



Modul 5 – Lena Wokbuk

Eneji Jenerol Prinsipol

BISLAMA LANWIS – VANUATU

Kampani we i givim mane from:

Long patnasip wetem:





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“Riniwabol Eneji Jenerol Prinsipol” trening modul hemi wan introdaksen long fundamentol blong eneji sos mo ol impoten samting blong hem.

Taem yu komplitim kos, lena bambae oli ajivim ol lening aotkam we i stap daon:

- Aedentifaem ol difren taeb blong eneji sos
- Difaenem riniwabol eneji
- Diskraebem ol wei blong yusum riniwabol eneji

- Eksplenem globol eneji naeia mo ol impak blong hem long envaeromen
- Diskasem ol taeb blong riniwabol eneji teknoloji mo ol advantej mo disadvantej
- Diskraebem ol impotens blong riniwabol eneji long komuniti

TEBOL 1: Lesen Plan

Japta	Lesen Taeb
1. Aes Breka – Introdaksen	Teori mo aktiviti 1
2. Eneji	Teori
	Aktiviti 2
	Aktiviti 3
	Aktiviti 4
3. Riniwabol Eneji Teknoloji	Teori
	Aktiviti 5
	Aktiviti 6
4. Riniwabol Eneji & Komuniti	Teori
	Aktiviti 7

Lena wokbuk ya (LW) i kamaot long koresponding Trena Gaed (TG). Ol Kontent long LW ya oli mekem i kam isi mo samaraesem, wetem fokus long ol daekram, pija mo ol koresponding aktiviti we i save alaoem man we i lanem blong stap enkej wetem trena long taem blong trening. Sipos yu wantem kasem moa infomesen long eni seksen, plis lukluk i go long koresponding TG.

Pija long kava: Konektem wanfala taeb blong riniwabol eneji. Sos: Pija Elena Zhuravleva blong Pexels (top lef), Pico-Haedro turbin long operesen. Sos: Powerspouts, New Zealand (top raet), Ground mounted Solar PV in remote Fiji Island. Sos: Zack Maraf (botom senta).

Disklema: Global Green Growth Institute i no save mekem eni jenis/waranti, we maet long ekpres o implae, o asum long eni likol laeabilti o responsibiliti blong akuresi, kompliti, o eni namba 3 pati we i yusum, o risal blong eni kaen yus, blong infomesen, aparatus, prodak, o proses disklos long ol infomesen we i kontenem long plesia o ripresentem se yus blong hem bambae hemi no go ova long praevet raet blong hem wan.

GLOSERI

Biomás - Okanik mata we oli yusum olsem fuel, plant materiel mo sisit blong anamol we oli yusum espeseli olsem wan sos blong fuel.

Klaemet Jens - hemi wan jenis long globol o rijinol klamet paten.

Coal - coal hemi wan flemebol blak o braon – blak sedimenteri ston wetem hae amaon blong kabon mo Haedrokabon. Oli klasifaem Coal olsem wan non riniwabol eneji sos from se hemi tekem million yia blong hemi fom.

Eneji - Abiliti blong mekem wok.

Eneji sekuriti - nonstop eneji sos we hemi avelebol long wan afodebol praes

Fosil fuel - wan naturol fuel olsem gol o gas, i fom long jiolojikol past long ol rimen blong oganisim.

Fuel cell - hemi wan elektro kemikel sel we i konvetem kemikel eneji blong wan fuel haedrojin (Haedrojin) mo wan oksidaesing (oxidizing) ejen Oksijen (oxygen) i go long elektrik.

Globol - rilet long hol wol, raon long wol.

Globol woming - wan inkris long ovarol tempereja blong atmosfera blong wol from grinhaos ifek folem inkris blong kabon daeoksaed, CFC'S, mo ol narafala gas we oli kosem polusen.

Hitt - kwaliti blong hot, hae tempereja.

Impakt - wan ifek o influens.

Naturol Gas - hemi wan non-riniwabol haedrokabon we i yus olsem wan sos blong eneji blong hit, kuk, mo elektrik jeneresen.

Non - riniwabol eneji- ol sos we bambae hemi ran aot o bambae i no save rifil blong taosen o milion yia.

Oel (crud oel) - Petroleum we oli no rifaenem, wan stiki likwid we i kamaot long petroleum, espeseli blong yusum olsem fuel o lubriken.

Petrol (unleaded gasoline) – Wan laet fuel oel we i kamout taem yu distilim petroleum mo yu yusum long intenol combustion enjin.

Polusen - Eni sabstens we yu putum i go long envaeromen we hemi denja o ifek blong hem i gat poisen.

Riniwabol Eneji - Eneji long wan sos we hemi no save go nogud.

Temol - Rilet long hit. Temol proses hemi menli hit.

1

Aes Breka – Introdaksen

AKTIVITI 1

Introdusum yu wan long sot toktok. Tokbaot wanem yu wis blong genem long trening mo wanem nao ol past eksperiens we yu bin gat wetem riniwabol enej.



2

Eneji

2.1 Wanem hemi Eneji

Bambae yumi save diskraebem eneji olsem samting we i gat plante fom mo gohed blong jenisim fom blong givim long yumi wan samting we i gat yus blong hem. Samfala fom blong eneji hemi:

Hit eneji – Tingbaot taem yu statem wan faea blong boelem sam wota. Taem yu kam klosap long faea yu filim hot from eneji.

FIKA 1: Yu save tingbaot olsem wanem faea i hitim wwota?¹



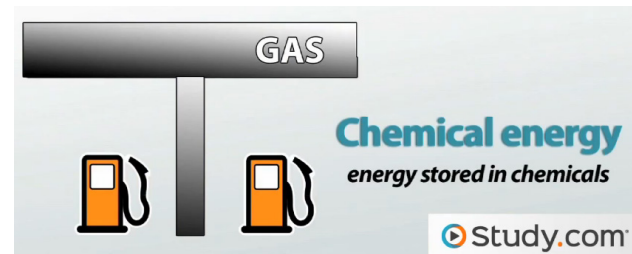
Mekanikol eneji – mekanikol eneji hemi amaon blong potensol eneji mo kinetik eneji. Hemia hemi taem we eneji blong aotbod enjin i givim pus long bot blong yu.

FIKA 2: Mekanikol Eneji draevem bot²



Kemikel eneji – Insaed long kemikel blong batri oli yusum blong storem eneji blong bambae yu save yusum hemia blong tanem radio i on. Taem oli bonem ol fuel, kemikel eneji hemi rilis mo konvet i go long hit o kemikel eneji.

FIKA 3: Fuel hemi wan sos blong kemikel eneji³



Elektrikol Eneji – hemia hemi eneji we hemi flo tru long ol waea blong givim paa long ol laet long ol hom blong yumi, ol skul, sam moa.

2.2 Ol sos blong Eneji

I gat 10 sos blong eneji we oli yusum oltaem raon long wol blong jeneretem paa. Ol sos ya oli:

1. Sola Eneji
2. Wind Eneji
3. Biomas Eneji
4. Jiotemol eneji (Geothermal Eneji)
5. Eneji
6. Wev Eneji
7. Haedro Eneji
8. Haedrojen Eneji
9. Nuklia Eneji
10. Fosil Fuel (Naturol Gas, Oel, Coal, Petrol etc.)

Ol sos blong eneji oli seraotem long Riniwabol Eneji mo Non riniwabol Eneji.

Riniwabol Eneji – hemi eneji we i kolekt long ol risos, we oli tekem ples naturol nomo long taemskel blong man, olsem sanlaet, win, ren, ol taed, ol wev, mo jiotemol hit.

Non-Riniwabol Eneji – hemi wan naturol risos we ol naturol samting oli no save tekemap ples blong hem kwik inaf blong step ap blong kipim wetem konsampsen olsem fosil fuel: Coal, diesel, petrol, naturol gas.

¹ Photo credit: Vanuatu Team, GGGI

² Source: Tropic Thunder Jet, <https://tropic-thunder-jet.business.site/>

³ Source: Study.com, "Chemical energy, <https://study.com/>

2.2.1 Sola Eneji

Sola eneji hemi kamaot long san. Difdifren teknoloji i bin develop blong yusum eneji blong San. Komon eneji we i kam long san hemi elektrik mo hit.

FIKA 4: San Laet – Sos blong Eneji⁴



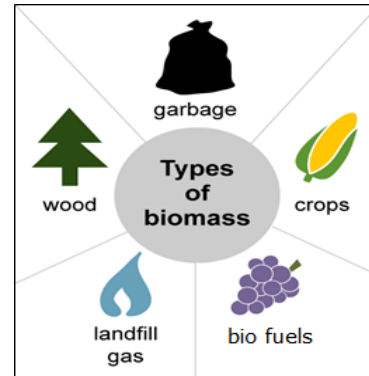
2.2.2 Wind Eneji

FIKA 5 MO FIKA 6: Seperetem proses yusum win⁵ & Win Turbin blong Elektrik⁶



2.2.3 Biomas Eneji

FIKA 7: Ol Taeb blong Biomas⁷



Biomas eneji o anamol meteriol i yus daerek blong eneji prodaksen. Eksampol inkludum wud, eneji crop mo doti blong man long siwej.

2.2.4 Jiotemol Eneji

FIKA 8: Jiotemol – Stim disjaj⁸



Jiotemol eneji hemi temol eneji we i produs mo stap andanit graon. Hemi hit we i kamaot dip insaed long sab sefes blong wol.

⁴ GGGI Vanuatu

⁵ Source: Shutterstock images, <https://www.shutterstock.com/image-photo/bali-indonesia-may-6-rice-winnowed-141503299>

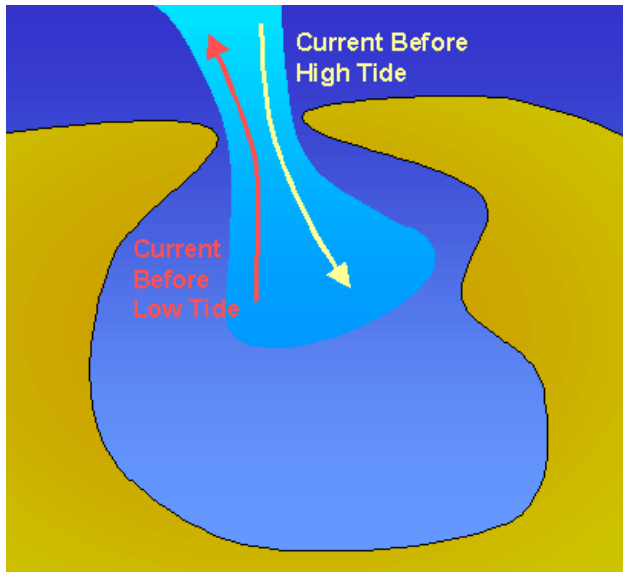
⁶ Source: Wikimedia Commons, Wind-Turbine, <https://upload.wikimedia.org/wikipedia/commons/a/ad/Wind-turbine-icon.svg>

⁷ Source: WordPress.com, Environment Sustainability Biofuels, <https://environmentsustainability2017.files.wordpress.com/2017/10/blog-24.jpg?w=768>

⁸ Clean Economy Center, <http://cleaneconomycenter.org/benefits-and-disadvantages-of-using-geothermal-energy/>

2.2.5 Eneji

FIKA 9: Bihevia blong taed long taem blong ol difren taed⁹



Taedal eneji hemi wan fom blong haedropaoa we i jenisim eneji long ol taed i go long ol fom blong paoa we oli gat valiu.

2.2.6 Wev Eneji

FIKA 10: Osen Wev¹⁰



Wev eneji (o wev paoa) hemi transpot mo kapja blong eneji long ol sea sefes wev. Eneji we i tekem oli yusum blong produsum elektrikol mo mekanikol eneji.

2.2.7 Haedro Eneji

FIKA 11: Wota i flo from wan hae level mo wetem hae¹¹



Haedro eneji i kam long eneji we i kam long wan kwik wota we i foldaon mo i ron, we maet i konekt blong wan yusful pepos.

2.2.8 Haedrojen Eneji

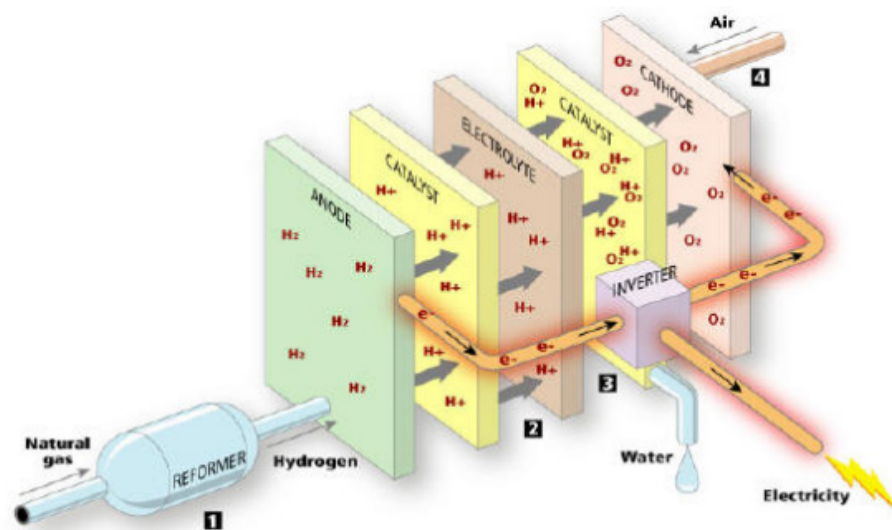
Haedrojen hemi avelebol wetem wota (H₂O) mo hemi moa komon elemen i stap long wol. Taem wota hemi seperet, i save yusum olsem fuel blong produsum elektrik. Haedrojen hemi wan gudfala sos blong eneji be i save yusum olsem wan sos blong fuel wetem yus blong Fuel Sel olsem we i soem long Fika 12.

Fuel Sel hemi produsum elektrik blong ranem moto draeving car.

⁹ Source: The Scuba Tutor, Tidal currents, <http://www.scuba-tutor.com/diving-environment/dive-site-conditions/tidal-currents.php>

¹⁰ Source: Wqpmag.com, "Water quality" <https://www.wqpmag.com/water-quality>

¹¹ Source: The Conversation, <https://theconversation.com/rivers-rain-and-releases-what-happens-when-you-dam-a-waterway-3934>

FIKA 12: Fuel Sel¹² mo Haedrojin Car¹³

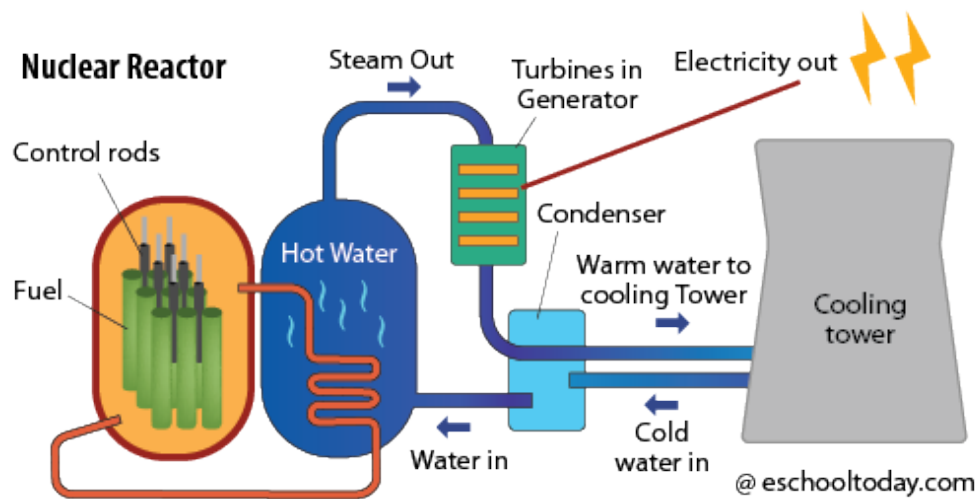
2.2.9 Nuklia Eneji

Nuklia enejj hemi yusum blong nuklia riaksen we i rilisim enejj blong produsum hit, we oltaem hemi yusum long stim turbines blong produsum elektrik long wan nuklia paoa plant.

¹² Source: Know It Info, "What is Uranium Energy", <https://knowitinfo.com/what-is-uranium-energy/>

¹³ Photo credit: Worcester Polytechnic Institute FCC Public, <http://www.odbornecasopisy.cz/en/post/new-membrane-technology-that-may-help-make-hydrogen-fuel-cell-vehicles-viable--2451>

FIKA 13: Nuklia Riaksen¹⁴



2.2.10 Ol Fossil Fuel (Naturol Gas, Oel, Coal, Petrol sam moa.)

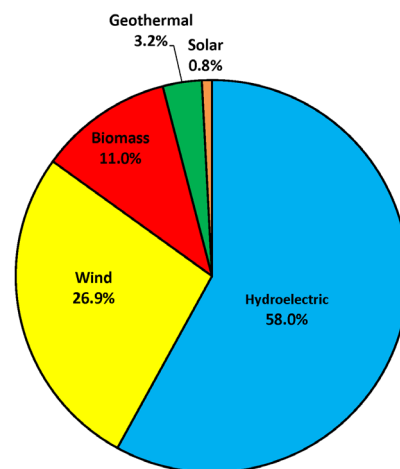
FIKA 14: Ol Taeb blong Fossil fuel¹⁵

- ▶ Coal- is a solid fossil fuel
- ▶ Petroleum- is a liquid fossil fuel.
- ▶ Natural Gas



2.3 Yus blong Globol eneji mo impak blong hem long envaeromen

FIKA 15: Wol Riniwabol Eneji (Elektrik) Miks long 2015¹⁶



Olsem yumi lukim long pija antap, haedroelektrik paoa i lidim ol riniwabol eneji folem win biomas mo jiotemol eneji. I gat 24% blong eneji blong wol i kam long riniwabol eneji sos. Karem eneji long non – riniwabol sos i gat plante impak from wol.

14 Adapted from, KnowItInfo, "What is Uranium Energy?", <https://knowitinfo.com/what-is-uranium-energy/>

15 Slideshare.net, "Slide 2 -Fossil Fuels", <https://pt.slideshare.net/jbishopgcms/fossil-fuels-5668194>

16 Information adapted from "World Energy Consumption", Wikipedia, May 2021, https://en.wikipedia.org/wiki/World_energy_consumption

2.4 Impak blong Eneji i yusum raon long wol

Longtaem, plante ples long wol oli stil yusum non – riniwabol eneji moa fosil fuel, i gat plante neketiv impak long globe. Sam long ol impak ya oli:

2.5 Globol Woming mo Si Level Raes

Hemia wanem i hapen taem we yumi yusum fosil fuel. Ol fuel oli rilisim gas blong priventem hit blong kamaot long wol – mo yumi stap go hot moa long evri yia.

FIKA 16: Industriol emisen kontenen ol grinhaos gas¹⁷



Hemia i kosem ol aes long not mo saot pol blong wol blong melt folem hae tempereja mo hemia i minim se moa wota i go long solwora. Hemia i inkrisim raes blong level blong solwota folem hae tempereja mo hemia i minim se moa wota i go long solwora. Hemia i inkrisim si level raes long ol aelan coast mo tu go insaed long ol vilej long taem blong hae taed. Hemi spolem ol kakae tu taem i pusum ol solwota insaed long land.

FIKA 17: Si level raes hemi denja long ol aelan hom blong yumi¹⁸



2.6 Kaemet Jens

From we tempereja blong wol hemi go antap – i afektem klaemet blong yumi – paten blong weta hemi jenis. Yumi karem ol strong saeklon, flad, moa draetaem. Yumi gat moa hot dei long taem blong hot sisen mo tumas kolkol dei long taem blong kolkol sisen. Hemia i afektem tu produktiviti blong ol kakae.

FIKA 18: Klaemet Jens i afektem ol kakae blong yumi¹⁹



¹⁷ Source: Wikimedia commons, 'Steam Emission at Asphalt Batch Plant, https://commons.wikimedia.org/wiki/File:STEAM_EMISSION_AT_THIS ASPHALT_BATCH_PLANT_CONSISTS_OF_85_PERCENT_SAND_DUST,_ACCORDING_TO_THE_AIR_-_NARA_-_542544.jpg

¹⁸ Source: SPREP, July 2013, https://www.sprep.org/news/sea-level-solomon-islands-predicted-rise-over-8mm-coming-century?_cf_chl_jschl_tk_

¹⁹ Adapted from OXFAM International, <https://farmbizafrica.com/images/Climate-change.jpg>

2.7 Eneji Sekuriti

Wetem limit saplae blong domestik fosil fuel, yumi mas impotem ol fuel olsem diesel blong elektrik prodaksen mo transpotesen. Hemia i minim se moa long ol mane blong yumi i go blong pem narafala kantri from fuel. Mo tu, sipos i gat wan kwik raes long praes blong oel o wan wo/faet we hemi kosem sotej long oel o wan pandemik o eni globol ivent bambae i afektem yumi isi nomo.

2.8 Spil o Polusen

Oel spil hemi kosem bigfala damej long ol osen, korol fis, mo ol risos blong osen. Polusen we oel spil mo oel i kosem daerek impak long sos blong kakae blong yumi long osen tu. Mo tu ol pijin we oli liv klosap long osen mo ol narafala anamol long land oli save ded long bigfala spil blong oel mo tu plante taosen fis.

FIKA 19: Oel spil hemi wan narafala bigfala impak long yus blong fosil fuel²⁰



Ol Not:

20 SlideShare, Slide 7 Water Pollution, July 2015, <https://www.slideshare.net/Hossian/water-pollution-50095046>

AKTIVITI 2

Diskraebem wanem hemi riniwabol enoji? From wanem yumi mas yusum Riniwabol Eneji? Diskasem mo serem save blong yu wetem ol narafala man long klas.

AKTIVITI 3

Identifaem ol difren taeb blong sos blong enoji mo makem “Riniwabol Eneji” o “Non-Riniwabol Eneji”. Blong wanwan fika indiketem wanem hemi sos? (Oli provaedem ansa long tebol).



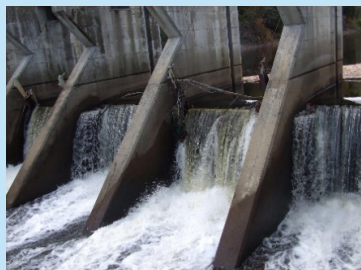
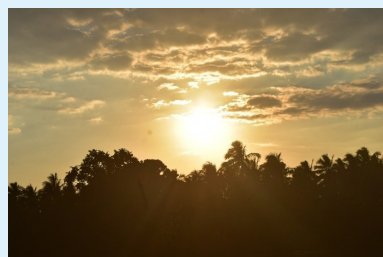
Fika 20: Win²¹



Fika 21: Fossil Fuel (Coal)²²

21 Wikimedia Commons, "Blowing wind", https://commons.wikimedia.org/wiki/File:Blowing_wind.jpg

22 Lumen learning.com, "Energy Independence", <https://courses.lumenlearning.com/boundless-politicalscience/chapter/energy-and-environmental-policy/>

Fika 22: Biofuel²³Fika 23: Biomass²⁴Fika 24: Haedro (Wota)²⁵Fika 25: Sola²⁶Fika 26: Jiotemol²⁷

23 Green Living, "Making Biodiesel at Home", https://www.google.com/search?q=%E2%80%9D%3B+https%3A%2F%2Fgreenliving.lovetoknow.com%2FMaking_Biodiesel_at_Home&rlz=1C1GCEA_

24 Wikimedia Commons, "Sugar cane", https://commons.wikimedia.org/wiki/File:Sugar_Cane_rows.jpg

25 Wikimedia Commons, "Hydro dams", https://commons.wikimedia.org/wiki/File:Hydro_dams.jpg

26 Source: GGGI, Vanuatu.

27 Clean Economy Center, <http://cleaneconomycenter.org/benefits-and-disadvantages-of-using-geothermal-energy/>

AKTIVITI 4

1. Wanem nao samfala neketiv impak blong yusum fosil fuel (olsem petrol)?

2. Diskasem long grup blong yu long ol problem yu stap fesem long komuniti folem weta. Traem blong tingbaot wanem i bin jenis ova long ol yia.

3. Wanem nao yu ting se i save fiksimap klaemet we i stap jenis?

3

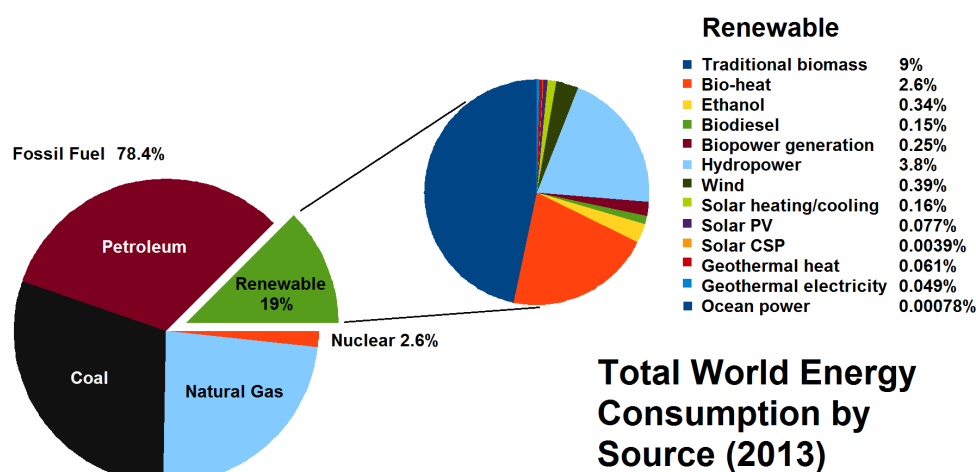
Riniwabol Eneji
Teknoloji

Riniwabol enei oltaem i provaedem enei long ol eria we i stap daon:

- Elektrik jeneresen
- Hit mo kolkol
- Transpot

Daekram daon i soem ol diren taeb blong riniwabol mo non riniwabol enei konsampsen long wol.

FIKA 27: Rinawabol mo non-riniwabol enei sos²⁸

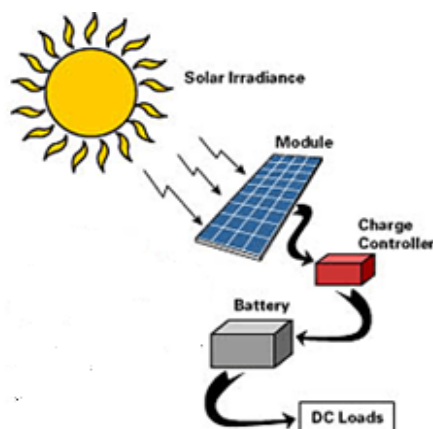


3.1 Olsem wanem blong yusum riniwabol enei

Long seksen ya, bae yumi diskasem ol difren teknoloji blong aedentifaem olsem wanem riniwabol enei hemi konvet i go long enei we i gat yus blong hem.

3.2 Sola Enei

FIKA 28 & FIKA 29: Elektrik we i kam long Sola Enei²⁹



28 Adapted from Power Technology, <https://www.power-technology.com/features/featurethe-worlds-most-used-renewable-power-sources-4160168/>

29 GGGI Vanuatu.

FIKA 30: Hit we i kam long Sola Eneji³⁰**FIKA 31: Draem Kava³¹**Advantej

Ol sola panel oli nogat ol pat we oli save muv mo oli rikwae smol mentenens nomo.

Sola eneji hemi avelebol long hae amaon long Pasifik Rijen.

Smol sola paoa hom sistem i save instolem isi nomo we inogat wok blong bildim niufala dam o sivil wok.

Sola eneji hemi avelebol evri sinkel dei long difren amaon.

Sola eneji hemi fri mo ino givimaot eni grinhaos gas blong womem wol.

Disadvantej mo ol wei (solusen) blong ova kam ol disadvantej

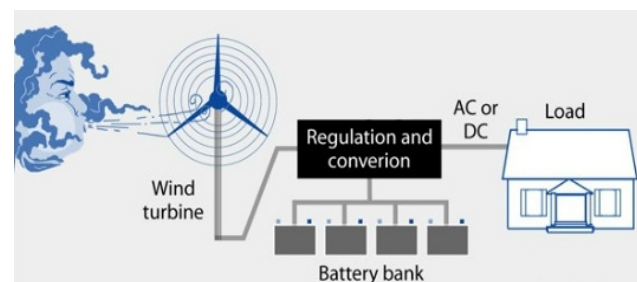
Sola eneji hemi avelebol long dei nomo. Be batri nao i yusum blong storem eneji.

Sola eneji storej i rikwaem plante batri we oli ekspensiv mo i nidim blong riplesem oltaem.

Sola eneji long bigfal skel i rikwaem bigfala lan eria.

3.3 Win Eneji

Kinetik eneji (win-blo) long win i save kolektem long wei we i employem wan wind turbin. Eneji long wind i tanem propel olsem ol bled raon long wan rotor we i konekt long men shaft mo draevem jenereta blong produsum elektrik. Fika 32 daon i soem wan win paoa sistem mo ol komponen blong win turbin. Hemi no oltaem blong lukim ol hom oli yusum wind turbin be hemi yus plante nao olsem komesol mo ol man i tokbaot olsem win fam olsem i soem long Fika 34.

FIKA 32: Win Paoa Sistem³²

Wetem referens long Fika 33, rife long fansen blong ol komponen daon:

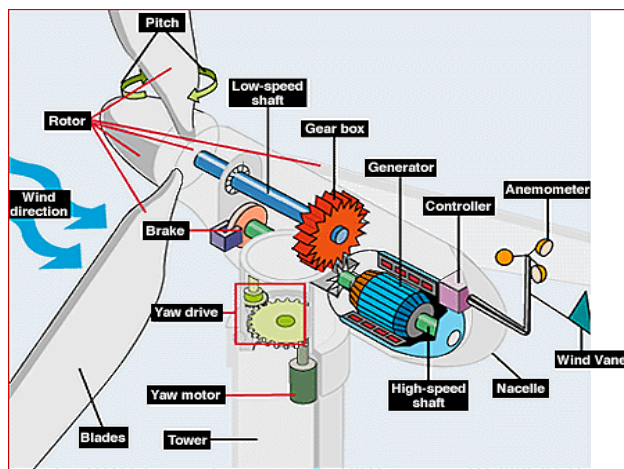
- Ol Bled – leftemap mo rotet taem win i pas ova long olgeta mo kosem rotor blong spin.
- Rotor – bled mo hub tugeta i fomem rotor
- Gia Bokis– i konektem loa spis shaft long hae spid shaft mo inkrisim resonal spid.
- Jenereta – produsum AC elektrik.
- Anemometa – i mesarem spid blong win mo pasem win spid i go long kontrola
- Kontrola – statemap mo satemdaon spid blong win blong masin we oli disaenem.
- Pij sistem – tanem ol bled aot long win blong kontrolem rotor spid mo blong priventem rotor blong tanem long ol win we maet hemi hae tumas o lo.
- Brek – stopem rotor long ol emejensi. Win vane – mesarem daereksen blong win mo ol komuniti wetem yaw draev blong alaanem turbin wetem rispek long win.
- Yaw draev – Alanaem turbin blong fesem win taem daereksen blong win i jenis.

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31 Adapted from the Fiji Sun, "Kava Demand Creates Trade Opportunity Between Fiji, Madang, August 2018, <https://fijisun.com.fj/wp-content/uploads/2015/11/Kava-1-750x403.jpg>

32 Source: www.energy.gov, adapted from, "What is Solar-Wind Hybrid Power Plant? Solar Mango, <http://www.solar mango.com/ask/2015/10/23/what-is-a-solar-wind-hybrid-power-plant/>

- Taao (Tower) – sapotem strakja blong turbin. Ol tol taao oli alaoem turbin blong arestem moa enoji taem i produsum moa elektrik.
- Nacelle – givim haos long gia bokis, shafts, jenereta, kontrola mo brek.

FIKA 33: Ol Komponen blong win turbin³³**FIKA 34: Aktiv win fam long Efate, Vanuatu³⁴**

Ol Advantej

Win enoji hemi avelebol long risonebol amaon long aelan kantri.

Win turbin hemi isi nomo blong instolem long kes blong hom skel blong paoa.

Win hemi avelebol evri taem nating we long naet long difren amaon.

Win enoji hemi fri long polusen mo ino givimaot grinhaos gas blong womem wol.

Disadvantej

Win turbins oli ekspensiv mo i nidim metenens ripea oltaem.

Nidim blong mesarem spid blong win long ol averej dei yu gat inaf win blong produsum elektrik.

Maet win i avelebol be ino save produsum paoa evritaem.

Yumi no save prediktim hamas paoa i save yusum from win i gohed blong jenis.

Wind turbin i spoilem imej blong lanskep, mo samfala oli mekem tumas noes.

3.4 Biomasa Eneji

Biomasa enoji hemi enoji we oli yusum anamol o plant materiel blong produsum enoji (hit mo elektrik).

FIKA 35: Wud (Biomasa) yusum blong kuk³⁵**FIKA 36: Suka mil long Fiji - Bonem sukaken bagasse blong produsum elektrik³⁶**

Kemikel/Biokemikel proses – Hemi taem we oli yusum biomasa blong jeneretem biogas (Methane) mo biofuel (biodiesel o bioethanol). Biogas mo biofuel oli bonem (Thermal proses) o maet oli yusum boila o enjin blong produsum enoji.

³³ SlidePlayer, "How do wind turbines work?", <https://slideplayer.com/slide/8820889/>.

³⁴ Photo credit: Vanuatu Team, GGGI

³⁵ Source: Biomass Stoves in Bengaluru, <https://dir.indiamart.com/bengaluru/biomass-stoves.html>

³⁶ Source: The Fiji Sugar Corporation Ltd

FIKA 37: Yusum Biogas long Tuvalu (sos: GIZ pasifik)³⁷Ol Advantej

Biomass hemi redi oltaem long risonabol amaon long aelan kantri wetem naturol fores.

Hemi isi nomo blong yusum – isi nomo olsem bonem blong karem hit eneji.

Avelebol fri long wan lo kost nomo.

Sef blong storem blong yusum afta we nogat batri.

Ol Disadvantej

I rikwae kompleks masin blong jeneretem elektrik.

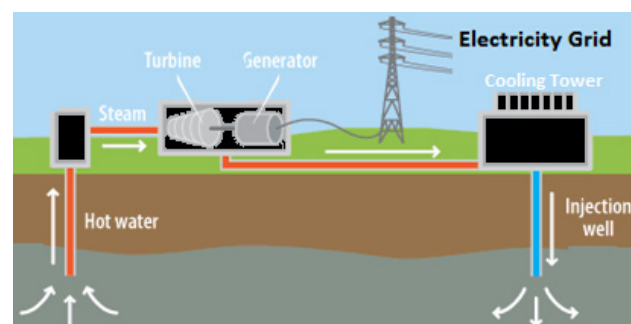
Bonem blong rilisim kabon daeoksaed olsem wan baepridak (byproduct).

Tekem taem blong gro blong bambae oli havestem long taem we i limit.

Bonem biomass o biofuel i krietem helt hazad.

3.5 Jiotemol Eneji

Jiotemol paoa plant i wok tru long tap i go long stim o hot wota pul ananit long graon; oli yusum hit blong draevem elektrikel jenereta.

FIKA 38: Jiotemol Teknoloji³⁸Ol Advantej

Jiotemol eneji hemi gat klosap limit saplae taem sipos faenem wan sos.

Jiotemol eneji i jenis (fluctuate) plante mo alaenem blong produsum wan trebol paoa.

Jiotemol eneji i yusum hot wota long graon we i save putum i kolkol mo yusum bakegen.

Jiotemol eneji i save yusum tub long ea kondisen (kolkol o hot).

Jiotemol eneji hemi fri long polusen mo ino givimaot grinhaos gas blong womem wol.

Ol Disadvantej

Jiotemol eneji i avelebol nomo long samfala eria long Pasifik.

Jiotemol plant oli bigwan mo rikwae tumas ekspensiv ikwipmen blong stat mekem elektrik

Jiotemol eneji oltaem hemi ekspensiv blong ol hom skel nating we eria i klosap long hom.

37 Source: Tweet by GIZ Pacific, <https://twitter.com/GIZPasifika/status/1125605100439756800>

38 Source: EPA- Student's Guide to Global Climate Change, <https://mbgna.umich.edu/geothermal-energy-what-it-is-how-it-works/>

3.6 Taedol Eneji

Eneji hemi fom blong haedropaoa we i transfomem eneji we i kam long ol taed i go long elektrik.

FIKA 39: Teknologi³⁹



Advantej

Taedol eneji hemi avelebol oltaem long difren amaon long eria.

Taedol eneji i save yusum blong givim paoa long bigfala skel elektrik jenereta blong ful komuniti.

Taedol eneji i save prediktim stret blong wan ful yia.

Taedol eneji i save kontrol isi mo planem blong grid koneksen.

Taedol eneji hemi fri long polusen mo ino givimaot grinhaos gas blong womem wol.

Disadvantej

Taedol eneji i avelebol nomo long osen long samfala lokesen.

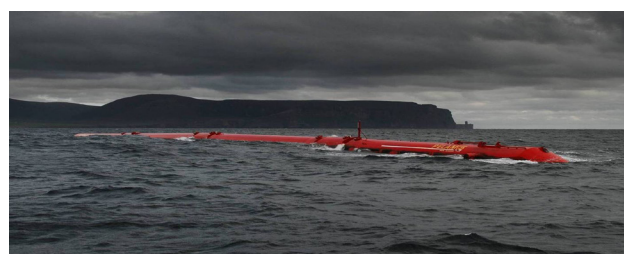
Taedol eneji i rikwae ol ekspensiv anda wota turbin mo i gat janis blong bigfala konstraksen.

Taedol eneji i nidim plante mentenens mo spesel materiel blong wok gud.

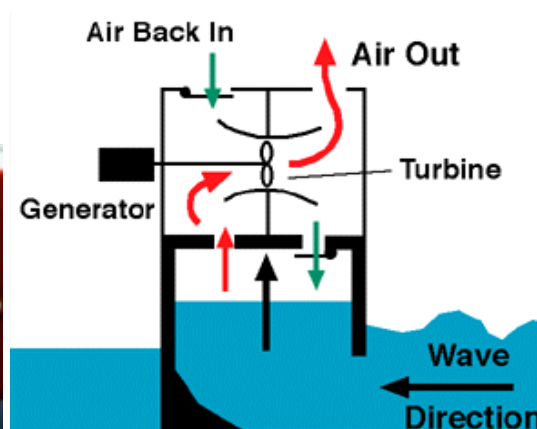
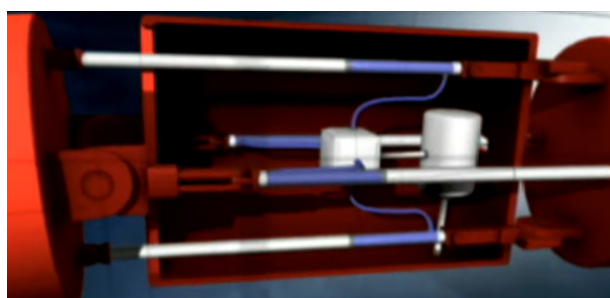
3.7 Wev Eneji

Wev eneji hemi transpot mo kapja blong eneji tru long osen sefes wev. Wan plant we hemi konektem wev paoa hemi wan wev eneji konveta. Taem ol wev oli krietem moson, fluid hemi pus i go tru long wan hydraulic moto we i konekt long elektrik jenereta mo produsum elektrik

FIKA 40: Wev Konveta⁴⁰



FIKA 41: Olsem wanem nao paoa plant hemi jeneret⁴¹



39 Source: NRG Initiative, Tidal Power, December 2015, <https://nrginitiative.files.wordpress.com/2015/12/tidal-energy-101.jpg>

40 Source: Wikipedia, Wave Power, https://en.wikipedia.org/wiki/Wave_power#/media/File:Palamis_at_EMEC.jpg

41 The Renewable Energy Website, Tidal Power Turbine Alternatives, <http://www.reuk.co.uk/wordpress/tidal/introduction-to-tidal-power/>

Advantej

Wev eneji hemi avelebol oltaem long ol difren amaon long eria.

Wev eneji i save yusum blong givim paoa long bigfala skel elektrik jenereta blong ful komuniti.

Wev eneji i avelebol bigwan long ol komuniti klosap long solwota.

Wev eneji hemi no nidim blong yusum land long aelan.

Wev eneji hemi fri long polusen mo ino givimaot grinhaos gas blong womem wol.

Disadvantej

Wev eneji hemi avelebol long osen long samfala lokesen.

Nating we wev eneji hemi avelebol oltaem – hemi jenis plante mo paoa bambae hemi gohed blong jenis oltaem.

Wev eneji i rikwae ekspensiv turbin mo bigfala civil wok.

Wev eneji i rikwae plante mentenens mo spesel materiel blong wok gud.

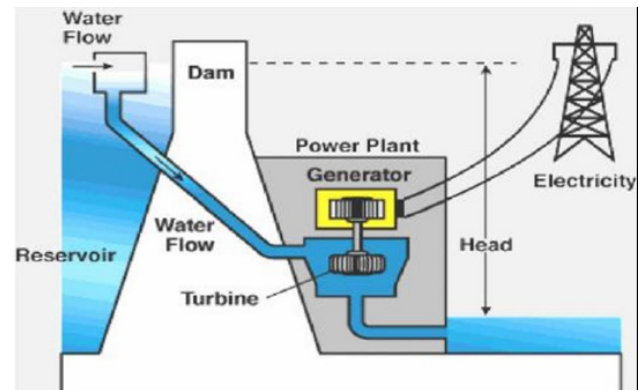
3.8 Haedro Eneji

Haedro eneji hemi paoa long eneji blong wan samting we i foldaon o wota we i ron kwik. Hemia hemi komon yus blong teknoloji olsem Sarakata Haedro long Santo. I gat ol smol (Pico o Micro) hadro dam we i yus blong produsum elektrik blong ol haoshol o komuniti, semak long Talise Haedro long Maewo.

FIKA 42: Sarakata Haedro- Santo, Vanuatu⁴²



FIKA 43: Haedro eneji teknoloji⁴³



Ol Advantej

Haedro eneji hemi avelebol oltaem long ol difren amaon long eria.

Haedro eneji i save yusum blong paoarem bigfala skel elektrik jenereta blong wan komuniti.

Pico Haedro eneji i save yusum blong givim paoa long ol sinkel hom isi.

Haedro eneji hemi stebol mo i save kontrol isi mo plan blong grid koneksen.

Haedro eneji o fri long polusen mo ino save givimaot grinhaos gas blong womem wol.

Plante long ol bigfala Pasifik aelan mo inland komuniti oli gat plante reva mo bigfala hil so Haedro hemi stretgud long olgeta.

Ol Disadvantej

Haedro eneji hemi no avelebol long ol smol aelan we inogat ol reva mo bigfala hil.

Haedro turbins i nidim blong instolemgud blong krietem ol dam o digim ol dren blong instolem ol paep.

Haedro eneji i rikwae mentenens oltaem espeseli long taem blong hevi ren taem ol sofmad o doti i save blokem ol turbin mo filta.

42 Source: <http://www.pacificwater.org/resources/article/files/Vanuatu.pdf>

43 Source: Slideshare.net, <https://www.slideshare.net/salmanJailani/study-about-the-types-of-power-plants-and-how-electricity-is-produced>

3.9 Haedrojin Eneji

Haedrojen eneji i involvem yus blong Haedrojen fuel blong jeneretem eneji. Haedrojin fuel hemi wan zero-emisen fuel we oksijen i bonem. I save yusum long fuel sel o intenol combusen enjin. I stat blong yusum long komesol fuel sel viakol, olsem car pasenja, mo i bin yus long fuel cell blong plante yia. Hemi yusum tu olsem fuel blong spescraft fos.

FIKA 44: Haedrojin fuel sel bas⁴⁴



Ol Advantej

Nogat emisen mo i stap putumaot wota nomo.

Haedrojin i save produsum mo storem blong yusum biae-potebol mo gud.

Seleksen blong RE i save yusum blong produsum Haedrojen gas.

Hemi isi blong yusum wetem ol fuel sel from ino gat ol pat blong mov – hae efisiensi.

Disadvantej

Haedrojin hemi denja tumas mo i save eksplo isi.

Inisol ikwipmen blong produsum Haedrojin hemi ekspensiv.

Teknoloji blong hem i advans tumas mo i no save sevesem isi.

44 Source: Wikipedia, Hydrogen Fuel Cell Bus, https://en.wikipedia.org/wiki/File:Hydrogen_fuel_cell_bus.jpg#/media/File:%20%20Hydrogen_fuel_cell_bus.jpg

AKTIVITI 5

Aedentifae, dro, mo diskasem long klas wanem taeb blong eneki sos we yu bin luk we i bin yusum long lokol eria blong yu o kantri. Talemoot weta hemi riniwabol o non riniwabol eneki?

AKTIVITI 6

Diskasem long klas wiswan riniwabol eneki bambae yu jusum long komuniti blong yu mo from wanem?

OI Not:

4

**Riniwabol Eneji
& Komuniti**

4.1 Komuniti Bond

Nating we riniwabol eneji i save helpem haos blong yu blong provaedem elektrik mo eneji long aplaens, Hemi save stat blong bildim wan gudfala strong komuniti. Riniwabol eneji i save ple wan impoten rol blong jenisim komuniti blong kam moa gud.

FIKA 45: Komuniti Projek Bildim Bond⁴⁵



4.2 Moa man – Cost i daon

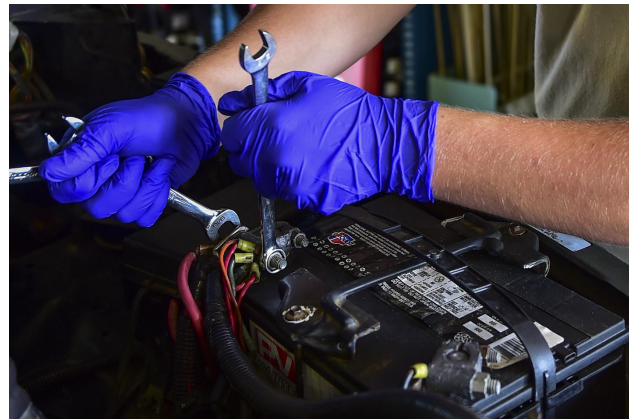
FIKA 46: Seraotem kost i minim se wanwan man i pem smol⁴⁶



4.3 Serem wok, komuniti onasip – rilaebol eneji

Olsem we yu save, oli serem wok long komuniti long bigfala lafet o taem ol ofisol oli kam blong visit. Divison blong leba i bin wok gud blong plante yia, mo hemi hemi wan samting we i nidim blong konsidarem long implemetesen blong riniwabol eneji projek.

FIKA 47: Wetem moa man oli involv mentenens hemi isi⁴⁷



4.4 Ekonomik Benefit

Bigfala skel komuniti bes riniwabol projek i krietem moa ekonomik benefit blong komuniti. Ol memba blong komuniti oli save statem bisnis blong olgeta we i save produsum inkam long komuniti mo invest bakegen blong ol narafala komuniti projek olsem bildim komuniti hol, helt, senta, moa klasrum mo asistim ol memba blong komuniti.

⁴⁵ Source: Wikimedia Commons, [https://commons.wikimedia.org/wiki/File:Locals_thank_Australia_for_funding_rural_road_rehabilitation_and_maintenance_in_Malekula_Vanuatu_\(12779057305\).jpg#/media/File:Locals_thank_Australia_for_funding_rural_road_rehabilitation_and_maintenance_in_Malekula_Vanuatu_\(12779057305\).jpg](https://commons.wikimedia.org/wiki/File:Locals_thank_Australia_for_funding_rural_road_rehabilitation_and_maintenance_in_Malekula_Vanuatu_(12779057305).jpg#/media/File:Locals_thank_Australia_for_funding_rural_road_rehabilitation_and_maintenance_in_Malekula_Vanuatu_(12779057305).jpg)

⁴⁶ Windpower Engineering & Development, August 2019, <https://www.windpowerengineering.com/pattern-energy-confirms-third-party-interest-in-company/>

⁴⁷ Source: ProCar Reviews.com, <https://procarreviews.com/wp-content/uploads/Removing-Car-Battery-1024x682.jpg>

FIKA 48: Inkam we i kam long riniwabol enoji projek i save yusum blong bildim ol komuniti bakegen⁴⁸



4.5 Komuniti Responsiliti

Olsem ol man Pasifik yumi luk valiu blong land mo solwora blong yumi. Yumi mas lukaotem ol risos blong yumi mo mekemsua se oli manajem mo yusum long sastenebol

wei. Risot long riniwabol enoji i save help blong solvem envaeromentol problem we yumi fesem evridei mo mekemsua se yumi gat ol gudfala standad blong laef.

FIKA 49: Kostol irosen ifek i rilet daerek long fasin blong no responsibol long yus blong fosil fuel we hemi kosem globol woming⁴⁹



⁴⁸ Source: Humanity House.org, January 2017, <https://humanityhouse.org/wp-content/uploads/2017/01/UNDP%E2%80%99s-Response-to-Cyclone-Pam-Vanuatu.jpg>

⁴⁹ WikiVisually, https://wikivisually.com/wiki/Eita,_Kiribati

AKTIVITI 7

Long ol grup, diskasem ol kwesten daon.

1. Olsem wanem nao riniwabol eneji i helpem komuniti?

2. Komuniti blong yu i responsibol blong rivesem o daonem klaemet jens?

OI Not:







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