the state party to abandon plans for the different development projects which are incompatible with the World Heritage status of the property".

At the same occasion the WHC agreed to a boundary modification. About 300 sqkm<sup>2</sup> at the southeastern corner of the reserve were degazetted in order to facilitate uranium mining at the Mkuju River site. The Government had allowed the development of this mine for years in violation of its obligations under the Convention. Facts had been created, which the Convention was more or less forced to accept. The decision made, however, clear that the international community expected Tanzania "not to undertake any development activities within Selous Game Reserve, and its buffer zone without approval of the World Heritage Committee."

Tanzania agreed and signed in order to have the uranium site cut out of the reserve. However, the plan to build the dam was followed up unchanged.



Wetlands beneath the planned dam

## Part 3

In 1982, the World Heritage Committee, the intergovernmental decision-making body of the World Heritage Convention, decided to inscribe the Selous Game Reserve in Tanzania on the World Heritage list. This was to honour the “Outstanding Universal Value” of this vast protected area, which is the oldest and largest (size of Switzerland) in Africa. Other such sites in Tanzania are the Serengeti, Ngorongoro and Mount Kilimanjaro.

The honorary title is awarded upon proposal and request by governments and after intensive examinations and reviews by IUCN. It was a bit awkward therefore in recent years when leading Tanzanian politicians criticized the United Nations Educational, Scientific and Cultural Organization (UNESCO) for illegitimate intervention in Tanzanian affairs, after the World Heritage Committee insisted that the country’s government should follow the rules of the Convention in line with its decision to join the Convention and nominate Selous. UNESCO runs the Secretariat of the Convention and has the duty to monitor that the member states abide by their own commitments.



Stiegler's Gorge

## Mining: Not Permitted in a World Heritage Property

Mining is not permitted in World Heritage properties, and the major international mining companies have entered into an agreement with the Convention not to prospect or mine there. However, many smaller or rogue companies have not signed this agreement. In the 1990s the Tanzanian Government engaged in the search for uranium in the Selous Game Reserve and finally permitted a Canadian company to develop a uranium mine in the south-western corner of the reserve. The World Heritage Convention was not amused, and finally, after an extensive critical dialogue and despite the protests of relevant players, in particular from the conservation world, a boundary modification was agreed upon during the COP in Saint Petersburg in 2012. The agreement was a deal after much muddling. Although it was a “significant” boundary modification, it was rubber-stamped as a “minor” one in order to facilitate the procedures. The “Mkuju River” mining area, covering over 300km<sup>2</sup>, was formally excised from the World Heritage property, but not from the reserve, as this requires a change of the respective Tanzanian law.



The deal was basically unavoidable, as millions of dollars had been invested in the mine already, and the point of no return had been transgressed years before. The government had simply created facts and outsmarted the Convention. In order to avoid this for the future, it was agreed during the 36<sup>th</sup> Session of the World Heritage Committee in Saint-Petersburg in 2012 that Tanzania would not once again “... undertake any development activities within Selous Game Reserve, and its buffer zone without prior approval of the World Heritage Committee ...”.



Uranium mine "Mkuya River" in the Southeast of Selous

The Tanzanian Government failed to respect the agreed obligations of the agreement. Amongst others it granted another 34 mining concessions in the reserve and began developing the next major project – the big dam at Stiegler’s Gorge at the Rufiji River in the reserve’s tourist sector. Instead of regarding the Mkuju river mine as a singular exception, it was used as a precedent to argue that the Stiegler’s dam area too should be cut out of the reserve. According to UNESCO, one fact is crystal clear: “The construction of dams with large reservoirs within the boundaries of World Heritage properties is incompatible with their World Heritage status.” (Decision 40 COM 7, Istanbul/UNESCO 2016).



## Excursus

### *How Corruption Works in Practice*

*The Mkuju River Uranium Mine and the ongoing prospecting for uranium are good examples of major environmentally destructive projects, although in principle it is against Tanzanian legislation and World Heritage rules, which a country accepts when it proposes a site for World Heritage status.*

*The mining procedures in the Selous are interesting in relation to the Stiegler's dam. The reader should allow me therefore an excursus.*

*In the case of the uranium mine, the ministry gave the necessary permissions without following Tanzanian procedures and legislation. This can happen only if certain "bwana kubwas", political heavyweights, get involved and facilitate the decisions on the basis of their political influence. Such services are not always provided for free in Tanzania, and this is how corruption comes about. Corruption is defined as the "misuse of public power for private benefit"*

*The country ranks at a score of 103 out of 180 (the worst) in the Corruption Perception Index of Transparency International. This means it is pretty corrupt, although there are still a good number of countries performing worse. This is not an exact figure, but it can serve as an indicator.*

*Corruption always has two sides: one that pays for illegal services received, and the other one that receives money or other benefits in exchange. There are countries, some of them economically very active in Tanzania, where the payment of bribes is regarded as routine and whose Governments de facto tolerate corruption, as long as it happens outside of the country and facilitates foreign trade and investment. In most western industrial countries, meanwhile, strict anti-corruption legislation exists. This does by far not mean that there is no corruption anymore. However, companies cannot pay bribes in other countries openly any more, as this would lead to legal action against them. They must hide their bribes, and this forces companies to be innovative.*

*If "helpful payments" were made in the case of the Mkuju uranium mine or ongoing uranium prospecting, the problem is therefore, how to channel payments into the country, given the strict anti-corruption legislation in Canada and the UK, where the respective mining companies were registered at that time. Some explanation is offered by an interesting contract that was leaked to members of the Tanzanian Parliament and to the press. It led to hot parliamentary debates and a wide coverage in local newspapers.*

*An extremely well-connected Tanzanian businessman who was a member of the central committee of the ruling party for some time and had used his connections to become the largest hunting operator in the country as well as a major player in the photo-tourist scene, signed a contract with two uranium companies for one of his hunting blocks in the Selous. The companies were prospecting for uranium in that block.*

*The contract was drawn up by a Dar es Salaam attorney and signed by four directors of two international mining companies as well as the Tanzanian owner of the hunting company and his wife on March 23rd, 2007. A*

*complicated, foggy 12 pages agreement boiled down to the simple fact that the hunting operator would grant the mining companies access to his hunting block to conduct mineral exploration activities. In exchange, the two companies would pay the hunting block tenant an annual sum of US\$ 55,000, starting in 2007. If they would find uranium, they would pay US\$ 250,000, and an additional US\$ 6 million as soon as production would start.*

*It was reported that identical agreements existed for several of his other blocks, including the one where the Mkuju uranium mine was situated.*

*The hunting operator himself paid to the Government only annual fees of US\$ 10 000 to 27 000 for the rent of each hunting block. This gave him only the right to hunt, but no additional rights in the block according to the Hunting Act and other legislation, like the Mining Act. In particular, the tenant had no right to restrict the access to and movement or activities of people in his block, if they had an authorization from the Tanzanian Government, for example to explore for minerals or extract them. The tenant was not entitled to ask for a single shilling, if a prospector with valid documents entered his hunting block. Therefore, no profit-oriented international company with a sane CEO would have paid such sums to a Tanzanian company in exchange for non-existing rights.*

*It is therefore a realistic and logical assumption that this was just a sham contract to disguise corruption payments. The owner of the hunting company was very close to a number of political VIPs who played a role in granting exploration and mining contracts, and it seems that he served as the letterbox to receive payments on behalf of these people. The complicated contract most probably had no other meaning but covering “friendly payments”, so that the taxman and other authorities in the UK, Canada or wherever, would not find out what had really happened.*

*“Honi soit qui mal y pense.” Readers may correct me if they think I am interpreting the evidence inappropriately.*



## A Mega Dam for Electricity

The central rationale for the dam is electricity. Only one third of the Tanzanian population has access to electricity, in rural areas less than one fifth. More electricity is indispensable. The only question is: What is the best way to produce it? The strategic concept for the dam foresees that a private or public consortium of investors should build and run it. The state-owned Tanzania Electric Supply Company (TANESCO) would then buy the electricity. This company is at the same time the awarding authority for the construction of the dam. This model was chosen, as Tanzania itself does not possess the financial or management potential for the investment. However, a similar arrangement, which TANESCO had with a foreign private supplier in the past, led to a US\$100 million loss to the state due to corrupt practices. This remains an ongoing scandal, which has not yet been disentangled.

As mentioned in part II of this series of articles, the first company that was asked to construct the dam was Odebrecht from Brazil. It is Latin America's largest construction conglomerate and has a good track record for being able to design and build functional projects. However, it was also at the centre of an immense international corruption scandal and has bribed governments all over the world in exchange for profitable contracts. Negotiations between Brazil and Tanzania were conducted at the highest level and in 2012 a Memorandum of Understanding was signed. This was renewed in 2016.

The plan is to build a 130-meter-high and 800 meters long concrete-faced rock fill dam across the 8 km-long and 100 meters deep Stiegler's gorge in the Selous Game Reserve. In addition, four saddle dams totaling 14 km will be built upstream. The reservoir would eventually store 22 million m<sup>3</sup> and cover a surface area of over 1,200 km<sup>2</sup>, which is just a bit smaller than the island of Zanzibar. The proposal foresees an installed capacity of 2,100 megawatts. 400 km transmission lines and 220 km of roads were also projected.

In 2013, Odebrecht estimated investment costs for the dam of US\$ 3.6 billion excluding the necessary power lines to connect with the national grid. The company provided technical planning and even gave advice on how to handle the opposition against the dam by the World Heritage Committee and conservation NGO. Meanwhile, it seems that Odebrecht is not involved any more. For some time, the Tanzanian Government had indicated that Ethiopia might fill the gap. However, on October 22nd, 2018 Egyptian newspapers reported that "Arab Contractors", the biggest construction company of the country will build the dam. The two Presidents would jointly lay the foundation stone "in the heart of one of Africa's largest remaining wild areas", as the Egyptian "Daily News" naively put it. On December 12th, a construction contract amounting to US\$ 3 billion was signed. Time of construction would be three years.

## Who Will Foot the Bill ...?

Since the planning began, the project has been in technical, economic and political turmoil. Implementation is years behind plan. A tender for construction was published but was unsuccessful. This is quite understandable, as neither the technical nor financial preconditions for the construction were met. In particular, it is hitherto totally unclear who will provide the necessary finance, which, realistically speaking, will range from an estimated US\$ five to seven billion in total. For comparison: The country's total national budget is around US\$ twelve billion per year.

The major donors of aid money and the World Bank have already turned away. The African Development Bank has indicated in October 2018 it might supply a credit. Most shareholders of the Bank will, however, insist that the regional institute will follow its own environmental rules. The great "inconnu" remains China. The dam might fit into their present massive African infrastructure initiative.

President Magufuli has reiterated that the country will pay for the dam from its own resources. So far, the Ministry for Energy and Minerals has allocated approx. US\$ 300 million in 2018. This was 40% of the total budget of the Ministry of Energy.



## ... and is a Single Big Dam the Best Alternative?

Contrary to what is normal for very big investments of this kind, the project has neither been subjected to rigid economic and technical viability studies nor have alternative options been examined. Outside observers have meanwhile expressed major concerns that Tanzania is putting all its eggs into one basket in the economically crucial electricity sector. Natural gas has been found in big quantities and is not being adequately considered. Some experts argue that a number of smaller dams might spread the risk as compared to one single large dam.



The wind and solar potential has not even been looked into, although this is the approach many industrialized countries presently follow. Without sufficient data, it is unclear whether the river flow will be sufficient and continuous enough in the long run. How it will be influenced by climate change is another open question. Studies expect that rainfall will be increasingly variable and rivers will be exposed to climate-related disruptions. A combination of alternative energy production plants instead of one single mega production site would reduce risks and could altogether secure a capacity of even more than 2,100 MW, experts maintain. A decentralized production and grid system would also facilitate the provision of electricity to remote communities.

All these technical and strategic questions, which will determine the viability of the project in the long run, remain unanswered. Answers would require studies and consultancies. It seems that Tanzanian experts raised their voices but were soon suppressed. The new President, John Magufuli, who was elected and took office in late 2015, has made the dam his personal project. Previously, Magufuli was Minister for Works, Transport and Communication. He sees development coming primarily through infrastructure and major investments. While his nickname “the bulldozer” indicates that he loves roads and earthworks, it also describes how he managed the institutions under him, and how he now tries to run the country.

## “Anyone against Stiegler’s Gorge Project will be jailed”

Other African Presidents built huge churches, mosques, stadiums or conference halls in order to create monuments of their Presidency for posterity. It seems that Magufuli has decided to make the Stiegler’s dam the major monument of his Presidency for future generations. All discussions and queries were ordered to be stopped. “Come rain, come sun, Stiegler’s Gorge hydroelectric dam must be constructed”, the President announced at the Dar es Salaam trade fair in July 2017 to close the debate. After the opposition had asked to be at least provided with a proper Environmental Impact Analysis (EIA), one of his Ministers announced in Parliament that critics of the project would simply go to prison.

The “East African” called this in a commentary a “fatwa” and “simply idiotic. The newspaper continued: “Tanzanian officials have become so enamored of issuing fiats, orders, prohibitions and ultimatums that one wonders whether there are any laws left in the book for people to consult.” The threat against critics is symptomatic for the present political situation, which the European Union found serious enough to take it up at the United Nations Human Rights Council in September 2018: “The EU is concerned about the human rights situation in Tanzania, including increased restrictions to the rights to freedoms of expression and assembly, including arrests of, and charges against, human rights defenders, journalists, bloggers and members of parliament. A free and vibrant civil society and a strong and independent media are crucial ingredients for a sustainable and effective development of a society and a cornerstone in the fight against corruption.”

In any case, critics, conservationists and civil servants understood the government’s message. The project is not discussed openly any more. Like in any totalitarian system, nobody dares to speak up. Civil servants in particular will nowadays only talk to you about the project, if they know you well, and on the basis of confidentiality. For the Stiegler’s Gorge dam, the big danger in such a situation, in which dialogue and critical analysis is prevented by higher orders, is that erroneous developments cannot be corrected, that mistakes accumulate and that the

project might end in disaster. This is presently a possible perspective for the Stiegler’s Gorge dam. It could become the “White Elephant” that President Magufuli leaves behind for posterity.

## And what about Wildlife and the Environment?

So far, we have looked into some technical and strategic risks of the project, but for many observers the most important aspects are the ecological consequences. The project is in the heartland of Africa’s oldest and largest protected area and will certainly have major negative consequences. For the President things seem to be easy and clear. In a meeting with envoys at the State House on July 30th, 2018 he was quoted in the newspapers, saying that “wildlife conservation was expected to improve after the project has been implemented.” He added that “... wildlife will get enough drinking water compared to the past.” For most Tanzanian officials, these words probably settled the environmental debate, rendering any further EIA obsolete. For others, it showed complete negligence of the issues.



During the Odebrecht planning period in 2013 a first scoping report for an EIA had been prepared by the local consultant “Arms on Environment”. Like all other engineering and environmental documents, it was kept secret. WWF writes in its publication “The True Cost of Power” that the report was of poor quality.

In May 2018, the University Consultancy Bureau of the University of Dar es Salaam (Prof. Rafaeli Mwalyosi et al.) submitted an EIA. The document restricts itself to a few environmental consequences and leaves out the major ones. As experts comment it contains many errors, factual mistakes and gaps. In addition, the paper clearly does not any justice to the scale and the complexity of the proposed project under consideration. It identifies some negative environmental consequences of the dam, which the authors claim can be mitigated. In their eyes, the dam will pose no threat to the Outstanding Universal Value of the Reserve. They mention positive impacts of the dam on the ecosystem like an increase of biodiversity. Outside experts criticize them as unsubstantiated and highly questionable. The same applies to proposed mitigation measures, which are regarded as poorly deducted and inadequate.

Even from a merely formal point of view the opus does not fulfil the legal requirements for such a project, as a so-called “strategic EIA” is foreseen in the Tanzanian legislation. According to experts and relevant international organizations, the content is of appallingly poor quality and fails to meet the most basic requirements and international standards. In particular, it is not in line with the assessment principles laid down for World Heritage Sites. It also does not provide answers to the many questions the World Heritage Committee requested the State Party to answer in both a number of written communications and in formal Committee Decisions.

Relevant commentators point out that the EIA of the University Consultancy Bureau does not meet even the most basic established international standards and best practices. It does not identify the risks, impacts and benefits of the project and consequently does not facilitate the quality of decision-making that is required in the case of a World Heritage site, protected by international treaties. Many important aspects are missing, including for example hydrology, proper baseline data on flora and fauna, comprehensive social and ecosystem assessments and the biological and ecological processes, which constitute the Outstanding Universal Value of the property. Also, an accurate view of the impacts and what will be lost in the property if the dam is built, is missing. In a nutshell, this EIA does not deserve the name it carries, and its academic authors have lost all scientific credibility.

## “The True Cost of Power”

In the absence of a proper EIA, the only available document on the possible impacts of the dam is the report “The True Cost of Power”, published by WWF in 2017. The WWF underlines that there “are wider impacts beyond the physical inundation of 1,200 km<sup>2</sup> of land and the construction of the dam that must be considered. There will be increased erosion, the potential dry out of the lakes that are important for wildlife tourism, reduced fertility of farmland downstream and the retreating of the Rufiji Delta and potential collapse of the fish, prawn and shrimp fisheries found there. This could negatively impact over 200,000 livelihoods ...”.





## The State of Construction in December 2018

The Tanzanian Government does exactly the opposite and creates facts. This is the same strategy as practiced successfully in the case of the Mkuju uranium mine. The preparation of construction is in full swing while this is written. Wide roads from Kisaki, Mtemere and Kisarawe to the site have been built. Lorries are rushing on them day and night. The drinking water system at Stiegler's is being rehabilitated. Housing for a large working force is being constructed or rehabilitated. A Chinese construction company is present on the ground. Altogether there are already hundreds of workers on the building site.

The Tanzanian Government has decided that 1,450 km<sup>2</sup> of forest shall be cleared now. This will affect approximately 2.6 million trees. Authorities expect a revenue of US\$ 62 million according to press articles. It would not only be the largest single logging exercise in the world in recent times but would also constitute a significant breach of Tanzanian legislation. As an observer one can ask whether the Tanzanian Government regards itself as being above the law. A tender for logging fell through, but a Chinese logging company has been seen in the area on a reconnaissance mission some months ago. Logging has not started yet.



220 km of new access roads are being built

## Epilogue

Tanzania has to produce more electricity. The question is and must be how this can be achieved in an optimal way and with the lowest possible environmental damage. In order to answer this, all the options must be explored and compared. Instead, the Tanzanian Government is using a different logic: Tanzania needs electricity and therefore a mega hydropower dam must be built in the Selous Game Reserve. Cutting the decision-making process short bears the danger of a gigantic failed investment and can, due to its size and importance, endanger national security.

There are serious doubts whether the single dam option is feasible and whether the connected risks with this dam can be managed. Somebody must advise the President that he is running in danger of marking his place in Tanzanian history as the man responsible for the country's biggest mistaken investment. And somebody should assist Tanzania to conduct the necessary feasibility, technical and environmental studies in order to avoid this danger.

The dam is situated in one of Africa's most important protected areas, the Outstanding Universal Value of which was honoured with the prestigious and highly selective status of World Heritage Site. The negative ecological impact of the dam will be enormous. Amongst others it will probably destroy the wetlands consisting of river arms, lakes, swamps and thickets that constitute the "heart" of the reserve and its most important tourist area just downstream of the dam. A reliable and serious assessment of the impacts has not been carried out yet but is urgently required. If the Tanzanian Government continues with the project, the Conference of Parties of the World Heritage Committee will have little choice but to deprive the Selous of its world heritage status. This has happened only three times in the history of the Convention. It will lead to a major international loss of reputation for Tanzania. The national park and game reserve system of Tanzania has been one of the unique features and a unique selling point of the country internationally.



Such wetland underneath the dam will dry out once the dam is in place



As soon as the Selous loses World Heritage status, the German Government will have to decide whether it will indeed terminate its ongoing project to support the management of the Selous (Euro 18 million in 2018-2020), as it has decided and announced previously.

Presently, it seems improbable that the Tanzanian Government will change its position. If it turns out in a few years that the dam cannot be finalized for whatever reasons, the damage can never be undone. There is even another hypothesis that cannot be ruled out, namely that the Government is following a plan to reduce the Selous in size and to exploit its rich natural resources unsustainably, once and forever.

Members of the Tanzanian delegations to the World Heritage Conventions have indicated that the current President could indeed aim to considerably downsize the reserve. This would facilitate the logging of the Miombo hard woods valued at several hundred million US\$. Virtually all the valuable timber outside the reserve was cut down during the last 25 years. It was illegally exported to China. Uranium has already been found and the prospecting continues. In May 2018, the Geological Survey of Tanzania revealed that metals like copper, silver, cobalt, zinc and gold have been discovered. “We anticipate that with technological changes, there will come a time when we can easily mine the discovered minerals “, the responsible geologist said. Several crucial buffer zones of the reserve like the Kilombero Valley Ramsar Site or the Gonabis Wildlife Management Area (JUKUMU) have already been taken over by cattle.



The incursions into the Selous are on the increase and the cattle owners, might already greedily look upon the green pastures of the protected area. Many of them are big shots while the pastoralists do only the work. Even the poaching and export of ivory with a value of US\$ 100 million or more from the Selous in recent years might have been only the prelude to a much bigger exploitation of the reserve’s natural resources.

When we published our book on the Selous “Wild Heart of Africa” in 2009, I gave some thoughts to the future of the reserve. The reserve had recovered from near-collapse in the 1980s and for years it had been under excellent management by Tanzanian wardens. Financially it had been self-sufficient, mainly due to sustainable hunting. However, dangers could be sensed already. The retention scheme had been terminated and as a consequence poaching had started again.

I drew up different scenarios for the future. One was that once again the reserve would be exploited without environmental considerations. I sketched a gloomy picture in terms of poaching, mining and large projects for the years to follow. I saw such a development as a real risk, but then I wrote: “Let us be positive and believe that the Selous will continue to have a strong leadership, which will prevent such a scenario from becoming a reality.” It seems that I was wrong. The negative scenario appears looming ahead of us.



Annex:

## Selous Game Reserve: A Unique Wilderness.

By W. Alan Rodgers and Rolf D. Baldus

The Selous Game Reserve, at around 50,000 km<sup>2</sup>, is Africa's largest legally gazetted wilderness area. No habitation, no cultivation, no cattle, no people apart from reserve staff, some tourists and legal trophy hunters, make this a true wilderness. The Selous is remote, difficult to access, little-explored and still poorly documented.

Why is it such a wilderness? A mixture of history, tsetse flies and natural barriers have all contributed to its isolation. The Selous is the heart of the south-east Tanzanian block of miombo (*Brachystegia*) woodland – one of Africa's largest vegetation types running from western and southern Tanzania to Mozambique, north Botswana, Zambia, southern Congo up to Angola. Miombo is characterized by the woodland tsetse fly or *ndorobo*, which still carries bovine trypanosomiasis and used to transmit trypanosomes causing sleeping sickness in humans. Therefore, no cattle and few people live in the area. The sleeping sickness epidemic of the 1940s led to the large-scale evacuation of the tiny scattered settlements of Wangindo people and the empty area was added to the game reserve to prevent their return.

A major river network crosses the Selous. The Rufiji River and its tributaries the Reatha, Kilombero and Luwegu, were a barrier to people and modern communication. They were also barriers to wildlife. For example, the giraffe of the northeastern Selous have never crossed the Rufiji southwards.

History has not helped in that the Selous was the hinterland of the old Arab and Portuguese trading centre of Kilwa Kisiwani. Trading was largely in slaves and ivory, and slaving decimated the local populations. This was followed by the severe German reprisals following the Maji Maji rebellion of 1905. The maji, or magic water, which was reputed to prevent German bullets from killing, came from a shallow well, called Kisima Mkwanga, near Kingupira in the eastern Selous. The Germans applied a scorched earth policy – burning huts, laying waste and destroying crops.

The Maji Maji fighters did the same against villages, which did not join them. Finally, the First World War arrived and was fought as a bush war in German East Africa, with more than a 100,000 British and Allied troops unsuccessfully chasing 3,000 German and Tanganyikan askaris through the Selous. They spent the rains of 1916 and 1917 facing each other across the Rufiji River. It is still possible to see relics of the war such as cartridge cases and gun butts, and years ago, I found a horseshoe. The demand for food and porters again reduced the population.

So, the Selous remained a wilderness, which maintained enormously important wildlife populations. Despite poaching in recent years, the Selous still has some of Africa's major elephant, buffalo, hippopotamus and sable populations. Before the poaching crisis of the 1980s, it had the largest rhinoceros' population as well. The best estimates were over 3,000 black rhinos. Extensive unspoilt habitats allowed for sustainable viable populations; for example, there is ample space for Africa's largest wild dog population to survive.

But vastness brings its own problems and sometimes the Selous seems too big. It prevents easy travel from Ifakara, Mahenge and Songea to Dar es Salaam. Bordering districts want a road to be built from Liwale to Mahenge across the narrow neck of the southern Selous. There were efforts to create a "cattle corridor" from Ifakara to Liwale, allowing livestock to be moved to the beef-deficient areas of southeastern Tanzania.

The major dam at Stiegler's Gorge, which is presently under construction, would allow a road from Morogoro to cross the Rufiji and go on to Utete and Liwale. These roads would, of course, increase access and so reduce the concept of wilderness. Presently the government plans to build a dam on the Ruvu River, which would flood parts of the northern sector and put indispensable dry season grazing land under water, which invariably would lead to a significant reduction of grazers.

Another imminent danger are government permits granted to explore for precious stones, uranium etc. although an international agreement exists not to mine in World Heritage Sites. Yes, there are places, which have not been visited or walked through. There are streams, seepages and waterholes still to be discovered. There are new plant species still to be collected and identified.

The far southwest of the Selous is perhaps the least known of all. The valleys leading off the south Luwego River offer spectacular scenery in a total wilderness. Management policies for the Selous continue to promote the concept of wilderness – limited block based hunting, controlled tourism and a minimum of infrastructure. Wilderness is increasingly rare in today's world. It presently looks, as if the days of wilderness in the Selous are numbered too.



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