

Report about the Ethiopian trip 28. 1.-9. 2. 2022

Wind energy Ethiopia e. V.

Windenergie Äthiopien e. V.

Travellers / Workers:

Liranso Salomon (left in the picture)
Translators from Hossana/Ethiopia,
Uwe Anke, 2nd from the left,
Pappendorf, Striegistal, Germany.
Joachim Hahn, 3rd from left,
Rüsseina, Nossen, Germany.
Martin Menzel, 4th from left,
l,Bodenbach, Nossen, Germany.
Abiti (right in the picture) one of our
supporting “young
Technicians“ from Addis Abeba.



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1. Current situation 2021:

In October 2021, after a longer Corona-Project pause, we (Franz Fröhlich, Joachim Hahn) could take care of important things in situ. in a type of flying-visit to Tula, with the aim of securing a smooth ride for the next project, (see. detailed project report 2021).

Viewing of the extensive material storage area from 2019 in a storeroom of the Mekane Yesus Church in Hossana to check inventory and condition of the stock.

Exchange of a defective inverter in the electro house Tula.

Re-programming of PV-charge controller.

Preparation work for the completion of a building planned to accommodate a second electricity centre in the distant village area "Trumpet".

Preparatory instructions to the young technicians in Tula.

Rekindling personal contacts in Tula and the city Hossana

2. Aim of the project trip Jan / Feb. 2022

The main aim of this trip was to create a level of success in the project village Tula, so that for the next trip there would be a better chance of an extensive completion of the total energy system in Tula. Our project goal, which was ambitious, considering there were only 3 people in the group, could however, be reached. We had set the following goals for ourselves:

1. Purchase of 30 pieces of 200 Watt-Solar panels and two metal doors (to ensure the lock up of the store in Tula) as well as their transportation to Hossana / South Ethiopia from Addis Abeba (approximately 280km).
2. Shipment of spare parts for a defective inverter - repair option in a company.
3. Transportation of all materials stored in Hossana including two big battery blocks (stored since 2020) to the village Tula and local storage in electro house 1 and 2.
4. Clean up and tidying of the 1. E-House, overview and inventory check.
5. Inspection and if necessary, the repair of the defective diesel generator.
6. Installation of a new double rechargeable battery block in the 1st electro house including installation of a more powerful inverter and installation of additional inlet cables.
7. Conversion of the "old rechargeable battery block in the new electro house including installation of some solar panels with charger regulator including battery connection, in order to keep the battery in good condition.
8. Installation of metal doors for the new E-House.
9. Plan and viewing of new cable lines through the part of the village that until now has had no electricity.
10. Organizational clarifications in the village Tula (financial contributions, consumer behaviour)
11. Organization of a lasting contact between Addis Abeba and Germany.

3. Travel information / customs clearance / Corona-Situation / war events.

The relatively last minute booking of a flight was strangely enough once again not possible to book directly over Lufthansa or, Ethiopian Airlines (cooperation flights) but only over a second supplier, and this at comparatively high prices, Ethiopian Airlines, approximately 820,00 Euro/Pers. The Lufthansa flights to Ethiopia are apparently still suspended. Otherwise, the flight from Dresden via Frankfurt to Addis Abeba is a short and optimal connection. The journey starts from here at home at midday and by 6.00 o'clock in the morning one is already in Addis.

The visa is produced on-line only, over the platform of the Ethiopian Embassy. A visa costs approximately 48,00 Euro.

Requirements for departure was a PCR-Corona-Test, that was not allowed to be older than 120 hours at the time of entry into Ethiopia. No corona test was necessary for the return trip. A pre-online registration before the return flight from Addis had become unnecessary during our stay in Ethiopia since Ethiopia was taken off the risk list.

The customs clearance is still extraordinarily meticulous. During a pre-Xray check "suspicious pieces of luggage" receive a label, so that "fast exit", is not possible and everything is inspected, including our suitcases. Amongst many fuse boxes and individual installation material, a relatively large electronic spare part stood out. After a long and useless wait, I asked a co-worker, if I could talk to the person in charge, who very kindly registered the accompanying letter from the Mekane Yesus-Church and then let us run.

The Ethiopian standard currency, "Ethiopian Birr "(EB) had again gone down in value, 1 Euro=56 Birr. In 2019 it was at 1:34. We found that often the prices hadn't changed in comparison so that expenditures were then more favourable for us (hotel costs, technical goods and appliances).

Corona-Situation

Ethiopia had also to suffer from Corona, however on the whole, less than was initially feared. In Addis, masks were still partially current indoors. In southern Hossana, however, life had returned to complete normality. Apparently, Corona has been overcome there for two declared reasons: 1. With an average population age of 20 years old, Corona had relatively low chance of causing any dangerous cases. 2. Africans seem to be more resistant than Europeans due to their more frequent confrontation with different viruses and bacteria, (Kenyan studies). We were able to experience this normality with great pleasure.

War events in the North.

The unclear war events in the north and northeast of the country, above all between armed groups of the Tigray-folk and the state army, are still worrying, although in Addis Abeba and in the south of the country however, this doesn't seem to play a role. It is merely, army checkpoints on open country roads that make the need for security of the Ethiopian state visible.

Jeep trips.

The pre-booked jeep was ready and waiting. (Including driver, excluding diesel, 3000,00 Birr = 54,00 Euro/Tag.) Our old driver "Shifferaw" was not able to drive us this time, due to his corona infection which he had not yet fully recovered from. So the young and happy "Ephräm" was our new chauffeur..

4. Arrival in Addis Abeba, choice of hotel, solar panel purchase. Sat. 29.1. 2022.

As usual we first landed at our Ethiopian friends from Berlin, family "Wolde Giorgis Demissie". After an extensive breakfast and a typical Ethiopian coffee ceremony, organizational things were discussed, contracts (jeep) completed, and purchases planned. Thanks to the inestimable services of the family members Melat, who had already organised the purchase of the 30 solar panels. They just needed to be delivered.

In the hotel "Canaan", not far from from Woldes family home, we finally found a hotel, that was affordable and halfway decent, approximately 12 Euro / night without breakfast, but it had an extremely good gastronomy. However, the street noise and occasional power cuts were to be accepted.



5. Transportation to Hossana in southern Ethiopia Sun. 30. 1. 2022

Due to the fact, that Melat had already completed the solar panel purchase, (delivery planned for the 29. 1.) and also the two metal doors (custom made), we were able to just drive to Hossana on the Sunday, 30. 1. 2022. Melat had organised a Pickup truck. Seeing as the shorter road to Hossana via Budajira, which had been restored by the Chinese approximately 12 years ago, was now in a disastrous condition, we decided to take the approx. 80 km longer west route via Welkite, which proved to be a good decision. Scenically. It goes along the high ranges surrounding the Great Rift Valley with

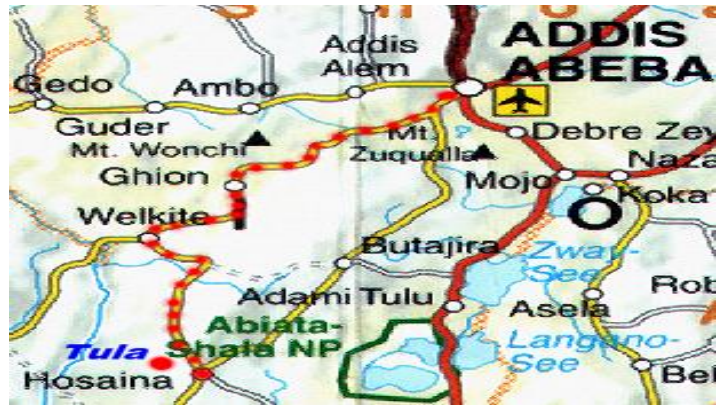


majestic open views, past many settlements, fields and gardens. It was amazing to see again and again, that threshing of the grain was still done at a threshing area with oxen, just like 2000 years ago.

It was important, that the driver in the leading Pickup truck had the paperwork, including receipts of the loaded goods, since the police would want to check this.

Start time 9.00 o'clock in Addis, we arrived in Hossana at approximately 16.30. 280 km.

Unfortunately, the hotel where we usually stay "Hotel Lemma", was booked out with a conference so that we had to switch to another hotel for this night. Although it was not run by Muslims there was no alcohol. The owner was a mineral water producer.....



6. Hossana: Material purchases and big Material loading Aktion on Mon. 31. 1. 22

It was planned on this day, after making some purchases, to load the 7 transportation crates onto a truck, from morning / midday, in order to then drive to Tula in the afternoon and be able to unload there, all by hand, to build up the tents and to then sleep in Tula. However, this plan didn't correspond to the local realities.

Thanks to the help and knowledge of the area of our translator Liranso Salomon (named after as Liri), in a relative short time we could buy most necessities: Wood boards and-slats for the PV-Roof construction, water containers, charcoal stoves, charcoal, bread, water, vegetables, telephone cards, schnapps and toilet roll. Everything went smoothly. The warehouse on the land of the South synod of the Mekane Yesus church was open. We could plan the loading of the truck: whether to load single products by hand or by means of forklifts for a compact loading of the crates? We decided in favour of the latter.

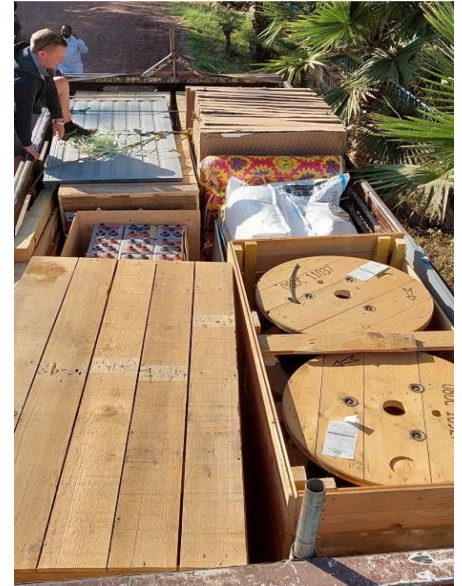


Then the unloading of the bridged rechargeable battery cells, which stood on two palettes, each weighing nearly 1 Ton. If just one of the 2470 kg-cells would break, the entire project would have failed.

Then, truck and Forklift (telescope loader) actually arrived. It was midday. The hall was locked and to our amazement and then also irritation - was not open again for hours. So, we stood around waiting, with all the machinery and could do nothing but hold onto one (or two) bottles of beer. What had happened? There were some open questions and maybe a little irritation at the Church management level. Whether one was allowed to hand out the goods to us, almost all members of the management were new and hardly knew about the project, although we had now been working together under partnership contract with this church for over 10 years. Now, in retrospect, we also see a feeling of responsibility from those in charge



or maybe not in charge. It wasn't until late afternoon, that the hall was opened again and loading could begin. Precision work was in demand, and the crates fit exactly on the truck as planned, however, what we had not calculated was that the pallets under the crates at this time were now severely damaged but with Martin Menzels prudence and under most difficult conditions, they were bolted together again in a flash. Luckily, the cable-less screwdriver which I had previously asked to be brought over from Hossana had arrived. Without this, all would have failed. With the help of beams and poles the crates were heaved into position by strong, active men on the truck. Then it was evening, and we decided to stay overnight in Hossana and start on our way the next morning. In the end, we were infinitely grateful that despite the obstacles none of the crates got broken...



7. Transportation to Tula, Unloading and setting up camp. Tues. 1. 2. 2022.

The 20 km long trip from Hossana to Tula of approximately 2500 m below sea level to approximately 3000 m above sea level is adventurous, for the truck however, amazingly feasible. We reached Tula before midday. We decided in favour of unloading part of the freight into the new E-House in the village part, that we call "trumpet" because of the birds' eye view of its shape: PV-panels, several cable drums, metal doors and the building wood for the solar roof. Thanks to the many spontaneous helpers from the village, the unloading went quickly. After that we went on to the older E-House, where the rest of the freight, the battery blocks, rolls of cables and all individual electric components were unloaded. This meant a lot of never-ending unscrewing of screws which had served to hold the crates together to protect the load during the journey. Special transport belts, proved to be really useful for the heavy batteries, that the Berlin Battery company was able to supply us with in advance.

After midday, about 13.30 the truck driver could be paid (approximately 13.000 Birr = 230 Euro incl. "Overnight charges") and sent back to Hossana.

Then we were able to set up camp so that we had enough time to get settled in. Our tight time schedule for the day before, never would have worked. So, with strange obstacles and complicated paths, God writes in amazingly straight lines.



8. Rat damage and technical problems - about moments that can make one become depressed.

My heart pounds every time I reach Tula. No, it is not the exertion of a rather adventurous cross-country trip but the question “what awaits us in Tula?”: Is the installation still running? Are there problems with the technology? Are the village technicians present? What does it look like in the electro house? Does it all still exist?

What we found, was initially devastating. There was no light. The fuse was switched off, the battery fuse too. The technicians gave representative reports of problems of an overload of the accumulators, which they wanted to stop. And the Safety fuse tripped out approximately 10 days ago. The battery main safety switch kept burning out. They showed me several of these 125 A-Fuses. I could not explain any of the problems shown to me at first. And nothing is worse than problems, whose cause you don't know. Then amidst this disaster, a sidelong glance showed big rat nibbled holes in our material cupboard and the plastic toolbox. In October last year our water containers had also been uselessly ravaged by rats nibbling great holes. Whether bulbs of the LED lamps, whether charging lights or screwdriver grips, bags, suitcases, or toolboxes all knarred by rats. Later, we discovered a big rat knarred hole in the kitchen box, into a fish can. A feeling of helplessness took over, how to deal with these rats. Luckily, there were no signs that the rats had nibbled on the battery casings. All this, and the unsolved technical questions and the rats, let my mood sink very, very low.



On the Following day, I analysed the technical problems piece by piece in order to understand them.

1. The big rechargeable battery block was fully loaded and in order.
2. When plugging in the battery trip switch, I saw that the one of the technicians had inserted one of the double safety fuses incorrectly, so that the remaining safety fuses had to burn out, because the parallel one was on a wrong outlet. One problem solved.
3. Then I discovered that two of the five active solar regulators were set on 48 V instead of 24 V. With that the accumulator overload was explained. Also, a PV-charger showed problems with loading. This could be replaced later. By re-programming the PV-regulator, everything could be put right. The new Victron-PV-Regulator no longer allowed an unpredictable conversion of voltage.
4. The battery showed an overloading defect. We already had this once and could remedy it by exchanging a circuit board. Since we had wanted to install a bigger battery (7 KILOWATT), the function of the total system didn't stand to debate. Nevertheless, the question remains, technically, how could we manage the assumed overload of current and voltage. For a possible solution to the problem see section 11 "A special electro-technical problem “.

Thanks to the thoughtfulness of the other group members, we could eat something in the evening and move into the built-up tents. With a mini rechargeable battery we had light and could charge our phones.



9. Performance in the old and new Electro-Houses Wed. 2nd to Son. 6th. 2. 2022.

This has been on the agenda for a long time: The E-House had to be tidied and organised: old left-over cable pieces were removed, a wheelbarrow thrown away and a wooden cable roll was turned on its side to become a table for the regulars. And so, there was more space, which gave room for the "in house "battery transport". More to the point, over the course of the day we were able to organise and add to the tool board for all the tools, old and new in the electro-house as well as preparing a selection of tools needed by the technicians for further independent work they would be expected to do on the network. Our "Previously locked up tool cupboard was emptied of Rat left-overs and cleaned thoroughly then left standing open, since we have the impression, that the rats feel much more at home in closed areas rather than open ones. The sensitive measuring tools that were stored here before would at last now be stored in a rat-safe crate.



Overview of assembly performances.

Since it is not feasible to give a complete and thorough chronological report of work done from 2nd to the 6th of February 2022 here, the following is a summary of these performances as an outline. All the work took place at the same time by two separate groups but with changing members, always with the back-up of our young technician, Abiti and the village technicians.



a) Main Electro-Headquarters.

- Material organisation, Cleaning, Tidying of tools.
- Assembly of the re-chargeable battery rack for the new re-chargeable block.
- Carrying the old re-chargeable battery block out of the main E-House (Tula-Technicians)
- Carrying and assembly of the new re-chargeable battery block, (24 cells approximately 70 kg), into the E-House (Tula-Technicians)
- Dismantling of the old 4,5 KW- inverter, extension of the circuit board for repair/exchange.
- Assembly of the new 7-KW-Inverters incl. connecting it to the Electricity box.
- Wiring up of the Electricity circuit box.
- Switching the villages electricity supply back on; circuit breaker test for the E-House.
- Re-construction of a battery divider switch with three parallel main safety fuses
- Re-positioning of a reinforced Battery conductor cable (plus / minus each 2 x 50² Cu) with multiple crimped ring rivets



Dismantling of an apparently defective PV-converter, (a defective regulator was already dismantled in October).

Assembly of two new PV-Regulators. Therefore, completing the connections of the PV-connection of six PV-boards with one PV-Regulator each, with total full strength of 9 KWp.

Corrugated iron security roof over the sensitive technology:

Repair of the emergency current aggregate (exchange and new connection of a charred automatic safety fuse box.)

Mounting of metal door in the store to the "solar roof outbuilding ".

Build a big metal lined rat safe crate for sensitive technical parts, camping equipment and kitchen utensils.

Sorting and adjustment of the rat eaten camping kitchen.

b) Performances in the 2nd (to be newly develop), Electro-house in the part of the village called "trumpet "

This Electro-station became necessary as more cottages clearly had to be connected in the village, as had been communicated to us at the beginning. Roughly 250 cottages instead of 130. This considerable increase in supply can be only managed through an additional Electro house, that should supply a separated village area. Since this is smaller, we had decided to move the smaller old re-chargeable battery from the main headquarters about 2 Km away and install a bigger one at the main headquarters. The second Electro station should be purely solar powered.



The wood and existing clay building was erected in 2019 and in October 2021 was already showing sad signs of weathering, particularly because of its, still missing corrugated iron roof.

On our request and after our delivery of corrugated roofing, in October 2021 the walls were newly wattle and daubed and the roof was put on. Now that the preparations were completed, we could start with installing the technical equipment. The building had clearly turned out to be bigger than we had planned. However, with the larger roof surface it meant a greater possible yield via more solar panels. Also good. Not only that, the building could be halved inside with a dividing wall and a second "security door " to an extra room providing a storeroom and separate technical area..



The following could be taken care of here:

Mounting of two lockable metal doors (outer and inner door).

Mounting of two windows with metal shutters.

Levelling of area to stand the re-chargeable battery block.



Installation of the base framework and the rechargeable battery blocks (The "old" one from the main Electricity headquarters), including cell connections. The 12 rechargeable cells (approx. 80 kg) could be transported with the jeep.

-Connection of the rechargeable battery block with a Battery divider.

-Installation of a big wooden assembly wall on the north side to make it easier to secure all electric components (made of boards and transportation crates).

-Installation of two PV-Regulators, (the two missing ones which were installed as spares in the main electric house and must be replaced in 2023),

-connection of a converter and a charging block.

-Installation of two solar panels (each 200 watts) on the roof for keeping the chargers loaded.

-Installation of a water protection board over the Technical-wall.

And with that, the preconditions have been fulfilled for the next part of the project of completing the extension of the 2nd Electricity house. It is still necessary to finish the Electricity control box, the installation of the two lacking PV-Regulators as well as the installation of the complete solar roof with 32 PV-Panels of 200 watts, as well as the connection of the still to be built, village network.



10. Energy consumption, consumer behaviour and "Bulk consumer Church"

On a whole, one can only smile over the energy consumption of the village if, one considers how much one household alone in Germany uses. Since however, it is about a very restricted energy production in Tula, other principles are valid here.

It is interesting for us to see how much electricity the village uses when everything is up and running, in order to be able to estimate how much electricity we need to provide. At the moment, there were still about 130 or 140 homes, two churches, the village administration and the school connected.

Here some observations of the electricity consumption: Since middle October of 2021 the counters ran approximately 100 days, 1.340 kWhs were used, at times some of "trumpet" had been switched off by the village technicians. That would be 13, 4 kWhs per day. After we switched the supply back on, including the church. A daily consumption of 20 kWhs was recorded.

The estimated overall yearly consumption will be about 7.000 kWhs for approximately 130 households, in Germany, that is the energy consumption of approximately two households.

The power consumed depends on the time of day:

Mornings: 800-1200 watts

In the evening: 2200-2300 watts

It turns out that the larger rechargeable battery was necessary. At peak times of consumption, the charged levels will go down considerably. With 3,6 Kw, (our water Kettle), for example the charge level fell from 24,8 V to 23,8 V. Approximately 150 A comes from the rechargeable battery so long as no solar current creates an out-put at night, for example. Nevertheless, the new rechargeable battery appeared to be extraordinarily "steady".

A certain problem with consumer behaviour came to light. Three years ago, in the evenings, we measured a consumption of approximately 1,5 Kw. It was now 2,2 KW the same number of connections. Therefore, the consumer behaviour has changed in the direction of a higher energy consumption. A tour of the village showed us the causes. The factor "lights" plays a small role, there are generally always LED lamps in the use (usually 7 watts). There were other reasons:

1. The number of small appliances has increased, radios, chargers, rechargeable lamps.

2. A major factor are the few televisions that have appeared. Originally, we had not allowed these in the Household connection contract. Unfortunately, only some of the households had received this contract. It is difficult to explain to the inhabitants that we can only provide a limited amount of electricity per home. With amazement, they responded to my somewhat provocative statement, that the 170-watt- T.V. uses the amount of electricity provided for 10 households and actually, they should be paying ten times their present electricity costs. During the large church service-like meeting, I could stand before over 200 villagers and explain the situation with the request not to connect any further TV appliances but instead watching T.V. together in larger groups would be better. Whether the mighty applause that took place will shows its fruits, we don't yet know, however, we live in hope.



3. One of the two Protestant churches (Megalot-Church) has chosen to expand in a super reconstruction. Many outbuildings and - extra rooms for the Sunday school, kitchen, and places to use for studying. Therefore, much more than just church services. In the church alone, there are 15 lamps hanging from the high ceiling. These alone, would have to be estimated at approximately 300



watts not to mention the imposing amplifier system. Here we thought together with the community leaders whether a mini power installation for the church alone, might be the best option though the community would clearly have to pay most of the costs, of which we were also assured this was possible. Here we shall have to see, whether it actually materialises. A diesel aggregate for 1000 Euro would be by far the most advantageous variation here. For the pure church service, that would be a genuine alternative. But already an intended 10 - hour business per day (only the lowest current use) due to the diesel consumption the cost advantage would go out the window.

11. A special electro-technical problem (only for electro technology freaks)

Not for the first time, we are confronted with an electro-technical problem, that we must solve urgently, in order to be able to retrieve the service of the inverter in the village at all. It is the same problem as before, of protecting the inverters when they short circuit due to a temporary overload. Once again, the inverter short circuited (defect in the motherboard), and we suspect that it was due to too much incoming current or due to a short in a point rubbing in the main cable. Now, one could think that an inverter with a 4.5KW performance (ca, 20 A) would be protected enough from short circuiting by at 16 A-Fuse. However, this is not the case, because a fuse box with melt protection, needs three or four times the amount of electricity to short circuit, a 16 A switch will trip when a consumer used more than 16A for a while. But the inverter cannot do this. It can't trip a 10A fuse. The fuse stays in and the inverter will be switched off by an internal safety switch, which it has obviously done often. The inverter can just about trip an 8A fuse. Then the inverter would be protected from a short circuit by a fuse. that would mean the the consumers could only use 8A (Approx. 1800 Watt) from a performance of 4500 Watt!!!

Therefore, we must go in search for an electricity fuse box that trips the switch at a defined level of current (for example 25A). Then, the inverters 4500 Watts can be made fully available to the village.

The same goes for an eventual overload perhaps caused by a distant lightning strike which is under the trigger threshold of the built-in lightning protection valve, (for example switch off at 280 V.)

Finding a solution to this problem is extremely important for the entire installation.

12. Problem Stabilising the electricity masts

In the last years, it turned out that the masts made of eucalyptus trunks, buried into the ground, are not feasible as they rot at the base quickly. The masts don't last much more than 5 or 6 years. There are more than 200 masts. We had tried to find a remedy through different test methods:

-Take pine instead of eucalyptus. Very good alternative. Unfortunately, there are not many pine trees near Tula.

- Simply paint the masts with tar paint above and below ground level unfortunately only little effect.

- Rap tar mating around the base of the mast above and below ground level. This proved to have a good effect, but it is very complicated to get done properly.

- Casting a concrete element including screwed connection of the masts. Certainly the most durable solution, but in practise impractical and too heavy.

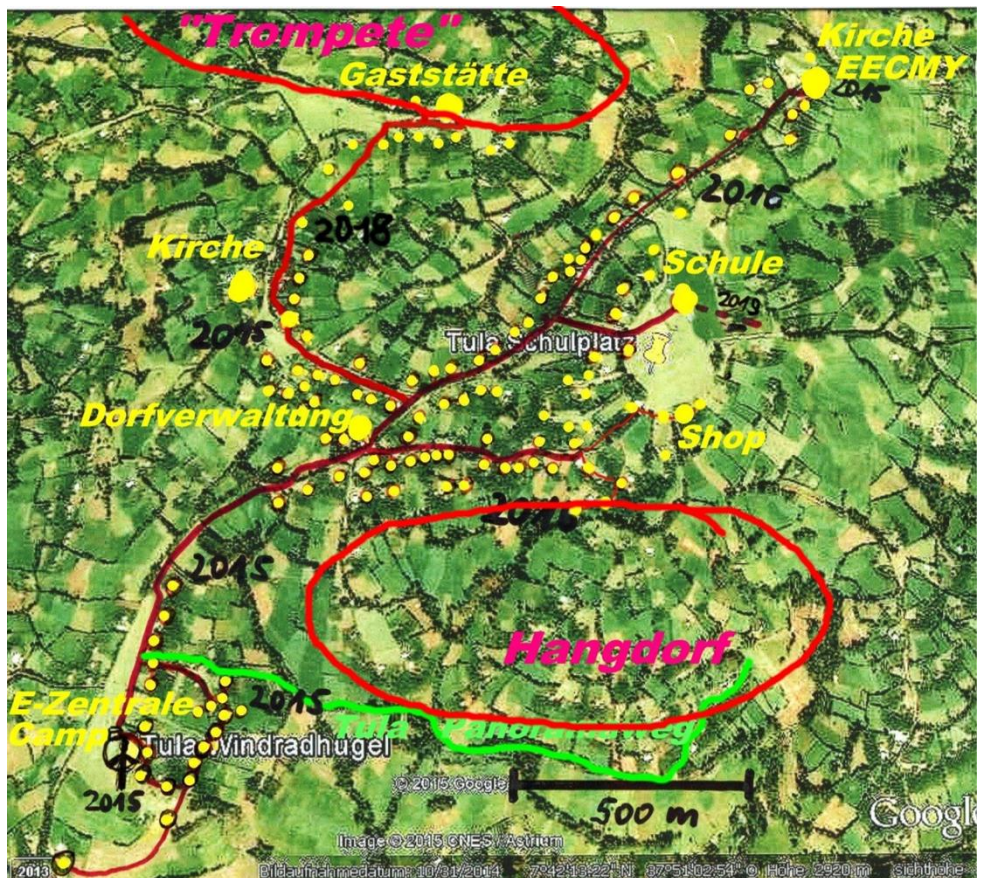
- The next thought came, to wrap the base of the masts with a foil approximately 30 cm over and 40 cm below ground level, to staple this on and secure the top of the foil with a big cable binder. We tried this with approximately six test masts. This was a light proof foil - it proved to be an easily performed variation. We will see if it proves itself to be a good solution.

Many masts have already been replaced by the technicians, with this method.



13. Planning of more cable lines.

The map here shows the present extent of the project, every yellow point is a connected home. Circled in red are the areas in the village that still need to be connected. With the help of Google Maps, I was also able to plan and mark out the planned cable route on a detailed map and to calculate the amount of cable needed. Now it was decided to walk the new cable route together with our translator, Liri, the mayor and the village technicians. This was a generous Sunday hike of probably over 4 km. This "line hike" was of great importance for the mayor and the technicians, they could practise reading maps and determining the location, as there are no maps of the village. Moreover, we could calculate the planned cable route together. With that the technicians are ready and able to start laying the main line while we are no longer here. there is plenty of material available.



14. Organizational regulations with the village administration

Important with all performances in Tula is the inclusion of the mayor and this villages elders. This usually happens in an open village meeting, which this year took place near our power station, on the lawn. I had previously discussed with Liri, all points to be talked about:

1. General information about the building of the network and current situation of work. in progress.

2. Consumer behaviour; House checks (also TV problem).

3. Problem of homes not yet connected and contracts.

4. Necessary rise in electricity prices from 30 to 40 Birr. (= 0,71 Euro per

month) to the pay for the security, a quarter goes to the "Sleeping Guards" who will sleep in the electricity house.

5. Building up reserves. The biggest problem in a company, that has never needed to build up a reserve, since each repair / each replacement part can be taken from natural resources.

6. Payment of the technicians (also increase in house connection).

7. Perspectives.



15. Person to Person. Contacts.

Meals with the locals at home.

As well as the nightly invitation to coffee at our guest family home, we were also invited into individual homes in the day and sometimes to the church. We were offered, Kollo (roasted grains), Kotcho, (a fermented, backed and somewhat sour tasting, green, brown mash, produced from the trunk or the root of the wrong Banana bush), buttermilk, good beer, a remarkably strong Araki spirit with a rustic taste, quickly steamed local cabbage leaves or also grilled goat meat pieces. Both Kotcho as well as the buttermilk are spiced up with the sharp chili and paprika powder, Mitmit or Barbaré. Usually,



there is an open fire in the middle to the hut, which by the way, has no chimney which leads to a considerable build-up of smoke which often leads to tears. Amazed children and grown-ups, happy and thankful to receive and cater for their guests. These invitations testify to hearty connections, however certainly also now and then as a reminder for us that their home should also soon be connected to the electricity network....

Balls for the youth.

If there is anything that is received well, that's balls for children and teenagers. Uwe Anke bought donated volley balls and soccer balls, that we could hand over to the youth during the village meeting. The joy was gigantic, and we were happy to see them soon training with the balls.



A trumpet for the restaurant "Zur trumpet"

Because of the trumpet shape of the meadow area Northwest of the village (birds eye view), we call this part of the village "trumpet". The village pub also got its name from us in 2019. Now, "trumpet cafe" stands on a big sign at the restaurant in amharic writing. This prompted me to take an old trumpet donated from Uwe Dassler from Choren and give it to the proprietor, Adisso as decoration for the sign. With a serenade on this trumpet, we made a small and happy ceremony followed by an invitation into the restaurant. Whether Adisso really hangs the trumpet on the sign or tries daily to elicit sounds from the instrument, we don't yet know.



Pictures for a hotel.

When in Hossana, we use the hotel "Lemmo Inter-national" for our arrival and departure.

Now, we, Franz Fröhlich and I, noticed in October 2021 that the walls of the otherwise quite beautiful Hotel-Restaurant were as bare as a concourse. So, the idea came about, to give the hotel a few large wall pictures with Ethiopian motives. We could now put this plan into action. I had enough typical Ethiopian motives. Now to tell the boss, about hanging the suitcase sized pictures (we couldn't bring any larger) on the wall. We had nails and hammer at hand. After initial hesitation, however, "I cannot afford this". He thawed a little and we could happily hang the pictures on the wall to the bosses astonishment. In the end beaming faces from the staff and certainly from some guests, and clearly an improvement to the hotel restaurant.



16. Return trip from Addis Abeba, material search, material purchase and instructions through the partner church Mekane Yesus and check list for Abiti.

The return trip on 7.2. to Addis over the west route (Welkite, Wollisso) went without problems. Stop Checks through generally friendly army-members showed however, a certain tense domestic situation, that is due to the unrest in the north.

The departure day, 8. 2. was used in Addis for six tasks:

1. Visit to the solar company "solar Development "in Addis Abeba

Is it possible to have our 5-kilowatt alternator repaired at the company "Solar Development"? (For which we had bought spare parts from the company) And was it possible to get such machines directly in Addis?

Previously the alternator could not be repaired. In the meantime, (February 2022), the repair seemed to have been successful. The boss of the company informed us very frankly that the incurring transport charges, customs charges and import charges to get technical machinery such as an alternator, into Ethiopia, came out with an end price that would be completely unacceptable for us. Since the dues shift unpredictably, the company cannot make any dependable offer for us either. Therefore, the only affordable option for us remains the export from Germany with transportation through us, in our baggage.

2. Purchase of two more solar panels.

Since it is better to have not only 30 but 32 panels connected in Tula, we bought two more PV panels at the „Universal for Electric “in the piazza.

3. cost - and availability search "diesel aggregate “

At the piazza in Addis, we could get a price at a store for a diesel aggregate with a performance of approximately 2,6 - 3 KILOWATTS. They cost just under 1000,00 Euro each. This could become current at the next trip since the church of Amba village near Tula, requested an aggregate for their church. We really want to comply with this wish, since the electrical connection of the village which was planned a few years ago unfortunately had to be cancelled due to a translation misunderstanding, as it was realised that Amba-Village was not a part of Tula but a separate neighbouring village. There was great disappointment in 2019.

4. Instructions through the church Mekane Yesus

The very active coordinator previously responsible for us in Hossana called, Ashenafi had been transferred, in the last two years, to another department of Addis Abeba, could meet us briefly once again and could give us some instructions. He recommended that we get the financial system sorted out in Tula. The technicians should get a fixed wage and there must be a possibility to create reserves.

Essentially, these are also our concerns, that He clearly wants to communicate with those responsible at the church in Hossana once again.

Unfortunately, Ashenafi is now being sent by his church to Switzerland.

5. Check list for check-up trips by Abiti

We produced a check list with Abiti, that he understands the rules for the regular check-up trips to Tula. It is planned that Abiti, as our contact, drives every 4 to 8 weeks to Tula in order to keep an eye on the situation there. To check with the technicians about any problems, to ask about present state of affairs and or to give advice.

6. A Thank you meal together with everyone involved.



That is important to. A beautiful meal to say "Thank you" to all those whose preparations in Addis Abeba contributed greatly to the success of our project.

Just before midnight, our flight took off as planned for Frankfurt. Just before midday, we arrived, on the 9. 2. 2022 home again, grateful and fulfilled.

17. Total cost of the project trip

The immediate costs of this project trip amounted to 10.385,00 Euro. In it were included, all costs for material purchases, flight, transportations, services, machine use, extra expenses and overnight stays. The flight costs however, are donated to the organisation by the participants.

All the other materials and components transported from Hossana to Tula by truck, see chapter 6, were already shipped to Ethiopia and paid for in 2019/20.

We are very grateful that this action also stood on sure feet financially, through regular contributions received.

18. Perspectives

In order to be able to complete the electricity network in Tula in the foreseeable future, the new electro house must be installed completely: Connection of all solar panels of two rooves, installation of the still missing Photo voltaic regulator and a battery including all wiring and connection with the village network. The bulk of this will now hopefully be connected by the technicians in our absence and can then with each house connection by the technicians be completed. Then, all will be revealed whether our cable material and all installation components already deposited in Tula are enough. In January / February 2023 a montage trip is planned to check this.

If either of the two currently, solar-supported Electro-centres, are working at full capacity, the wind turbine, which is currently shut down due to a lack of regulator, is to be put back into operation in order to help cover the extra demand for night-time electricity.

We are very grateful that this trip, despite being a relatively small group, was highly effective and everything that we had planned to accomplish, got done. Thanks to all that participated in the fore and background!

Gez. J. Hahn.

Photos:

Uwe Anke

Jochen Hahn

More Information about the project can be found under www.creaprotect.de