

Mazingira Bora

Newsletter December 2025

tist Growing Trees
Growing Leaders

1. We are Honest
2. We are Accurate
3. We are Transparent
4. We are Servant to each other
5. We are Mutually Accountable to each other

www.tist.org

English Version

TIST is an innovative, time - tested, afforestation program led by the participants.

Dial *709# (Safaricom) or * 789* 7000# (Other Networks) and get to know more about TIST and your Small Group. Follow the prompts. Safaricom is Free.



**Ntharagwene TIST Cluster meeting held on 19/11/2025.
Next meeting will be held on 17/12/2025.**

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TIST: Greenhouse Gas Business.

Growing trees absorb carbon dioxide through photosynthesis. Carbon dioxide is one of the greenhouse gases, which captures the sun's radiant heat inside the Earth's atmosphere helping to maintain the temperature of the Earth surface. The Earth is getting hotter and hotter which can be very damaging. This is called the Greenhouse Effect, which causes some areas of the world to experience more flooding, more drought or desertification.

The burning of fossil fuels like oil, coal and natural gas and the cutting down of trees produces carbon dioxide. Because growing trees absorb carbon dioxide, they help reduce the Greenhouse Effect. Governments and large Industries in many countries want to reduce their emission of carbon dioxide so that the Earth does not heat up as much. They have signed many different agreements including the Paris Accords which have every government in the world involved.

TIST Quantifiers count and measure the trees we plant so that CAAC can work out how much carbon dioxide the trees absorb. The unit of

measurement is equal to one tonne of carbon dioxide absorbed and sequestered in the living tree. In order to make a 'carbon credit' the TIST program must be "Validated" by an outside 3rd party to assure that all international requirements are met. Then the amount of CO₂ sequestered by the TIST trees is "Verified" to be accurate. Companies and Governments can then buy those 'carbon credits' meaning they can pay for TIST trees to reduce their carbon dioxide emissions for them.

We must have honest and accurate data on trees to sell these credits to a buyer. The carbon credit money can help groups to be even more productive, effective and start new projects. TIST groups get paid an advance of \$20 for each 1000 trees each year (roughly 2.00 kshs per live tree per year). When the carbon is sold, the TIST farmers will receive 70% of the profits. In addition to the greenhouse gas payments, the TIST farmers get co-benefits from other TIST activities.

TIST Farmers - let's plant more trees!

Together we achieve greater benefits.



TIST: Small Group Techniques: Group interaction.

a) *What is the best way to arrange people during a Small Group meeting?*

A small circle is the best. Don't have a table because it creates barriers between people. Don't have a chair and a large seat for the most important person. In TIST, we all sit the same way. We either all sit on the ground, or we all sit on chairs.

b) *What do you do if more than twelve people want to join your group?*

If there are more than twelve people interested in joining your group, it is best to form a new group. The group can multiply with two, or three or four members of the original group forming the core of the new group. This is better than one member trying to start a group alone. Remember to start using rotating leadership straight away.

c) *What techniques can you use if the group energy is low?*

Split up the group into pairs and get each pair to talk about the task. Dramas also help.

Sometimes stopping and each person saying something good that their group is doing can also motivate people again. Also remember to keep the meeting from becoming too long. By having a Co-leader who is keeping time, you can focus the group's energy on making sure the work gets done in the agreed upon time period.

Meeting Schedule:

To manage time well, a Small Group should have a well-organized meeting schedule. This is important because it will help you keep focus on your agenda and the most important activities. It is also important because in TIST, we commit to work together for the long-term to improve our farms and grow and maintain our trees for the carbon market. We need to know our fellow Small Group members well, since each person's actions impact our whole group and all of TIST.

It is important, too, for your Small Group to have regular meetings, preferably once a week or once in two weeks. This will give all members in your group an opportunity to strengthen your group and share and learn new ideas.

During your meeting, it is necessary to focus on important issues. Many TIST Small Groups have found the process below as a Best Practice for successful meetings:

Step I. Greetings and introductions for any new members (5 – 15 minutes):

Make sure everyone feels welcomed. Make it brief but let each person introduce him or herself.

Step II. Opening prayer (2 minutes):

A short word of prayer can help the group unite.

Step III. Songs (5 minutes):

These could be songs written by your group, or songs that encourage people such as religious songs.

Step IV. Agreement on task and time (5 minutes):

The meeting's leader explains what was planned for the meeting and the group members discuss and then agree on what the agenda should be. The time spent on each task or discussion should be agreed so that the co-leader can help keep the meeting on time.

Step V. Group work on tasks (1 hour):

Ideally, tasks should have been discussed at the end of the last meeting. Tasks might include sharing what each person has done to help TIST activities, sharing Best Practices, training on some subject of interest, and any other important issue that will help your Small Group to prosper.

Step VI. Kujengana (5 minutes):

Each group member makes one positive, specific statement to that week's leader about his or her observable leadership of the meeting. In addition, anyone may identify a gift seen in the leader.

Step VII. Closing prayer (2 minutes)



TIST Farmers Combat Global Warming and Climate Change.

TIST farmers have responded to a global call to combat global warming and climate change. Many farmers have sought understanding through TIST seminars/trainings and at Cluster meetings, to learn and understand more about global warming, its effect on the climate, and mitigation approaches. We see many impacts of climate change today. Just to illustrate a few instances of impacts - floods, droughts and typhoons are more intense. Other notable illustrations are the gradual wearing off the glaciers at the peak of Mt. Kenya, unpredictable weather patterns that have resulted in crop failures in many areas, drying of water springs and water catchments areas, among many others.

This month's newsletter will share training notes from seminars, so that we all can understand global warming and climate change better. We will begin by defining each term and explaining it further and then learn how your trees play a significant role in mitigating the effects of global warming.

What is Global Warming?

Global warming refers to an average increase in the Earth's temperature, which in turn causes changes in climate. A warmer Earth will lead to changes in rainfall patterns, stronger storms, a rise in sea level, crop failures, and a wide range of impacts on plants, wildlife, and humans. When scientists talk about the issue of climate change, their concern is about global warming caused by human activities and the extremes of climate and weather variability this brings about.

Is the Earth getting warmer?

Yes! The Earth has warmed by about 1°C over

the past 100 years. Over 95% of the world's leading climate scientists say that things people do are making the Earth warmer, such as burning of fossil fuels including coal, petrol, and natural gas, and cutting forest and managing land poorly.

What is the Greenhouse Effect?

The greenhouse effect is the rise in temperature that the Earth experiences because certain gases in the atmosphere, called greenhouse gases - like carbon dioxide, nitrous oxide, sulfur dioxide, and methane - trap energy from the sun. Major sources of carbon are deforestation, gases emitted from industries, gases emitted from motor vehicles, gases emitted from burn of wood fuel or charcoal and burning of forests.

What are the dangers of Global Warming?

- Severe water stress in the arid and semiarid land areas would result in more areas becoming desert.
- Increased spread of diseases like malaria. As areas become warmer, they become suitable breeding grounds for mosquitoes, and increasing risks of malaria infection. Many families and health institutions can be impacted, average life spans decline, and infant mortality rates rise.
- Decreased agricultural production in many tropical and subtropical countries, especially countries in East Africa. Due to decreased rainfall and increased breeding of pests, due to increased warming, the production of food crops may decrease, and this results in poverty and hunger among many families and communities.



- Higher worldwide food prices. As more farmers get less yields and food supplies become scarce, the prices increase because the demand is high, and supply is low.
- Major changes in the productivity and composition of critical ecological systems, particularly forests. Water catchment areas in the mountains and forests continue to dry up. This will affect the ability to irrigate crops and will reduce stream flows necessary to keep dams and reservoirs replenished. This will reduce generation of hydroelectric power. Our industries, hospitals and other institutions that heavily rely on electricity will be severely affected. The supply of piped water to urban areas, as well as rural homes, will also be affected.
- Tens of millions of people at risk from flooding and landslides, driven by projected increases in rainfall intensity and in coastal areas, rising sea levels.

How can I prevent Global Warming?

“I’m a farmer. I can grow crops and I can absorb carbon. I can sell my crops and I can sell my carbon.”

Plant and care for trees!

As mentioned above, carbon dioxide is the major cause of global warming. Trees absorb carbon dioxide from the air during photosynthesis and store it in the wood, roots, and soil as cellulose carbon. However, when trees are cut and burned, they release most of the carbon they had stored back to the air.

Did you know each tree could create a microclimate?

Trees and their cover cool the surface of the earth. Feel the comfort of the shade of a tree. Notice that the soil below is moister than where the sun bakes it with no shade. When the ground stays cooler, the ground holds more moisture longer. This means that trees on your land will help improve the amount of water in your soil and help retain it for a longer time. This will help your crops and also even help the water users in your area.

What are carbon credits?

To make a TIST carbon credit requires three things:

- 1) A real and additional reduction in the carbon dioxide (CO₂) in the air;
- 2) A promise to keep the carbon out of the air for many years (usually 30);
- 3) A Verification by an independent third party that certifies that the actions have taken place according to all the rules, and the amounts of tonnes sequestered are accurate.

Trees absorb carbon dioxide from the air during photosynthesis and store it in the wood, roots, and soil. The amount of carbon taken from the air and stored can be measured and calculated, and then, when verified as accurate, this absorption of carbon dioxide can be sold on the world market as carbon credits. Buyers can purchase these credits to offset their carbon dioxide emissions.

TIST is able to sell the carbon absorbed in trees, just like producers sell sugar and milk. With carbon, however, you don’t ship the tree to the market. Instead, the value is from the carbon



taken out of the air, kept in the tree on your farm or forest, measured and reported. The trading of carbon credits can be done through electronic exchanges, or it can be arranged between people or companies directly. We have to meet the market rules and requirements. We cannot clear forest, or cut trees to plant trees, since this is bad for the environment. We have to commit to keep trees in a grove growing for the long-term, 30 years or more. We have to report data accurately. Once trees are planted, some measurements and calculations are made to measure the amount of carbon TIST farmers trees have absorbed. Note again, trees are never actually taken to the markets. They remain in the shambas and the longer they stay alive, the longer the period of receiving payments. So, the farmer keeps the trees, the fodder, the firewood, and the fruits and the nuts. The money that TIST makes selling carbon offsets creates a new source of income and is then shared with TIST Small Groups and used to support the costs of TIST, including training, quantification, and management.

Do all trees absorb the same amount of carbon?

No. Trees with wider circumference (more biomass) store more carbon than trees that are thin. Taller trees also absorb more carbon than short trees. Therefore, trees that are thick will bring more income from carbon credits. This means trees planted with good spacing have a chance of growing big and tall and earn more carbon income. They do not compete for soil nutrients and water as much as trees that are closely spaced.

Therefore, in order to receive good payments out of our trees, it is important to plant them in a good enough spacing that will allow them to grow healthy, tall, and big. Thinning some of

the trees to harvest firewood and keep the other trees growing well is usually the best way to manage your trees.

Where/who are the buyers of carbon credits?

Currently, carbon credits are sold on voluntary markets and in compliance markets. They may be certified in different ways, just as there are different brands and certifications for other products you buy and sell (like coffee, and organic coffee under different labels). TIST could market its carbon credits on the compliance or the voluntary market because they are of high quality.

There are many different standards in these markets with different and ever-changing rules about tree planting, monitoring, and reporting that we must meet to sell carbon offsets. We use the highest quality standards for the Validation and Verification — the Verified Carbon Standard (VCS) and the Climate, Community, and Biodiversity Alliance Standards (CCBA).

TIST has two basic types of buyers:

The first is made up of people willing to give money to encourage people to plant trees. Examples include paying for tree planting projects to make a wedding, or a conference, carbon neutral. The second type is made up of companies in the US, Europe, Canada, and other industrial countries that are making voluntary commitments to reduce their GhG emissions, either because they are good stewards of the environment, or they are preparing for future regulatory requirements.

TIST is very happy to have good quality carbon credits, and to be able to supply many different customers.

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**Ntharagwene TIST Cluster wakiwa kwa mkutano wao wa kila mwezi
tarehe 19/11/2025. Mkutano ujao utakuwa tarehe 17/12/2025.**

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TIST: Biashara ya ruugo ruruthuku.

Kuanda miti nikujukagia ruugo rwa ruruthuku rwa Carbon dioxide gukurukira kuthithia irio. Carbon dioxide ni rumwe rwa ruugo ruria rwitagwa rwa ‘greenhouse’ (antu gukunikenue), ruria rugwatagia mwanki jwa riu ndene ya nthiguru na gutetherie gwika mwanki jwa nthiguru. Athomi bamwe nibathuganagia ati nthiguru nikugia mwanki nkuruki na nkuruki untu buria bumba kwithirwa buri bwa kugitaria. Bubu nibu bwitagwa ‘greenhouse eeffect’, untu buria butumaga guntu kumwe ndene ya nthiguru kuur mbuura iria igutuma kuigara, na namwe gukaaga mbura na gukooma

Kuithia kwa into bimwe ta beteroi, makara na bingi nigwitaga ruugo rwa carbon dioxide. Niuntu miti nijukagia carbon dioxide, niitethagia kunyiyia untu bubu bugwitwa “greenhouse effect”. Thirikari na kambuni inene ndene ya nthiguru inyingi nicikwenda kunyiyia kuthithua kwa carbon dioxide nikenda nthiguru itagie mwanki jumwingi.

Atarimiti ba cluster nibataraga na kuthima miti iria tuandaga nikenda TIST yumba gutara ni

ruugo rung’ana rwa Carbon miti iu ikujukia. Carbon iu ithimagwa na gintu gigitwa “carbon credits”, nan i umwe na kilo ngiri imwe cia ruugo rwa carbon ruria rujukitue. Kambuni na thirikari riu nocigure carbon credits iji kuuga no iririire miti nikenda inyie uriti bwa ruugo rwa carbon.

No mwanka twithirwe tujukitie mantu jamma na jario jegie miti nikenda tuumba kwendie credit iji cia carbon kiri muguri. Mbeka kuumania na kwendia guku no itethie ikundi kuumba kuthithia mantu jamaingi nkuruki, kurita ngugi uria bibati na kwambiria miradi imieru. Ikundi bia TIST nibiriiagwa mirongo iiri kiri o miti igana o mwaka (ni akui umwe na shilingi 1.8 kiri o muti juria juri mwoyo o mwaka). Mbeka iji cia ruugo ti baita yonka iria ikundi bibinini bionaga nontu miti iri na baita maita ikumi gwita mirongo inna nkuruki ya mbeca iria ciumanagia na biashara iji ya kwendia ruugo.

Arimi ba TIST – tuandeni miti ingi!

Amwe tukinyire baita inene nkuruki.



TIST: Njira cia ikundi bibinini: Gukaranira gwa gikundi.

a) *Ni njira iriku iri injega buru ya kubangania antu mucemanione jwa gikundi gikinini?*

Kithiururi gikinini ni njira iria njega buru. Gukethirwa kurina metha niuntu nitumaga gukagia kigitaria gati gati ka antu. Gukethirwa kurina giti kana giti gikinene kia muntu uria urina gitio kiria kinene buru. Ndene ya TIST, twinthe tukaraga nthi na njira imwe. Twinthe tukaraga nthi muthetune kana tugakarira iti

b) *Niatia buumba kuthithia kethira antu nkuruki ya ikumi na bairi ibakwenda gutonya gikundine kienu?*

Kethira kurina antu nkuruki ya ikumi na bairi baria bakwenda gutonya gikundine kienu, ni bwega nkuruki kwambiria gikundi gikieru. Gikundi nokigaane jairi, kana amemba bathatu kana banna ba gikundi kiu gikuru baambie gikundi gikieru. Iji ni njira injega nkuruki ya mumemba umwe kugeria kwambiria gikundi wenka. Ririkana kwambiria utongerira bwa kithiuruko orio.

c) *Ni njira iriku umba gutumira kethira inya ya gikundi iri nthiguru?*

Gaana gikundi kie antu bairi bairi na antu bau bairi baririe ngugi iria irio. Matinda kinya jo nijatethagia. Rimwe na rimwe kurungamithia na kuuria o muntu auge gintu kimwe gikiega kiria gikundi kienu gikuthithia o gutethia gwekira antu motisha ingi. Ririkana kinya kumenyeera ati mucemano jutarea mono. Na njira ya kwithirwa kurina muthetheria wa mutongerira wa gwika mathaa, bukomba kwerekeria inya ya gikundi kiri kumenyeera ati ngugi ikathithika ndene ya mathaa jaria ibangiri.

Mubango jwa mucemano.

Kenda mathaa jatumika bwega, gikundi gikinini nikibati kwithirwa kiri na mubango jubangi bwega jwa gwitithia mucemano. Bubu burina bata niuntu bugatetheria kumenyeera ati mathuganio nijerekerete mantu jaria jabangiri na mantu jaria jarina bata nkuruki. Kinya burina bata niuntu ndene ya TIST, nituciritahira gwtaniria ngugi amwe kenda igitene riraja tukura na twika miti yetu bwega niuntu bwa thoko ya ruugo. Nitugwitia kumenya amemba ba gikundi gietu gikinini bwega niuntu mathithio ja o muntu nijathithagia mwanya kiri gikundi na TIST yonthe.

Kairi burina bata gikundi giaku kinini gwita micemano ya igita nyuma ya igita, mono o kiumia kana rimwe ndene ya biumia biiri. Bubu bukaa

amemba bonthe ndene ya gikundi giaku kanya ga gwikira gikundi inya na kugaana na kuthoma mantu jameru.

Mucemanione, kurina bata kwerekeria mathuganio mantune jaria jarina bata nkuruki. Ikundi bibinini bibingi bia TIST nibionete njira iji iri mwitire juria mwega buru kiri kuthithia micemano ya bata:

Itagarira ria mbele. Gukethania na gucimenyanithia kwa amemba baaberu (Dagika ithano gwita ikumi na ithano): Menyeera ati muntu wonthe nakwigua ang'anirite. Dagika inkai itumirwe indi umenye ati o muntu nakwimenyithania wengwa.

Itagarira ria jairi. Iromba ria kwambiria (Dagika ijiri): Iromba ririkui noritethia kureta gikundi amwe.

Itagarira ria jathatu. Ndwimbo (Dagika ithano):

Iji nociithirwe ciandiki ni gikundi kienu kana ndwimbo cia gwikira antu inya ta ndwimbo cia kidini.

Itagarira ria janna. Gwitikaniria ngugi na mathaa (Dagika ithano):

Mutongerira naugaga jaria jakathithua mucemanione na amemba ba gikundi bagetikaniria kurita ngugi iu. Mathaa jaria jagatumika kuthithia o ngugi kana kwaniria nijabati gwtikanirua nikenda mutetheria wa mutongerira agatetheria gwika mathaa ja mucemano.

Itagarira ria jatano. Gikundi gikarita ngugi iria irio (Ithaa rimwe):

Kiri njira iria bwega buru, ngugi nicibati kwithirwa ciaariritue mucemano jugikinya muthia. Ngugi nociithirwe ciri amwe na kugaana jaria o muntu athithitie gutethia mantu ja TIST, kugaana mitire iria miega buru, kuritana kwegie mantu jaria antu bakwenda na gintu kingi kiria kirina bata na kiria gikatethia gikundi giaku gwita na mbele.

Itagarira ria jatantatu. Gwakana (Dagika ithano):

O mumemba wa gikundi auge gintu kimwe gikiega kiri mutongerira wa kiumia kiu kwegie utongerira buria bwonekete ndene ya mucemano. Kwongera, muntu omba kuuga kiewa kiria oonete ndene ya mutongerira ou.

Itagarira ria mugwanja. Iromba ria kuthiria (Dagika ijiri):



Arimi ba TIST nibakurua na Kwongeraka kwa murutira jwa nthi na kugaruka kwa rera.

Arim ba TIST nibaigitue na bacokia kiriro kia nthiguru gia kurua na murutira jwa nthi na kugaruka kwa rera. Arimi babaingi nibacuite kuelewa gukurukira semina na moritani ja TIST nan dene ya micemano ya cluster nikenda bathoma na belewa kwegie murutira juju, jaria jwianagia najo, na jaria tuumba kuthithia nikenda tujwebera. Nitwonaga mantu jamaingi jaria jaumanitie na kugaruka kwa rera narua. Kwonania ming'uanano imikai, ngai ya Elnino ya mwaka jwa 1998 iria yathukiria akui nthiguru yonthe na mpara iria yathingatire, na kiurutani kia mwaka jwa 2004 iria kiongerere murutira juju nainya. Ming'uanano ingi iria ubati kumenya ni kunyia kwa nkamia iria iri mulima Kenya kuria kwonekete, rera itikuumba kubangirwa iria itumite imera bithuuka ndene ya ntuura inyingi, kunyara kwa ithima nan aria kugwatagia ruuji, amwe na mantu jangi jamaingi.

Gatheti ya mweri juju nikugaana moritani kuumania na semina nikenda tuumba kuelewa murutira jwa nthiguru na kugaruka kwa rera bwega nkuruki. Tukaambiria na kumenya o riiwa ririuga atia na kueleza nkuruki na riu tuthome uria miti yaku iritaga ngugi ikwoneka kiri kunyiyia magitari jaria jaumanagia na kurutira kwa nthiguru.

Kurutira kwa nthiguru nimbi?

Kututira kwa nthiguru ni kwongereka kwa mwanki ndene ya nthiguru, kuria kuretaga kugaruka kwa rera. Nthiguru irina murutira nkuruki no irete kugaruka kwa mbura, biurutani birina inya nkuruki, kwongereka kwa ruuji iriene, kuthuka kwa imera, na magitaria jamaingi kiri imera, nyomoo cia kithaka na kinya kiri antu. Riria athomi barairia kugaruka kwa rera, wasiwasi yao ni mono kwegie kurutira kwa nthi kuria kuumanagia na mantu jaria jathithagua ni

antu na kugaruka gukunene kwa rera kuria kuumanagia na bubu.

Ka Nthiguru igwita na mbele kurutira nkuruki?

li! Nthiguru niongerekete kimwanki nauu 1°C ndene ya miaka igana iu ikurukite. Babaingi ba Athomi ba science baria batongeretie ndene ya nthiguru nibathuganagia ati mantu jaria antu bathithagia nijatethagia kurutiria nthiguru, ja kuithia into ja makara ja maguta, beteroli, ngasi na kugiita miitu na kumenyeera muunda bubuthuku.

Greenhouse effect nimbi?

Iji ni kwongereka kwa mwanki juria nthiguru igagua niuntu ruugo rumwe, ruria rwitagwa ruugo rwa greenhouse, ja carbon dioxide, nitrous oxide, sulphur dioxide, na methane nirugwatagia mwanki jumwe kuumania na riuu. Biumo biria binene bia carboni ni ugiti miitu, ruugo ruria rurekagua kuuma viwandene, ruugo kuumania na ngari, ruugo kuumania na kuithua gwa nkuu kana makara na kuumania na kuithia miitu.

Kurutira kwa nthi kuretaga magitari jariku?

- ♦ Kwaga ruuji ndene ya ntuura injumu (ndwanda) kuria kuumba gutuma ntuura inyingi nkuruki ikaa rwanda.
- ♦ Kwongereka kwa gutamba kwa mirimo ja rwagi. O uria ntuura cirutagira, nou ciejaga injega cia guciarana kwa rwagi na kwongerwa kwa kuumbika gwa kuajua ni rwagi. Nja na cibitari inyingi no citongwe ni jaja, miaka ya gutuura ninyiaga na gukua kwa aana babanini gukongereka.
- ♦ Kunyia kwa maketha kuumania na kulima



ndene ya nthiguru iria ciri guntu kurina riuu riringi, mono nthiguru iria ciri East Africa. Niuntu bwa kunyia kwa ngai na kwongereka kwa tunyomoo turia tuthukagia imera niuntu bwa kurutira, maketha kuumania na imera bia irio no janyie na bubu bukareta ukia na mpara ndene ya nja na ntuura inyingi.

- ♦ Irio kwongerra goro ndene ya nthiguru yonthe. O uria armi babaingi baguketha maketha jamanini na irio bekanyia, nou ngarama ya irio ikongereka na irio ndene ya thoko bikaa bibikai.
- ♦ Nikugijaga kugaruka gukunene kiri maketha na gukaranja kwa imera na nyomoo mono ndene ya miitu. Naria kugwatagia ruuji ndene ya irima na miitu nigwitaga na mbele kunyara. Bubu bukareta thina ya kurima na ruuji na bukanyia ruuji ndene ya miuro ruria rwendekanaga nikenda naria gwaki gwa kugwatia ruuji kuumba kung'ania ruuji. Untu bubu bukanyia kuthithua kwa sitima. Kambuni, cibitari iria citumagira stima na wingi ikagitarua. Ruuji rwa paipu rwa tauni na rwa risabu kinyaru rukagitara.
- ♦ Antu makumi ja mamilioni bakarugurirwa thina cia kuigara kwa ruuji na kugua kwa nthi, kuria gucukumagwa ni kwongereka kwa mbura na nterene cia iria, kwongereka kwa ruuji iriene.

Natia mpumba kueberia kurutira kwa nthi?

Anda na umenyeere miti!

Ja ou tuugite au iguru, ruugo rwa carbon dioxide ni rumwe rwa iria iretaga kurutira kwa nthi. Miti nijukagia carbon dioxide kuuma ruugone riria ikuthithia iria na ikamiika ndene ya rubau, miri na muthetune ja kaboni ya cellulose. Indi-ri, riria miti yagitwa na yaithua, kaboni iu ireki nirekagua ruugone kairi.

Nwiji o muti nojuthithie rera ya antu au gukuiritie?

Miti na kithiiki kiayo niioragia nthi. Nwiji kuganirwa kuria kuri kithiikine kia muti. Ona ati muthetu juria juri rungu jurina ruuji nkuruki ya juria juri aria kurina riuu na gutina kithiiki. Riria nthi ikaraga na gapio, nthiguru niikaga ruuji igita riraja nkuruki. Guku nita kuugamiti iria iri muundene jwaku nitethagia kwongera ruuji ruria ruri muthetune jwaku, na igatethia kuruika ku igita riraja nkuruki. Bubu bugatethia imera biaku na kinya butethie baria batumagira ruuji ndene ya ntuura yaku.

Krediti cia kaboni nibicio?

Kenda uthithia krediti ya kaboni ya TIST nigwitagia into bithatu:

- 1) Gutaurwa kwa mma na kwongerekete gwa carbon dioxide iria igutonyithua ruugone;
- 2) Ahadi ya gwika kaboni iu kuraja na ruugo ndene ya igita ria miaka imingi;
- 3) Gutegerwa ngugi na gukurukithiua ni kiama gitina uthoni na TIST kiria kibati kwona ati mantu nijathithikite kuringana na mawatho jonthe.

Miti nijukagia ruugo rwa kaboni riria ikuthithia irio na kumiika ndene ya rubau, miiri na muthetune. Kaboni iria ijukagua kuuma ruugone na gwikwa noithimwe na igatarwa, na riu, yarikia gukurukithua ati ni yam ma, kujukua guku kwa ruugo rwa kaboni no kwendue ndene ya thoko ya nthiguru yonthe ja krediti cia kaboni. Aguri nobagure krediti iji nikenda bathiria ruugo rwa kaboni ruria bagutonyithia ruugone.

TIST niumbaga kwendia kaboni iria iri kiri miti iji o uria antu bendagia sukari na iria. Indi-ri kiri kaboni, utikagia muti thokone. Antu au, uguri ni kuumania na kaboni iria irititwe ruugone, na yekwa mitine ndene ya munda kana mwitu



jwaku, ithimwi na ripoti yaikua. Kwendia na kugurwa kwa krediti iji nikuthithikaga, New York, Chicago, London na tauni ingi ndene ya nthiguru kana gukabangwa gatigati ka antu kana kambuni. No mwanka tukinyire mawatho na jaria jakwendeka ndeme ya thoko. tutiumba kugiita mwitu junthe kana tugiita miti tuanda ingi nontu bobu butibui kiri mazingira. no mwanka tucititie gwika miti ndene ya miunda moyo ndene ya igita riraja, miaka mirongo ithatu kana nkuruki. No mwanka tuuge mantu jongwa jaria jario. Riria miti yaandwa, ithimi na mathabu jamwe nijathithagua kuthima ni kaboni ing'ana miti ya arimi ba TIST ijukitie. Rikana kairi, miti itikagua thokone. Ikaraga miundene na ouria ikaraga igita ririraja iri moyo, nou igita ria kuriwa riongerekekaga. Kwou, murimi neekaga muti, irio bia nithia, nkuu na matunda na nkandi. Mbeka iria TIST ithithagia kuumania na kwendia kaboni ni kiumo gikieru kia mbeka na riu ikagaanwa na ikundi bibinini bia TIST na igatumirwa kutirima ngarama cia TIST, iria ciri amwe na moritani, utari miti na urungamiri.

Miti yonthe nijukagia ruugo rung'anene?

Aari, miti iria iri imiarie nkuruki niikaga kaboni inyingi nkuruki ya miti imiceke. Miti imiraja kinyayo nijukagia kaboni inyingi kiri miti imikui. Kwou, miti iria imati niretaga mbeka inyingi kuuma kiri krediti cia kaboni. Guku ni kuuga miti iandi itarenie bwega irina kanya ga kunenea na kurea na kwona mbeka inyingi nkuruki kuumania na kaboni. Iticindanagira irio na ruuji ja miti iria iandi ikuianiritie.

Kwou, nikenda twona mbeka injega kuumania miti yetu, burina bata kumianda itarenie bwega nikenda yumba gukura irina thiria, ia imiraja na imiarie. Gutaura miti imwe nikenda twona nku riu tugeeke iu ingi igikuraga bwega jaria maingi niyo njira iria njega buru ya kumenyeera miti yaku.

Ninaa/Ni bau baguraga krediti cia kaboni?

Nandi, kaboni yendagua thoko cia kwiritira nandene ya thoko cia lazima. Thoko iji citikurukanagia umwe, ojauria kurina mianya na gukurukua kwa into bingi biria uguraga na kwendia. TIST noyendie krediti cia kaboni kiri thoko imwe ya iji nontu krediti iji ni injega mono.

Kurina ithimi mwanya ndene ya thoko iji birina mawatho mwanya na jakaraga jakigarukaga kwegie uandi miti, kumenyeera na kureta ripoti jaria tubati kuujuria nikenda tuumba kwendia ruugo rwa kaboni ruria twitite. Nitutumagira ithimi biria biega buru kiri gutegetwa ngugi na gukurukithua — the Verified Carbon Standard (VCS) na Climate, Community, and Biodiversity Alliance Standards (CCBA).

TIST irina mithemba iiri ya aguri:

Muthemba jwa mbele ni jwa antu baria bakwenda kunenkanira mbeka nikenda bekira antu motisha ya kuanda miti. Ming'uananona ni amwe na kuririra miradi ya uandi miti nikenda batuma muranu kana mucemano jutikongere kaboni ruugone. Muthemba jwa iiri jurina kambuni ndene ya US, Europe, Canada na nthiguru ingi iria ciri mbele mantune ja ibanda baria bakwiritira bongwa kunyiyia kuongerwa kwa ruugo ruruthuku (ruugo ruria ruretaga murutira) nontu bari akaria babega ba mazingira kana niuntu nibakwithuranira niuntu bwa gutirimana na mahitaji manna jaria jakwendeka. TIST nigwiritue mono kwithirua irina krediti cia kaboni cia iguru, na kuumba kuenderia aguri babaingi mwanya.

Mazingira Bora

Newsletter December 2025

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Ntharagwene TIST Cluster mari mucemanio-ini wao wa oro mweri, mweri 19/11/2025. Mucemanio ucio ungi ugakorwo mweri 17/12/2025.

- Thiini** ✓ TIST: Thuguri ya Greenhouse Gas. Page 2
wa
ngathiti: ✓ TIST: Maundu ma ikundi: Uikarania wa ikundi. Page 3
✓ Arimi aTIST kuhurana na ugaruruku wa riera. Page 4



TIST: Thuguri ya Greenhouse Gas.

G

ukuria miti nikugucagia

carbon dioxide kuhitukira

photosynthesis. Carbon

dioxide ni imwe ya 'Greenhouse gases', iria

ihotaga kunyita urugari wa riuu thiini wa thi

igateithia kuiga urugari wa thi. Atalamu amwe

maugaga thi ithiaga na-mbere na kuhuhu na

uhoro ucio nouthukie maundu. Mathina maya

nimo metagwo ma Greenhouse, maria

matumaga miena imwe ya thi igie na miihuro ya

maai, kwaga mbura na gukagia na ngaragu.

Gucina indo ta maguta, coal na gas ingi

niguthondekaga carbon dioxide. Na tondu miti

niigucagia carbon dioxide niguo thi ndikahiuhe

muno.

Atari a miti a TIST mataraga na magathima

miti iria wahanda niguo TIST ihote guteithiriria

kugucia carbon dioxide.. githimi kia carbon iria

igucitio gitagwo carbon credits, na kiiganaine

na tonne imwe ya carbon dioxide iria igucitio.

Kambuni na thirikari nocigure carbon credits

na uu nikuga nocirihe miti iria irahuthika

kugucia.

Nomuhaka tukorwo na wihokeku na

ukinyaniru hari mathabu ma miti kuri aria

turenderia carbon credits. Mbeca cia carbon

credits niciteithagia ikundi gukorwo na maciaro

maingi na kwambiriria itaratara ingi. Ikundi cia

TIST nicirihagwo \$20 kuri miti 1000 iria iri

muoyo(kindu 1.8ksh hari o muti). Marihi ma

greenhouse gas to mo marihi moiki ikundi

ciamukagira tondu miti iri na mbeca maita 10-

40 makiria ma mbeca ici.

Arimi a TIST - reke tuhande miti miingi!

Turi hamwe nitwigiagira maciaro maingi

Amemba a cluster ya Karaba kuma

County ya Laikipia mari mecemanio

mweri ucio urathirire.



TIST: Maundu ma ikundi: Uikarania wa ikundi.

a) *Ni njira iriku njega ya kubanga andu mucemano-ini wa ikundi?*

Githiururi kinini nikio kiega. Mutigakorwo na metha tondu niikoraga mikira andu-ini.

Mutigakorwo na giti kinene kuri iria ingi kia mutongoria. Thiini wa TIST, ithuothe tuikaraga undu umwe. Tuikaraga thi kana tugaikarira iti.

b) *Twikaga atia riria andu makiria ma 12 magia na wendi wa kuingira gikundi?*

Riria kwagia na andu makiria ma 12 marena kuingira gikundi, niwega guthondeka gikundi kingi. Gikundi giki nokigayano maita 2 kana 3 ona kana 4 na niwega andu a tene gikundu mambiririe icio ingi mari o. njira ino ni njega gukira amemba eru makigeria guthondeka gikundi kieru mari oiki. Ririkanai guthiururukia utongoria.

c) *Ungika atia riria hinya wagikundi wathii thi?*

Gayania amemba eri eri na umere mariririe uhoro ucio. Geriai guthaka mithako ya ngerekano tondu niiteithagia.

Maita maingi riria mundu umwe arugama kuga maundu maria mega muhotete gwiki niguteithagia muno na gugekira hinya ringi. Na ningi ririkana ndukareke micemano inenehe muno. Riria muri na muteithia wa mutongoria uria uraiga mathaa, nouhote kuhuthira mucemano wega na mukaiguithaniria.

Mutaratara wa mucemano.

Niguo kuhuthira mathaa wega, ikundi ciagiriirwo nigukorwo na micemano mibang wega. Njira ino niya bata tondu niigutuma murumirire mutaratara na muhote kwaririria maundu maria ma bata. Naningi niyabata tondu thiini wa TIST nitukoragwo twiheanite gukiria na gutungata miti gwa kahinda kanene niundu wa thoko ya carbon. Nitwagiriirwo nikumenya arimi othe a ikundi wega, tondu ciiko cia I mundu nicia bata kuri gikundi.

Niundu wa bata, na makiria kuri gikundi gukorwo na micemano ya o hindi na mungihota o wiki. Uu niukuhe amemba thiini wa gikundi kamweke ga gwikira gikundi hinya.

Riria muri na micemano, niwega mureore maundu maria ma bata. Ikundi nyingi niconete mutaratara uyu ukimateithia muno.

Ikinya ria I: Kugeithania na kumenyithania amemba eru(Ndagika 5-15):

Tigirira o mundu niaigua amukiritwo wega. Mutikoe kahinda kanene no utigirire andu nimemenyithania.

Ikinya ria II. Mahoya ma kuhingura (Ndagika 2):

Mahoya manini nimateithagia kunyitithania giundi.

Ikinya ria III Ruimbo(Ndagika 5):

Ici nocikorwo iri nyimbo citungitwo ni gikundi kana ciagwikira andu hinya na cia kugooca Ngai.

Ikinya ria IV. Kuiguithania kiria gikwariririo na mathaa (Ndagika 5):

Mutoingoria agatariria maundu maria makwariririo nao amemba magetikaniria. Mahida m a r i a makuhuthirwo kwaririria makaiguithanirio niguo muteithia wa mutongoria akahota kuiga mathaa.

Ikinya ria V. Kwaririria maundu (ithaa I):

Niwega maundu maria makwariririo makoragwo mathondeketwo mucemano-ini urcio ungi. Maundu maya nita uria andu mahotete gukuria TIST, guthomithania maundu na mitaratara bata iria iguteithia gikundi gukura wega.

Ikinya ria VI. Kujengana (ndagika 5):

O memba wa gikundi niaheanaga kaundu kega ka wiki iyo na akauga uria onete utongoria thiini wa mucemano. Na makiria, mundu o wotha akauga kiheo kiria onete hari mutongoria.

Ikinya ria VII. Mahoya ma kuhinga (Ndagika 2):



Arimi a TIST kuhurana na ugaruruku wa riera.

A memba a TIST nimakoretwo makihurana na ugaruruku wa riera uria ukoretwo kuo thi yothe na arimi aingi nimoritie mataaririo wega thiini wa semina na micemano niguu mataukwo wega uhoro uyu wigii ugaruruku uyu wa riera, maundu maria ungirehe na uria mangihota kuhurana nangu.

Nitwonaga maundu maria ugaruruku wa riera urehete umuthi. Na kuheana mamwe ma maundu maria marehetwo niguu, mbura iria yari nene muno ya Elnino ya mwaka wa 1998 iria yathukirie bururi na gukigia na ng'aragu nene muno hamwe na muiyuro wa maai iriaini wa mwaka wa 2004 muno ciarehetwo ni ugaruruku uyu wa riera. Maundu mangi ni ta guthira kwa barafu iria ikoragwo kirima-ini kia Mt. Kenya na imera citarathimika na cigatwarana wega iria citumite magetha mathuke na manyihe, kuhua kwa njuui na ihumo cia maai na mangi maingi.

Mweri uyu ngathiti niikwonania maundu maria maririirio thiini wa semina maria mangitutethia gutaukwo wega ugaruruku wa riera nikii. Tukwambiriria na kumenya wega ciugo icio naningi tuthii na mbere na guthoma uria miti yaku inyitaga itemi kunyihia ugwati uria umanaga na ugaruruku wa riera.

Ugaruruku wa riera ni kii?

Ugaruruku wa riera ni kwongerereka kwa urugari uria uri thi uria ucokaga ugatuma riera ricenje. Thi riria yagia na urugari muingi niitumaga imera cia mbura cicenjie na gukagia na ihuhakano nene na maai ma iria makambatira, mimera igathuka na miti ikaninwo ohamwe na nyamu cia githaka. Riria ataalamu makwaria

maundu megii ugaruruku wa riera, nimaroraga muno global warming iria irahagwo ni maundu mariu mundu ekaga na mogwati maria marehagwo ni maundu maya.

Thi niirahuha makiria?

li! Thii niyongereire urugari na muigana wa 1°C kwa makiria ma miaka 100. Aingi a ataalamu a uhoro wa riera monaga ati andu nio matumite thi yongerereke urugari na njira ya gutema miti na gucina indo cia tiiri, coal petrol na riera itheru na kwaga gutungata migunda yao.

Maundu maria marehagwo ni Greenhouse.

Maundu maria marehagwo ni greenhouse nit a kwongerereka kwa urugari wa thi nitondu riera guku iguru riria ritagwo greenhouse ta carbon dioxide, nitrous oxide, sulphur dioxide na methane nicihotaga kunyita hinya wa riuu. Carbon nyingi yumanaga na gutema miti, ndogo ya iganda, ndogo ya ngari na ndogo ya makara na miti.

Mogwati ma Global Warming ni mariku?

- Kwaga kwa maai na kuuma kwa migunda.
- Gutherema kwa mirimu ta malaria. Kugia na urugari muingi na kuhotithia rwagi guciarana na kwongerera ugwati wa malaria. Micii miingi na mathibitari nomakorwo ni ugwati uyu na mituurire ya andu ikanyiha na ikuu cikongerereka.
- Kunyiha kwa magetha ma urimi na makiria mabururi-ini maria mari East Africa. Na niundu wa kunyiha kwa mbura na



kwongerereka kwa guciarana kwa tutambi niundu wa ungi wa urugari, magetha nimanyihaga na uthoni ugathii nambere na kuongerereka miciini iitu.

- Kwongerereka kwa mathogora ma irio nitondu arimi aingi nimanyihitie magetha na irio cikanyiha, mathogora nimathiaga iguru nitondu andu nimarabatara irio na ni nini.
- Mogaruruku manene ma magetha na riera na muno mititu. Ihumo cia maai cikahua. Maundu maya nimagutuma uhei wa maai wa irio unyihe. Maundu maya ningi nimakunyahia uthondeki wa thitima ya maai. Iganda ciitu, mathibitari na kundu kungi kuria gutumagirwo thitima nigukuhutio na njira nene ma. Utambia wa maai mataown-ini na miciini nigukuhutio ona kuo.
- Mamilioni ma andu mari ugwati-ini wa muiyuro wa maai uria urehagwo ni mbura nene na maai ma iria kwambatira.

Niatia tungigitira Global Warming?

Handa na utungate miti!

Ta urui twona haha iguru, carbon dioxide ni imwe ya riera riria rirehaga global warming. Miti niigucagia carbon dioxide kuma riera-ini riria ireka photosynthesis na ikamiiga thiini wayo mutiini na miriirni hamwe na tiiri ta cellulose carbon. Na ningi, riria miti yatemwo na yacinwo niirekagiriria carbon iria ikoretwo igite rieraini.

Niui ati o muti nouthondeke riera riaguo?

Miti na mahuti maguo niuhumbagira tgi. Niitumaga kugie na riera riega na kiiruru gikaagira. Niukuona ati tiiri uria uri miti-ini iria

iri na kiiruru niukoragwo uri mugunyu gukira uria uri riua-ini. Riria thi yaikara iri hehu, tiiri niuhotaga gkuiga ugungu gwa kahinda karaihu. Uu nikuga ati miti iria iri mugunda-ini gwaku niiteithagia tiiri kugia na maai na igateithia kuiga maai macio gwa kahinda karaihu. Njira ino niiguteithiriria mimera yaku hamwe na aria mahuthagira maai.

Carbo Credits ni kii?

Niguo uthondeke carbon credits cia TIST urabatara indo 3;

- 1) Kwongerereka kwa kunyiha kwa carbon riera-ini
- 2) Kwiranira kunina carbon riera-ini gwa kahinda karaihu.
- 3) Kuhitukio ni honge ciirugamiriire ati makinya nimoetwo kuringana na watho.

Miti niigucagia carbon dioxide kuuma riera-ini riria ireka photosynthesis na ikamiiga thiini wayo ,miri-ini ohamwe na tiiri-ini. Muigana wa carbon uria woyagwo kuuma riera-ini na ukaigwo nouthimike na uthuthurio na uhitukio na njira nginyaniru na kugucio kuu kwa carbon rieraini nokwendio kuri thoko ya carbon credits. Aguri nomagure carbon credits ici niguo kunyahia carbon dioxide.

TIST iri na uhoti wa kwendia carbon iriaigucitio miti-ini ota uria arimi mendagia igwa kana iria. No riria urendia carbon ndurabatara kuneana muti. No urabatara kugucia carbon dioxide kuma riera-ini mugunda-ini waku kana mutitu-ini na utarirwo. Wendi wa carbon nouhanikire New York, Chicago kana London ona kana micii



mingi bururi-ini wothe, kana uiguithanirio ni andu kiumbe na makambuni imwe kwa imwe. Nonginya tukinyirie ikiro na mawatho ma thoko. Tutingitema mititu kana miti iria iri migunda-ini gwitu tondu undu uyu niuthukagia maria maturigiciirie. Nonginya twitikire kuiga miti iri muoyo gwa kahinda ka miaka 30 na makiria. Nonginya tuheane uhoro mukinyaniru. Riria miti yahandwo, ithimi na uteri nichuthikaga guthima muigana wa carbon iria igucitio ni miti ya arimi a TIST. Ririkana o ringi, miti nditwaragwo thoko. likaraga migunda-ini na o uria iraikara kuo noguo marihi maguthii nambere na kuingiha. Kwa uguo murimi athiaga nambere na kuiga miti iri muoyo na ikamuhe irio cia mahiu ohamwe na ngu na matunda. Mbeka iria TIST ithondekaga kumana na wendia wa carbon cithondekaga kihumo kia marihi maria magayanagwo ni arimi a TIST na igatumika gutheremia TIST, hamwe na githomo, uteri wa miti na utungati wa TIST

Miti yothe igucagi carbon iiganaine ?

Aca, miti iria ikoragwo na utungu munene niihotaga kuiga carbon nyingi gukira iria miceke. Miti miraihu noayo niigugagia carbon nyingi gukira iria mikuhi. Kwa uguo, miti mitungu niirehage marihi maingi kumana na carbon credits. Uu nikuga ati miti iria ihanditwo na utaganu mwega iri na mweke wa gukura iri minene na irehe marihi maingi. Ndigayanaga unoru wa tiiri na maai ta miti iria ikuhaniriirie.

Kwa uguo, niguo kwamukira marihi maingi kumana na miti, ni hari na bata kuhanda miti na utaganu muiganu uria ukumiteithia gukura iri mitungu na miraihu. Kuhurura miti niguo wone ngu na niguo ikure wega ni njira njega ya gutungata miti.

Aguri a carbon credits mari ku na ni ariku?

Gwa kahinda gaka carbon credits yendagio na njira ya kwirutira kuhitukira gukinyiria mawatho ma thoko. Mawatho maya nomakorwo mari ngurani ota uria gukoragwo na mithemba ngurani ya indo thoko-ini ingi iria wendagia na ukagura(ta kahuwa). TIST noyendie carbon credits kuhitukira mawatho maya kana kuhitukira thoko ya kwiendera tondu ikoragwo iri na ukinyaniru mwega.

Kuri na ikiro ngurani cia thoko na mawatho ngurani maria macenjagia ma uhandi wa miti, urori na uramati na nomuhaka tukinyanirie maundu maya niguo tuhote kwendia carbon. Tuhuthagira uthuthuria uria niwa kirathi kia iguru muno – Verified Carbon Standard (VCS) na Climate, Community and Biodiversity Alliance Standards (CCBA).

TIST ikoragwo na aguri mithemba iiri.

Wa mbere ni andu aria merutiire kuheana mbeka ciao niguo kuhinyiriria andu kuhanda mit. Muhiano nit a kuriha mitarataru ya uhandi wa miti niguo gutua uhiki na micemanio iri na riera itheru. Wa keeri ni kambuni thiini wa US, Europe, Canada na mabururi maria mangi makoragwo na iganda maria marihaga na kwiendera uhnyihia wa carbon nitondu nomakorwo mari na wendi mwega kana makihariria niundu wa ,awatho maria mangiuka thutha-ini.

TIST niikenetio nigukorwo na carbon credits ya kirathi kia iguru na ikahota kuhe aguri aao.

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Ntharagwene TIST Cluster wakiwa kwa mkutano wao wa kila mwezi tarehe 19/11/2025. Mkutano ujao utakuwa tarehe 17/12/2025.

- Ndani** ✓ **TIST: Biashara ya hewa chafu. Uku. 2**
- ya**
- Gazetti:** ✓ **TIST: Mbinu za vikundi vidogo: Mwingiliano wa kikundi. Uku. 3**
- ✓ **Wakulima katika TIST wapambana na ongezeko la joto ulimwenguni na mabadiliko ya tabia nchi. Uku. 4**



TIST: Biashara ya hewa chafu.

Miti inayokua hunyonya gesi ya kaboni kwa njia ya kutengeneza chakula. Kaboni dioksidi ni mojawapo ya ‘gesi chafu’ (greenhouse gases) ambazo huteka joto la jua lililopo katika anga ya dunia na kusaidi kudumisha hali ya joto katika uso wa dunia. Wanasayansi wengine wanafikiri kuwa dunia inazidi kuwa na joto zaidi na zaidi, joto ambalo lweza kuwa lenye kudhuru sana. Jambo hili huitwa athari ya hewa chafu (greenhouse effect), ambayo hufanya maeneo mengine kupanda mafuriko zaidi, ukame zaidi au kuenea kwa janga.

Kuchomwa kwa ngataa kama mafuta, makaa yam awe na gesi ya kiasili hutoa kaboni dioksidi. Kwa sababu miti huchukua kaboni dioksidi kutoka hewani, inasaidia kupunguza athari za gesi chafu. Serikali na viwanda vikubwa katika nchi nyingi wanataka kupunguza utoaji wa kaboni dioksidi ili dunia isizidishe joto sana.

Maqwantifaya wa TIST huhesabu na kupima miti tunayopanda ili TIST ifanye kazi ya kuhesabu

ni kiasi kipi cha kaboni dioksidi kinachonyonywa na miti. Kipimo chake huitwa ‘carbon credit’ (kadi za kaboni) na ni sawa na kunyonya kilo elfu moja za kaboni dioksidi. Makampuni na serikali zaweza kununua kadi hizi kumaanisha wanaweza kulipia miti ili ipunguze utoaji wa kaboni dioksidi.

Lazima tuwe na data yenye kuaminika na sahihi kuhusu miti ili kuuza kadi hizi za kaboni kwa mnunuaaji. Pesa kutokana na kuuza kaboni hii zaweza kusaidia vikundi kuzalisha zaidi, kufanya kazi zaidi na kuanza miradi mipya. Vikundi vya TIST hulipwa dolla ishirini kwa kila miti elfu moja iliyo hai kila mwaka (takriban shilingi 1.8 kwa kila mti hulio hai kila mwaka). Malipo ya gesi chafu si faida ya kipekee kikundi kidogo hupata kwa sababu miti ina thamani mara kumi hadi arobaini kuliko pesa inayopata kutokana na biashara ya kaboni.

Wakulima wa TIST – tupandeni miti zaidi!

Pamoja tufikie faida kubwa zaidi.



TIST: Mbinu za vikundi vidogo: Mwingiliano wa kikundi.

a) *Ni njia gani bora zaidi ya kuwapanga watu wakati wa mkutano wa Kikundi kidogo?*

Msiwe na meza kwa sababu inajenga vizuizi kati ya watu. Msiwe na kiti cha kukaliwa na mtu aliye na muhimu zaidi kati yenu. Katika TIST, sote twaketi kwa njia iliyofanana. Sote hukaa chini udongoni au sote kukalia viti.

b) *Mtafanyaje kukiwa na watu zaidi ya kumi na wawili wanaotaka kujiunga na kikundi chenu?*

Kama kuna zaidi ya watu kumi na wawili wanaotaka kujiunga na kikundi chenu ni vizuri zaidi kuanzisha kikundi kipya. Kikundi chaweza kujigawanya na kuwa vikundi viwili, ama wanakikundi asili watatu au wanne wawe msingi wa kikundi kipya. Hii ni vizuri kuliko mwanakikundi mmoja kujaribu kuanzisha kikundi peke yake. Kumbuka kuanza uongozi wa mzunguko kutoka mwanzo.

c) *Ni mbinu zipi mwaweza kutumia ikiwa nishati ya kikundi iko chini?*

Gawanya kikundi kiwe wawili wawili na uulize kila jozi kujadiliana kuhusu kazi iliyopo. Michezo ya kuigiza husaidia pia. Mara kwa mara kuwasimamisha na kila mtu kusema kitu kizuri ambacho kikundi chao kinafanya husaidia kuwapa watu motisha nyingine. Pia kumbuka kuuachisha mkutano usiwe mrefu. Kwa njia ya kuwa na msaidizi wa kiongozi anayesaidia kuweka masaa, unaweza kuelekeza nishati ya kikundi kuhakikisha kazi inafanyika katika muda uliopangiwa.

Ratiba ya mkutano.

Kutumia muda vizuri, kikundi kidogo chapaswa kuwa na ratiba ya mkutano iliyopangika vizuri. Hii ni muhimu kwa sababu itakusaidia kuzingatia yaliyo katika ajenda na mambo yaliyo muhimu zaidi. Ni muhimu pia kwa sababu katika TIST, tunajitolea kufanya kazi pamoja kwa muda mrefu ili kukua na kudumisha miti yetu katika soko la hewa. Tunahitaji kujua wanakikundi wenzetu vizuri, kwa sababu matendo ya kila mtu hushikilia kikundi chote na TIST yote.

Ni muhimu pia, kwa kikundi chako kidogo kuwa na mikutano ya mara kwa mara, ikiwezekana mara moja kila wiki au mara moja kila wiki mbili. Hili litawapa wanakikundi chenu nafasi ya kuimarisha kikundi na

kugawana na kujifunza mafunzo mapya.

Wakati wa mkutano, ni muhimu kuzingatia mambo yaliyo muhimu. Vikundi vingi vya TIST vimeona utaratibu unaofuata ukiwa mwenendo bora zaidi ili kuwa na mikutano ya kufanikiwa:

Hatua ya kwanza. Salamu na kujijulisha kwa wanakikundi wapya (dakika tano kufika kumi na tano): Hakikisha kila mtu anajisikia nyumbani. Hakikisha ni fupi lakini muache kila mtu ajijulishe.

Hatua ya pili. Maombi ya kuanza (Dakika mbili):

Ombi fupi laweza kusaidia kuunganisha kikundi.

Hatua ya tatu. Nyimbo (Dakika tano):

Hizi zaweza kuwa zilizoandikwa na kikundi chako, au nyimbo zinazowatia watu nguvu kama nyimbo za kidini.

Hatua ya nne. Kuitikiana kuhusu kazi na masaa (Dakika tano):

Kiongozi anaeleza yatakayofanyika mkutanoni na wanakikundi waitikie kufanya kazi hiyo. Masaa yatakayotumika kwa kazi hiyo au mjadala yakubalianwe ili msaidizi wa kiongozi aweze kuweka masaa ya mkutano.

Hatua ya tano. Kazi ya vikundi (saa moja):

Ili kufanya vizuri zaidi, kazi yapaswa kujadiliana mkutano wa mwisho ukiisha. Kazi zaweza kuwa pamoja na kugawana ni nini kila mtu amefanya ili kusaidia kazi za TIST, kugawana mienendo bora zaidi ya kufanya mambo tofauti, kufunza kuhusu vitu fulani na jambo lingine lolote la maana litakalosaidia kikundi chenu kukua.

Hatua ya sita. Kujengana (Dakika tano):

Kila mwana kikundi anasema jambo moja nzuri kwa kiongozi wa wiki hiyo kuhusu uongozi wake ulioonekana katika mkutano. Kuongezea, mtu yeyote aweza kusema ni zawadi gani katika uongozi ameona katika kiongozi huyo.

Hatua ya saba. Ombi la kufunga (Dakika mbili):



Wakulima katika TIST wapambana na ongezeko la joto ulimwenguni na mabadiliko ya tabia nchi.

Wakulima katika TIST wameitikia mwito wa ulimwengu wa kupambana na ongezeko la joto na mabadiliko ya tabia nchi. Wakulima wengi wametafuta kuelewa kupitia semina/mafunzo ya TIST na katika mikutano ya cluster ili kusoma na kuelewa mengi zaidi kuhusu kuongezeka kwa joto, athari zake kwa tabianchi na mbinu za kukabiliana nalo. Tunaona athari za mabadiliko ya tabianchi leo. Ili kuonyesha matukio kadhaa ya athari hizi, mafuriko ya Elnino ya mwaka 1998 yaliyovuruga karibu nchi yote na ukame mrefu uliofuatilia, na upepo mkali wa mwaka 2004 sana sana uliongezewa na ongezeko la joto duniani. Viashiria vingine mashuhuri ni kupunguzika kwa barafu katika kilele cha mlima Kenya, hali ya anga isiyo na utaratibu na ambayo imesababisha kuharibika kwa mazao katika maeneo mengi, kukauka kwa chemichemi na vyanzo vya maji, pamoja na mengine mengi.

Jarida la mwezi huu linaangazia mafunzo kutoka semina ili sote tuelewe ongezeko la joto duniani na mabadiliko ya tabianchi. Tutaanza kwa kuelezea kila neon na kulieleza zaidi na pia tujue jinsi miti yako ina jukumu kubwa katika kukabiliana na athari za ongezeko la joto duniani.

Ongezeko la joto duniani ni nini?

Ongezeko la joto duniani ni ongezeko wastani la joto duniani, ambalo huleta mabadiliko katika tabianchi. Dunia yenye joto zaidi yaweza kusababisha mabadiliko katika mvua, dhoruba kali zaidi, kuongezeka kwa maji baharini, kuharibika kwa mimea, na athari kadhaa kwa mimea, wanyama pori na wanadamu. Wanasayansi wanapoongea kuhusu suara la mabadiliko ya tabianchi na katika hali ya anga, wasi wasi yao huelekezwa kwa ongezeko la joto

linalotokana na kazi za binadamu na utofauti katika tabianchi na hali ya anga unaoletwa na jambo hili.

Je, joto katika dunia linaongezeka?

Ndio! Dunia imeongezeka joto zaidi ya digrii moja katika miaka mia moja iliyopita. Wengi wa wanasayansi wanaoongoza katika dunia hufikiri kuwa shughuli za binadamu hufanyanya dunia kuongezeka joto, kama kuchoma makaa yam awe, petrol na gesi ya kiasilia na kukata misitu na usimamizi mbaya wa ardhi.

Greenhouse Effect ni nini?

Athari hii ni kuongezeka kwa joto duniani kutakotokana na uwepo wa gesi Fulani katika hewa, zinazoitwa gesi chafu, kama, carbon dioxide, nitrous oxide, sulphur dioxide, na methane ambazo hutega nishati kutokana na jua. Vyanzo vikuu vya kaboni ni ukataji wa misitu, gesi kutokana na viwanda, gesi kutokana na magari, gesi kutokana na kuchoma miti au makaa na kuchoma misitu.

Hatari za ongezeko la joto duniani ni zipi?

- Uhaba wa maji mkali katika maeneo kame au yanayopakana na maeneo kame waweza kusababisha maeneo zaidi kuwa na jangwa.
- Ongezeko la kuenea kwa magonjwa kama malaria. Jinsi maeneo yanavokuwa yenye joto zaidi, yanakuwa mwafaka zaidi kama maeneo ya kuzalisha ya mbu, na kuongeza uwezekano wa kupata malaria. Familia na hospitali nyingi zaweza kuathirika, wastani ya miaka ya kuishi kupungua, na ongezeko la vifo vya watoto wadogo.



- Kupunguka kwa uzalishaji katika nchi za kitropiki na kisub-tropiki, hasa nchi katika Afrika Mashariki. Kwa sababu ya mvua iliyopunguka na ongezeko la uzalishaji wa wadudu kwa sababu ya joto, uzalishaji wa chakula waweza kupungua na ili husababisha umaskini na njaa katika familia na jamii nyingi.
- Gharama zilizoongezeka za chakula katika ulimwengu mzima. Jinsi wakulima wengi watakavyopata mazao chache na chakula kuwa adimu, ndivyo bei ya chakula itakavyoongezeka kwa sababu mahitaji ni mengi na usambazaji ni kidogo.
- Mabadiliko makubwa katika uzalishaji na muundo wa mifumo muhimu ya mazingira hasa misitu. Maeneo ya vyanzo vya maji katika milima na misitu huendelea kukauka. Hili litaathiri uwezo wa kumwagilia mazao maji na kupunguza maji katika mikondo ya maji yanayohitajika kujaza mabwawa na hifadhi za maji. Hili litapunguza kutengenezwa kwa umeme. Viwanda, mahospitali na taasisi zinginezo zetu ambazo kwa kiwango kikubwa hutegemea umeme zitaathirika sana. Usambazaji wa maji ya paipu katika maeneo ya mijini nayale ya vijijini pia utaathirika.
- Makumi ya mamilioni ya watu watawekwa katika hatari ya mafuriko na maporomoko ya ardhi, yanayoletwa na makadirio ya ongezeko la uzito wa mvua na katika maeneo ya bahari, ongezeko la viwango vya maji.

Nawezaje kuzuia ongezeko la joto ulimwenguni?

Panda na uichunge miti!

Kama ilivyotajwa hapo juu, carbon dioxide ni

moja ya gesi zinazoleta ongezeko la joto ulimwenguni. Miti hunyonya gesi hii kutoka kwa hewa inapotengeneza chakula na kuiweka katika mbao, mizizi na udongo kama kaboni selulosi. Hata hivyo, miti inapokatwa na kuchomwa, huachilia kaboni iliyokuwa imeweka.

Unajua kuwa ila mti waweza kutengeneza tabianchi ndogo mahali ulipo?

Miti na bima yake hupunguza joto lililo katika uso wa dunia. Hisi faraja ya kivuli cha mti. Tambua kwamba udongo ulio chini yake huwa na maji zaidi kulika ya udongo ulio palipo na jua pasipo na kivuli. Udongo unapokaa ukiwa baridi, huwa unaweka maji muda mrefu zaidi. Ili lamaanisha kuwa miti katika ardhi yako itasaidia kuongeza kiasi cha maji katika udongo wako na pia itasaidia kuweka maji udongoni kwa muda mrefu zaidi. Hili litasaidia mimea yako na pia kusaidia watu wanaotumia maji katika eneo lako.

Kadi za kaboni ni nini?

Ili kutengeneza kadi ya kaboni wahitaji vitu vitatu:

- 1) Punguzo la kweli na la kuongeza la kaboni dioksidi iliyo katika hewa;
- 2) Ahadi ya kuweka kaboni hiyo mbali na hewa kwa muda mrefu;
- 3) Ukaguzi unaofanywa na chama tofauti kinachothibitisha kwamba shughuli zimefanyika kulingana na mujibu wa sheria.

Miti hunyonya kaboni dioksidi kutoka kwa hewa wakati inapotengeneza chakula na kuiweka katika mbao, mizizi na udongo. Kiasi cha kaboni kilichochukuliwa kutoka kwa hewa hupimwa na kuhesabiwa, halafu, kinapothibitishwa kuwa sahihi, kaboni hii iliyonyonywa yaweza kuuzwa katika soko la ulimwengu kama kadi za kaboni. Wanunuzi waweza kununua kadi hizi kukabiliana na kaboni wanayoachilia kwa hewa.



TIST huweza kuuza kaboni iliyonyonywa na miti kama wazalishaji wanavyouza sukari na maziwa. Hata hivyo, katika kaboni, hauhitaji kutuma mti sokoni. Badalake, thamani ya kaboni iliyotolewa katika hewa na kuwekwa katika miti iliyo shambani au katika msitu wako, hupimwa na kuripotiwa. Biashara ya kadi za kaboni zaweza kufanyika New York, Chicago, London na mijiji mingineyo ulimwenguni, ama pia kupangwa kati ya watu au kampuni mbili moja kwa moja. Lazima tutimize sheria na mahitaji ya soko. Hatuwezi kukata msitu wote au kukata miti ili kupanda miti kwani hili ni baya kwa mazingira. Lazima tujitoe kuweka miti hii katika shamba kwa muda mrefu, thelathini au zaidi. Lazima turipoti data sahihi. Miti inapopandwa, vipimo na hesabu hufanyika ili kupima kiasi cha kaboni iliyonyonywa na miti ya mkulima katika TIST. Kumbuka tena, miti haipelekwi sokoni. Hukaa shambani na jinsi inavyokaa hai, ndivyo malipo yanavyoongezeka. Kwa hivyo, mkulima hukaa na miti, lishe ya mifugo, kuni, matunda na pia karanga. Pesa zinazotengenezwa na TIST katika kuuza kadi za kaboni hujenga chanzo kipya cha mapato na hugawanywa kati ya vikundi vidogo katika TIST na hutumika kusaidea kukidhi gharama za TIST, ambazo ni pamoja na mafunzo, uhesabu miti na usimamizi.

Je, Miti yote hunyonya kiasi saw ach kaboni?

La, miti iliyo na mzingo mpana huweka kaboni zaidi ya miti iliyo myembamba. Miti mirefu pia hunyonya kaboni zaidi ya miti mifupi. Hivyo basi, miti iliyo mipana huleta mapato zaidi kutokana na kadi za kaboni. Haishindani kupata virutubisho katika udongo na maji kama miti iliyokaribiana.

Hivyo basi, ili kupata mapato mazuri kutokana na miti yetu, ni muhimu kuipanda kwa nafasi

tosha itakayoiruhusu kukua kiafya, kwa urefu na upana. Kupunguza miti ili kupata kuni na kuiacha miti mingine ikue vizuri huwa njia nzuri zaidi ya kusimamia miti yako.

Ni wapi/nani hununua kadi za kaboni?

Hivi sasa, kadi za kaboni huuzwa katika masoko ya hiari na katika masoko ya kuhitimu mahitaji. Zaweza kuthibitishwa kwa njia tofauti, kama kulivyo na bidhaa mbalimbali na kuthibitishwa kwa bidhaa zingine unazonunua na kuuza (kama kahawa, kahawa aina mbalimbali). TIST yaweza kuuza kadi zake za kaboni katika masoko ya hiari au katika masoko ya kuhitimu mahitaji kwa sababu kadi zake ni za hali ya juu.

Kuna viwango mbali mbali katika masoko haya vilivyo na sheria mbali mbali na zinazobadilika kila baada ya muda zinazohusu upandaji wa miti, ufuatiliaji, na kuripoti ambazo tunahitajika kuhitimu ili kuuza kadi hizi za kaboni. Tunatumia viwango vya hali ya juu zaidi katika ukaguzi na kuthibitishwa — the Verified Carbon Standard (VCS) na the Climate, Community, and Biodiversity Alliance Standards (CCBA).

TIST ina wanunuzi wa aina mbili msingi:

Aina ya kwanza ni ya watu wanaojitolea kupeana pesa ili kuwapa watu motisha ya kupanda miti. Kwa mfano kulipia miradi ya upandaji wa miti kufanya harusi au semina kuwa kuwa isiyoongeza kaboni katika hewa. Aina ya pili ni ya makampuni yaliyo Amerika, Uropa, Canada na katika nchi zingine zilizokua viwanda zinazojitolea kupunguza gesi chafu zinazotoa kwa sababu mawakala wema wa mazingira au wanajitayarisha kuhitimu mahitaji Fulani ya baadaye.

TIST ina furaha sana kuwa na kadi za kaboni za hali ya juu, na kuweza kusambaza kwa wateja mbalimbali.

Mazingira Bora

Newsletter December 2025

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Growing Leaders

1. We are Honest
2. We are Accurate
3. We are Transparent
4. We are Servant to each other
5. We are Mutually Accountable to each other

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Ntharagwene TIST Cluster wakiwa kwa mkutano wao wa kila mwezi tarehe 19/11/2025. Mkutano ujao utakuwa tarehe 17/12/2025.

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- ✓ **TIST: Viasala wa Greenhouse Gas. Page 2**
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 - ✓ **Aimi ma TIST kuola uvyuvu wa nthi na uvinduku wa nzeve. Page 4**



TIST: Viasala wa Greenhouse Gas.

Kuvanda miti nikumasya nzeve itavisaa mawithyululukoni. Carbon Dioxide ni nzeve imwe kati wa ila syithiawa nthini wa Greenhouse Gases. Ila syosaa uvyuvu wa sua na kuutunga kwithiwa na uvyuvu wa nthi. Asomi amwe ma saianzi mesilasya kana nthi niyiendee na uvyuva muthenya kuthi ula ungi undu ula utonya kuete wanangiko. Uyu niw'o witawa usyao Greenhouse kila kitumaa kundu kumwe kwithiwa na mavuliko kana yua na maweu/ mang'alata kunyaiika.

Kuvivya kwa syindu ta mavia ma mwaki (Coal), mauta na nzeve kumasya nzeve itavisaa (Carbon dioxide, Nimatetheeasya kuola uthuku ula uetetwe ni Greenhouse. silikali na indasituli nthini wa nthi yingi nikwenda kuola undu ikumya nzeve itavisaa nikana nthi ieke uvyuva muno. Avitukithya/Athiani ma TIST nimatalaa nakuthima miti ila twavanda nikana TIST makeka masavu ma undu miti yosete nzeve itavisaa kuma mawithyululukoni.

Kithimi kila kitumiawa kuthima kitawa Carbon Credit kila kithiawa kianenen na tani imwe ya Carbonk withiwa yumitw'e mawithyululukoni. Kwoou kambuni na silikali nitonya kuua "Carbon Credits" kwasya nomaivie miti kuola nzeve itavisaa ile methiitwe mayumya na kumilekya mawithyululukoni.

Nitwaile ithiwa na uw'o na kunengane uvoo wa uw'o nikana tukwate athooi ma Credits. Mbesa sya Carbon Credit nitonya utetheesya ikundi kwithiwa syina projects na kwithiwa na ukethi munene na maendeeo. Ikundi sya TIST nikwataa ndivi ya \$20 kwa kila miti ngili imwe (1000) kila mwaka. Ndivi ya Greenhouse gas tiw'o vaita w'oka ikundi na aimi makwataa nundu miti yoo yina vaita kundu 10-40 kwi undu ndivi ya Greenhouse gas yiana.

Aimi ma TIST tuvande miti kwa wingi!

Kwa vamwe no tuvikie vaita munene.



TIST: Nzia ila itumiawa ni tukundi tunini: Ta kulikangana na kukwatangana.

a) Ni nzia yiva nzeo ya kuvanga andu tukundi yila mwi mbumbanoni?

Kilinge kinini nikiseo muno. vaikethiwe na mesa kati nundu noithukume ta ukuta kati wa andu vaikethiwe uvanthukanu wa kila kikwikalilwa ethiwa ni kivila ateo kwa mundu munengete ndaia mbee. Ingi nthini wa TIST ithyoo the twikalaa nthi undumwe ethiwa ni muthangani kana ivilani kwa kila umwe.

b. Nata mutonye kwika ethiwa andu mbee wa 12 nimekwenda kulika kakundini kenyu?

Ethiwa ve andu aingi mekwenda ulikana nenyu nikavaa kuseuvya kakundi kangi kana tungi twili vena mainyiva ene ana kana atatu kuma kakundini kala kambee (amemba ala akuu). Uu ni useo mbee kwi mundu umwe kwenda kwambiia kakundi eweka. Lilikanai kwambiia utonoi na kusumia nzia ya utongoi wa kithyululu.

c. Ni nzia myau utonya utumnia ethiwa vinya wa kakundi winthi?

Aanai withie ni andu eli eli na kila umwe ayosa undu uu ta muio wake. Ingi mathau ma malimano na nthekany'a ni matetheesya kwongela ngwatanio vinya na uthangaau. Ingi kunee niea wia wenyu museo kwakwiyonany'a mwi mbee nikutumaa angi makwata vinya na thambuu. Lilikanai yila mwoombana kulea kuselewa na kumina mbumbano tene. Kwithiwa na munini wa muungamii imusyaiisya wa masaa nokutume kila umwe ekia vitii na kuthangaa kwona wia ula walanitw'e niwathela masaani ala maile.

Walany'o wa kukomana.

Nikana musuvie ivinda tukundi tunini nitwaile kwia walany'o museo wa mbumbano. uu ni useo nundu nukumwia mwina mwolooto wa kila angyendani ya muthenya usu na mawia ala maile kwianiw'a muthenya usu. Ingi ni useo nundu nthini wa TIST nitweeyumisye kuthukuma vamwe kwa ivinda yiasa kuvanda na kuea miti yiane kuvikia soko wa nzave itavisaa. Nitukwenda kumanya tukundu tunini twitu na ena mwatw'o na kwona ni itambya yiva tutonya kwosa kuikiithya ithyotha na TIST nitweethiwa na kivathukany'o.

Ni undu wavata kumanya kakundi kaku kanini nikaile kumbana kaingi ona ethiwa ni keli kwa mwai. Kii nokiete kwosa vinya kwa kikundi kyenyu kwa kuthuthany'a na kila umwe kunenga ula ungi utao

na undu wikite kwake omithenya ila mutela onana na kila kinakivathukany'o na kitonya uete ualyuku museo kwa kila umwe vamwe na uu mawoni meu.

Yila mwoombana niuseo kwia mbee maundu ala mavata. Tukundi tunini twingi nitwoonie kuatiia nzia ithi syi vaa nthi kwi kwavata nthini wa mbumbano, na matambya asu ni:

Itambya 1. Ngethi na kwimanyithany'a kwondu wa andu ala eu kikundini (ndatika 5-15):

Ikiithyayi kila umwe niweew'a e muthokye, kila umwe etavany'a kwa mituki.

Itambya 2. Mboya sya kwambiia (ndatika ili (2))

Mboya nini nguvi noitethye kwa kwongela ngwatanio.

Itambya 3. Wathi (ndatika itano 5)

Uyu no withiwe wi wathi usevitw'e ni kikundi kyenyu kana wathi wa Ngai wina uthuthio kwa kila umwe.

Itambya 4. Kwiw'ana undu mukwika na mwitumia ivinda yiana ata (Ndatika itano(5))

Mutongoesya akaleany'a kila kikwikwa wumbanoni na ene kikundi mayitikila kwika. Masaa ala meutumika kwa kila undu nonginya mambe uneenewa na munini wa mutongoesya no ethiwe emusyaiisya wa masaa.

Itambya 5. Wia wa kikundi (Isaa yimwe 1)

Nonginya muimina kila wumbano nimwithiawa muneene wia ula mukoka uthukuma wumbanoni ula ungi. Ngelekany'o ethiwa no kila umwe kutunga livooti ya undu wikite kutetheesya TIST na mawalany'o na uthukumi wayo museo. Kumanyiany'a nzia nzau na maundu angi mavata ala matonya utuma kakundi kenyu keana na kwaila.

Itambya 6. Kwakana (ndatika itano (5))

Kila mumemba kunengane ondeto imwe ya kwakana onaethiwa ni yiulu wa utongoi. ingi kinengo kila kikivathukany'o kyonekete kwa mutongoi nikiyaile uwetwa ethiwa kivo.

Itambya 7. Mboya ya kumina/ kuvinga wumbano (ndatika ili (2))



Aimi ma TIST kuola uvyuvu wa nthi na uvinduku wa nzeve.

Aimi ma TIST nimeetikie wito wa kumatha undu tukuola uvyuvu wa nthi na uvinduku wa nzeve. Aimi anga nimamathie undu matonya kuelewa nzia ii kwisila kwa momanyisyo na semina sya TIST na ingi kwa mbumbano sya ngwatanio sya kila mwai nimaendeeie na kuelew'a undu wa uvyuvu wa nthi na uvinduku wa nzeve na niata matonya kwika kuola mothuku ala maetawe ni uvyuvu na uvinduku. Kwa ngelekany'o ta El-Nino ya 1998 ila yaetie wasyo munene na itina yaatiwa ni yua inene nthini wa nthi yitu Kenya, Ingi kiseve kinenen kya hurricane mwakani wa 20003 ila tukwo nitasyaetiwe ni uvyuvu na uvinduku wa nzeve. Ngelekany'o ingi ni kuthela kwa ia kiimani kya Mt. Kenya, mbua kwithiwa iteumanyika yiuu indii na kusesya ivinda yila yauaa na kwoou kundu kwingi ithima, nthongo kungala vamwe na mbusi na mikao ila itany'aa.

Ithangu ya mwai uyu ni kukwony'a momanyisyo amwe ma semina ala meutuma ueangwa mbee undu wa uvyuvu wa nthi na uvinduku wa nzeve mbeange. Mbee twianmbiia kwa kumanya kila ndeto na tuyona undu miti ithukumaa kuete ualyuku nthini wa uvyuvu wa nthi.

Uvyuvu wa nthi nikiyau?

Uu ni wongeleku muutia kuma muthangani ula uetae uvinduku wa nzeve. Uvyuvu/muutia mwingi kuma nthi utumaa undu mbua yuaa isesya, kukethiwa na iutani, kiw'u kya ukanga kwambata, mimea kulea usyaa, nyamu sya kithekani kukosa liu, miti vamwe na andu. Yila asomi ma saensi mekwasya uvyuvu wa nthi niwongelekete nundu wa mawiko ma mundu na kuete mauvinduku manene ma nzeve na uvyuvu wa nthi.

Ikonyo inya sya nthi niendee na uvyuva?

li!, nthi yi'u tui niyongelete uvyuvu kwa ndikilii imwe 10C ivindani ya myaka iana (100years). Asomi aingi meisilya kana mawiko ma mundu ala uendee na kwika nimo matumaa muiitia wa nthi uendee na kwongeleka amwe nita:- kuvivya syindu ila sumasya syuki ithuku muno ta mavia ma coal, mauta ma petrol na nzeve ila syi ungu wa muthanga vamwe na kutema miti na kulea usuvua itheka.

Nyumba ya Ngilini yithiawa na uthuku mwau?

Nyumba ino ya ngilini niyongelaa uvyuvu wa nthi nundu nzeve ila yumasya na kulekya nthini wa mawithyululuko nzeve nthuku ta Carbon Dioxide, Nitrous Dioxide, Sulphur Dioxide na Methane Trap kuma suani.

Nzeve ithi nthuku sumaa ona kambunini na industries syosawa ni miti na kwoou yila miti itevo iyiete uvyuvu kwa kwosa na kusii vinya kuma suani. nzeve ithi nisumaa nthini wa mitokaa, ngu syavivya na mititu yakana.

Mothuku ma uvyuvu wa nthi mni mau?

- Kiw'u kwaa isioni ila sya weu na kutuma iso ingi itwika weu kana mangalata.
- Kwongeleka kwa mowau ta malaria. nundu undu kundu kwavyuva niw'o kwithiawa kwaseuvya isio nzeo sya umuu kusiya na niw'o ukuaa tulinyu twa uwau wa malaria. Kwoou yila uu weeethiwa uwau wa malaria uiyaiika na kwongela ikw'u sya tuukenge na kutuma masivitali mausua.



- Kuoleka kwa ngetha ta undu kwithiitwe nthini wa nthi sya umiloni wa sua. Yila mbua yaua nini na tusamu tula twanangaa liu twongeleka nundu wa uvyuvu liu kuma miundani naw'o nunyivaa nundu wa ukosa mbua na kulika ni tusamu tuu nakii kiyiete wongeleku wa ukya misyini kuthi mbaini na nthi kwa vamwe.
- Nthooa wa malii niwongelekaa nundu yila liu munini na ayi ini aingi na vai liu ungi nonginya vei wambate nikana uiwe nala mena mbesa sya kuuthooa.
- Ingi usyai na mititu iivinduka nundu ethiwa kuna kiw'u na liu nyamu nikuoleka kwa kukw'a na kukosa liu na mititu iyuma nundu miti ndikala vate kiw'u. kii nakyo ingi kiituma liu ulea ukethwa nesa nundu vai kiw'u kya kungithya miunda. Ingi sitima uioleka kwa ndustries, sivitali na kunduni kungi kwa vata kwa mundu. Ingi kiw'u kya miveleki kwa andu ma mataoni na kula kungi kiyioleka onakyo.
- Mamilioni ma andu nimekwithiwa na ivuso ithuku nundu wa muthanga kutuuka, nundu mbua yaua nakw'o kula kwi ukanga na maia kiw'u kiyongeleka na uyithia mawikalo nimeethiwa matevo.

Nata tutonya ysiia Uvyuvu wa Nthi?

Vanda an Kusuvia miti!

Oundu tuwetete vaa iulu nzeve itavisaa (Carbon dioxide) ni imwe ya nzeve ila ietae uvyuvu nthini wa nthi yonthe. Miti niyosaa nzeve ino kuma kwa mawithyululuko yila ikusevya liu na kwia nthini wa mithamba, mii, matu na muthanga. Onakau yila twatema miti na twavivya isyokaa

ikaumya nzeve isu itavisaa na kumilekya ingi mawithyululukoni.

Ni wisi kana kila muti nuseuvasya kauvinduku ka nzeve?

Miti na matu mayo nimavwikaa muthaka wa nthi. Nutaniaa muunyi wa muti. Sisya ungu wa muti nukwona muthanga ula wivo ni mwiu na ti undu umwe na ula uathitwe ni sua. yila ungu wa muti vena muunyi nivathithu na vena kimeu kwa ivinda iasa kwi vala vaathitwe ni sua. kii kionany'a kana miti ila yi muundani kwaku nitetheeasya muthanga kwia kimeu na kiw'u kwa ivinda iasa kwi vala vate miti. Kiw'u kii kikatethya mimea yaku ni kikatumika maundu ni anga kisioni kyaku.

Carbon Credits nimyau?

Kusevya Carbon Credit sya TIST wienda syindu itatu

1. Nzeve itavisaa kwithiwa iyioleka na kwingeleka nzeveni (mawithyululukoni).
2. Kwiyiava kuola nzeve itavisaa kuma mawithyululukoni
3. Muthiani / muvitukithya kuikiithya kana mawiko othe mekitwe undu vaile.

Miti niyosaa nzeve itavisaa kuma mawithyululukoni na kutumia kusevya liu wayo vala iwiaa ta ngu mithambani, miini na muthangani. Nzeve itavisaa ila yumitw'e mawithyululukoni ithimawa na undu muti utonya kwia yiana naindi niw'o yikawa isavu na kuvitukithw'a kana ni yawo na indi nzeve ino yumitw'e mawithyululukoni na kwiwa mutini niyo itesawa sokoni ta Carbon Credits. Athooi ala mauaa mauaa ta nzia imwe ya kuola nzeve ino nthuku methiitwe mailekya mawithyululukoni.



TIST nitonya uta nzeve ino itavisaa oundu mundu utesaa sukali kana yiia. Onakau kuta nzeve ino mundu ndalisasya muti melini/isiwani. Indi vaita ni kuma nzeve ila muti uyu wuwity'e mawithyululukoni na kwithiwa muti wivo uendee na unyw'a nzeve itavisaa. Nzeve ino itavisaa itesawa sokoni sya New York, Chicago, London na misyi ingi minene nthi yothe nitesawa kwa mivango kati wa andu kana kambuni. Nonginya tuvikie miao ya soko nikana tute nthini wa isoko. Mwiao umwe nikana miti ndyaile utemwe ngulutu kana mititu kwengwa nundu uu ni uthuku kwa mawithyululuko. Nitwaile kwiyumya kuvanda miti yikale kwa ivinda iasa ta myaka miongo itatu. Na ingi nitwaile unengane uvoo waw'o. Miti yamina uvandwa masavu amwe nimaile kwikwa ta undu nzeve itavisaa ikwoswa ni miti ivanditwe ni aimi ma TIST. Manya ingi kana miti nditwaawa sokoni itiawa o muundani kwaku vala yaile ikala kwa ivinda iasa nikana ukaendee ukwata ndivi na kuunenge liu wa indo, ngu, matunda na mbindi/ngii. Mbesa ila TIST ikwataa kuma kutani kwa nzeve itavisaa nikuaaniaw'a tukundi tunini twa TIST na ingi utumika kukwatiia ndivi sya kumanyisya, kuvitukithya na kuungamia.

Miti yoothe inyusaa nzeve itavisaa yianene?

Anye'ee, Miti ila mithathau noyo yiaa nzeve mbiki kwi miti mitheke. Miti miasa niyosaa nzeve mbingi kwi miti mikuvi. Kwoou uthathau wa muti nuetae mbesa mbingi nthini wa soko wa Carbon Credits. Kii nikwasya utaaniu wa miti niwaile nikana unenge miti nzeve na kwithiwa itonya uthathaa na kuasava nikana yithiwe na ueti museo. Ingi yimitaaniu nesa ndiithiwa iyuaania unou wa muthanga, kiw'u kana sua. Kwoou nikana ukwate ndivi nzeo kuma mitini manya kana utaaniu wa miti niwaile nikana yiane

nesa yimithathau na miasa. Ingi kuola miti ni kuseo ni kutumaa ukwata ngu na kutuma miti ila yatiwa yiana nesa.

Niva kana ni aau mauaa nzeve itavisaa (Carbon Credits)?

Kwayu nzeve ino itesawa sokoni sya kwiyumy'a. Nitonya kwithiwa ivitukithiw'e kivathukany'o kwa ivinda na mivai kivathukany'o otondu soko syithiawa kivathukany'o sya kaawa na kaawa ka kwiseuvisya ungu wa masyitwa kivathukany'o. TIST nitonya uta carbon credits syayo nundu niiatiie mawalany'o na nisy kilasi kiyulu. Ve kilasi kivathukany'o na miao iulu wa uvandi wa miti yikalaa isesya na kusyaiw'a na livoti ila taile uvikia nikana tute nzeve yitu sokoni ithi yiya kilasi kya yiulu. Nitutumiaa nzia sya yiulu muno kuvitukithya, kukunikila, kuthiana n akwona nisyale - verified carbo standard (VCS) kwa nzeve, mawithyululuko, mbai na uvathukanu wa syithio situ (Climate, Community na Biodiversity Alliance Standards).

TIST yithiawa na aui mithemba ili:

Mbee ni andu ma ngoo sya wendi museo ala mauaa kwa kwenda matuthuthye kuendee na kuvanda miti . Ngelekany'o Kuiva andu mande miti kwa alusi kana conference ya kwikala tuoete nzeve itavisa.

Keli ni kambuni ila syi US, Europe, Canada na nthi ingi ila syina industries nimeyumasya kuola GhG ilasyumite nikwithiwa mena wendi museo kwa mawithyululuko kana meenda wambiia kuete walany'o wa kuola nzeve itavisaa.

TIST yina utanu kwithiwa nzeve yayo yi imwe ya kilasi kya iulu na itonya uteea athooi aingi kivathukany'o.

Mazingira Bora

Newsletter December 2025

tist Growing Trees
Growing Leaders

1. We are Honest
2. We are Accurate
3. We are Transparent
4. We are Servant to each other
5. We are Mutually Accountable to each other

www.tist.org

Kipsigis Version

TIST is an innovative, time - tested, afforestation program led by the participants.

Dial *709# (Safaricom) or * 789* 7000# (Other Networks) and get to know more about TIST and your Small Group. Follow the prompts. Safaricom is Free.



Ntharagwene TIST Cluster wakiwa kwa mkutano wao wa kila mwezi tarehe 19/11/2025. Mkutano ujao utakuwa tarehe 17/12/2025.

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TIST koristab mugaret.



enkimin ketik konyoru

koboisien koristo noton yaa

(CO₂) korisiton ko agenge

en chekiguren (greenhouse gases), en niton

kotere burgeyeta nguwo tut en soet asi konyor

burgeyet neo ng'uwotut, mwoe ng'omutik kole

kigoet burgeyet en emet ako magararan weche

emet en niton koweche emet, eniton koweche

emet amun emotinwek alak komuche koet

robta mising, bitu kameusiek anan ko melewet,

bitu koristo neyaa yon koboisien karisiek

mwanik, kou makaa (nesek) amun ketik

koboisien koristo kobose chongitab korisuwew

chemi soet, moche anyun seregali ak

emotinuwek cheboisein (industries) kobos

koristo neyaa asi nguwo tut borgeiyet

neyomegei.

En koitikab ketik chebo tist koiti ak kobimoni

toltolitab ketik asi komuch konai kole tiana

koristo negobosien ketit, kobunisiek ak seregali

kwole koristo neya ak koliban ketik ak kobos

korisoton.

Nyolche ko kibo imanit ak chelitit en koitetab

ketik asi kimuch kiyanten, ye ka konyoru rabisiek

komuche kurubit koboisien komnye ak konam

koyai tuguk alak che komagotinye, kurubisiek

kelibochin \$20 chebo ketik 1000 en kenyit

(kogerger ak 1.80ksh.) En ketit ne sobe,

nyorunen kelchil temik kosir olik amun

chechuak ketik.

Membaekab karaba kilasta en laikipia

county komiten tuiyet en arawanik konye.



TIST: Mitindoishek chepo groupishek che meng'echen: Kotuyet tap ke en Groupishek.

a) **Ne oret ne kimuche kepanganen pik en tuyoshek chepo groupit?**

Oret ne kararan ko kechop circle. Matonde mezoshek amun iku koimutyet. Matochop ngecherok che echen anan ko ngecherok alak tugul chebo pik che bo maana. En TIST, ketibotosi tukul kokerkeit. Kimuche ke toboten tugul en ng'echerok anan ketobote en ng'weny.

b) **Nen ne iyoe yon moche kochut pik che ite taman ak oeng' groupit?**

Angot komi pik che sire taman ak oeng' che moche kochut groupit kokararan inda kichope groupit ake. Imuch kebchei groupit koyop oengu, anan konget membaek somok anan ko angwan chebo groupit neta kochop core nebo groupit ne kitou. Inoni ko kaikai kosir koto membayat ageng'e. Obwat oboishen zungganet ab kandoinatet kobore konam.

c) **NE oret ne omuche oboishe yon kiten inguvut nebo groupit?**

Bchei groupit korop pairishek. Toreti kora drama. Saaishak alak ketononi, ak kekak komwa chi tugul ki ne ibwate agobo groupit. Obwat kora orib saaishak asimakoit tuyet. Yomeke kecheng' netoreti kondoindet en ripet 'ab saaishak, Imuche igeshi nguvushek chepo groupit iger ile kakai kasit nekokitokchinke.

Ole kiyoito tuyet.

Asi kerip sait komye, Groupit ne kiten koyoche kotinye schedule nebo tuyet. Inoniton koba maana angamun kere kole kotar agendas chebo maana koron. Kora koba maan en TIST angamun, kikekonu ke en boishet nebo minet 'ab ketik, kemin ak kerip ketik chebo carbon markets. Yoche kora kenai membaekchok en groupishek che meng'echen komye, angamun chitukul kotinye jukumu en groupit ak en TIST kotugul.

Bo maana kora koyai groupishek tuyoshek kila mara, sana sana en kila wikit anan ko oeng' en wikishek oeng'. Inoniton kokochin membaek

koneteke en grouitit ak kotech groupit ko mugul ak konai tuguj che imbya.

En tuyoshek chuton, kobo maana keker tuguk che bo maana. Groupishek che chang' en TIST kokoker kole boishe mtindo ne isubu en tuyoshek.

Stepit neta; Kokotiet ak Tachet 'ab membaek che imbya(5 – 15 minutes):

Hakikishan ile kokas chitugul komi komye. Ingonwakit lakini bokokchin chitugul komwa ge.

Stepit nebo oeng;. Saet ne kiyoten tuyet (2 minutes):

Saet yon kinome tuyet kotoreti groupit koik kibageng'e.

Stepit nebo aomok; Tyenwokik (5 minutes):

Imuche koik tyenwokik che kisire membaek, anan ko tyenwokik che ituitos pik kou chepo kanisa.

Stepit nebo angwan; kiyonchindos sait ak boishonik(5 minutes):

Ororu kondoindet boishonik che kiyoe en groupit ak koyon chin membaek koyai kasishek choton. Kasarta neki boishen en kasit ake tugul koyoche kiyonchin asi kong'et co-leader kotoret korip saishak en tuyet.

Stepit nebo mut. Kasishek ab groupit (1 hour):

Yoche kokidiscussen boishonik en tuyet ne kikobata. Boishonik komuch koik tuguk che kikoret chitugul groupit groupit anan ko TIST, training en tuguk che bo maana, ak ki ake tugul ne imuch kotoret groupit kota kwo taa kosir ole mi.

Stepit nebo lo. Techet 'ab ke (5 minutes):

Kila membayat koyoi teset en TIST. En teset komuche kobor chei kit ne talenta en kondoindet.

Stepit nebo tisab. Saaet ne kikeran tuyet (2 minutes):



Temikab TIST kotinye naet agobo burgeiyetab nguony ak waletab itondab emet.

Ngen che chang en temikab TIST agobo niton. Kigechil niton temik en konetisiosiek ak seminars ak en tuiyosiekab kilasta koguiyo agobo burgeiyetab emet, ak nee nebitu agobo niton ne oret negimuche keposen. Kitinye ak kenyoru koimutik en betusiek tugul. Koborunet netai ko kirobon robta El Nino en 1998 ne kibut emet ak let konyo kemeut, kibitz kora koristo neo missing en 2004 nito ko koborunetab waletab emet. Kibit en emet; kosib kochotio koikab beek en Mt. Kenya amun en burgeiyet ne kibitz en emet; kosib ko kobetio anan rorunetab amitwogik ene emet, kotenyo beek en kondametusiiekab beek ak anagei chechang chegitok.

En arawani ketinye asi komuch koguiyo biik agobo burgeiyetab emet ak walletab emet komie. Kitinye ororunetab chuton tugul asi iguiye ile tos imuch kotoret.

Ne anyun burgeiyetab emet?

Burgeiyab emet kogochin nguwendet koet missing burgeiyet, niton kogochin emet

konyor wallet. Ye eet mat en emet komuch kowal orowekab robta, koriswek che gimen, kotesak beek en nyanchosiek, lo mabit omitwogik, koseretio ketik, tiongik ak biik. Ye ngalal ngomotik agopo niton bo waletab emet kotinygei ak burgeiyetab emet; niton kotinyegei ak boisionikab biik missing ko agobo itondab emet ko bitumen niton.

Tos tesosei mat en emet?

Ee amun en kenysisiek 100 chegogopata kogitesak 1⁰c. Tinye ngomotik kole eng bosionikab biik che yoe kogochin ngwoindut koet mat. Niton kounetab mwanik chegitom kepoishen, petro, koristo nemiten ak koluletab keti, ribetab emet ne mayamat.

Tos tinye koriswek alak?

Niton keguren kotab kurwek amun miten en nguony koriswek che terotin kou carbon dioxide nitrous oxide, sulphur dioxide, mitane trap energy koyob asista. Olepitunen korisi ya (carbon) kotiletat timwek, koristo ne yopu factorisiek karisiek, nesek ak beletab osnosiek.

**Ne ngoiyondit ne konu burgeyetab emet?**

- ♦ Konu kotesak ongatet en ye mamiten beek.
- ♦ Konu kotesak mionwek kuo eset.
- ♦ Amun igochin kalyangik che ibu eset kochanga, komuchi kebek biik che chang.
- ♦ Konu koet bananda en biik amun ye kaet mat, komuchi komabiit omitwogik missing ko korotinwek chemiten oretab asista.
- ♦ Konu kobit oliet ab omitwogik. Kwo barak missing amun rorunet.
- ♦ Ye tiny timwek ak osnosiek kobitu kobetio beek en tulong, komagenyuru beek che kimuchi keboisien en imbarenik, kobetio omituokik, komagenyuru stimet ak beek en korik ak en townisiek.
- ♦ Biik che chang komosiche mengotosiek en maranetab neek.

Omuche oter burgeiyetab emeti?**Min ketik ak irib!**

Kou en mwaetab koristo noton ya (Carbon) ko konu burgeiyetab emet. Ketik anyun koboishen koristo (carbon dioxide) en yaetab omitwogik, konori en temenik, tigitik ak ngunyek, yegitil ketik any ko kagichunda korisoton kwo soet, kotes burgeiyetab emet.

Tos imuch inai ile ketit kotinye waletab emet?

Ketit ak orwet gotuche emet. kaitit urwet kosir olemiten asista.ole kaitit kogochin yoto kokoitit en abogora niton koboru kole ye imin ketik konyoru ngungunyek chemiten imbarengung kotityet en kila ak kila ,agotrurutik tugul.

Mungaretab koristo konee?

Mungaret kotinye tuguk somok:

- 1) Komiten keretab bosetab koristo noto yaa (CO₂) en koristo.
- 2) Kebos carbon en kenysisiek chechang.
- 3) Miten biik che tononchingei asi korib agoib kokwout kole kogisib mogutik tugul che tinye.



Ketik koboisien carbon ak kogonor en ketik, tigitik ak en ngungunyek. Kimuch kenai koristo ne yaa nemiten barak ak nekogiboisien ak keyai esabu. Ko bit anyun chemungarainik che ole ak kwoldoi.

Itin anyun TIST koalda koristo ne kogiboisien en ketik kou temik che tinye sugaruk ak chego. Mogimuchi keib ketit kwo ndonyo kobaten kibimoni toltolindab ketit ak kiyokto. Mungarani kotesetai en New York, Chigaco, London ak emotinwek alak. Miten ngotutik che bo mungaret ak tononywan. Biik alak komuche kotil ketik en osnet asi kogol alak, maiyanat niton amun ketesi carbon kotes burgeiyet. Kimokinigei kemin ketik chebo kasarta ne goi choton ko kipkaa. Ye testai temik koribe ketik konyorunen kelunoik chetoretegei en kaa kou- rabisiek, kwenik ak logoek.

Tos ketik tugul koboisien koristo ne kergei?

Acha, ketik chetebesen ak chegoen kotinye koristo neo kosir ketik chemengechen. Ketik chetebesen kotinye raninik che chang amun konori koristo neo. Noton anyun ye kigole ketik kigochi kokwoutik che yome asi koet

ak konyor beek. Rib ketingung ak kechororchi asi koegitun ak inyorunen kwenik ak omitwogikab tuga.

Ano/ng'o che ole koristo?

En nguni kochang olig ago miten boroinde en ole imoche. Amun tinye boroinde olik ak oldoik (kou kawek kotinye keruti).

Miten kobesosiek en indonyo amun tinye agetugul ngotutikyik kou ole kimindo ketik, ole kiribto ak ole kiyumdo report. Kiboisien biik che miten barak (validation and verification, V.C.S) ak Climate Community and Biodiversity Alliance Standard (CCBA).

TIST kotinye olik oeng:

Netai miten biik che tinye kapuatet ne mie ko kon rabisiek, kogochi che kimin ketik. Nipo oeng komiten kombunisiek en US, Europe, Canadaa ak emotinwek alak chegitestai kotinye maget kepos koristo ne yaa.

TIST kotinye boiboiyet en amun tinye koristo ne kararan netinye mungaret, en olik che chang.