



Modiul 5 – Lenas Wakabuk

Riniuabol Eneji Jenrol Prinsipols

PIJIN LANGUAGE – SOLOMON ISLANDS

Selen fo fanding hem from:

Patna wetem :

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Reiniuabol Jenerol Prinsipols trening modiul hemi wan introdaksin blong olketa faondesin konsep blong eneji sosos en impotens blong hem.

Taem yu finisim disfala kos bae yu save na lo olketa yia:

- Aedentifaem na difren eneji sosos.
- Save na long mining blo riniuabol eneji.
- Diskraebim nao olketa weis fo iusim riniuabol eneji.
- Eksplenim nao globol eneji yius distaem en hao bae hem afektim nao envaeronmen.
- Diskasim nao olketa difren taeps of riniuabol eneji teknolojis en olketa gud fala en nogudfala samting abaotim.
- Diskraebim na impotens blong riniuabol eneji long komiuniti.

TEBOL 2: lesan plan

Olketa Sapta insaed wakabuk ia	Olketa Lesan insaed wakabuk ia
1. Aes Breka - introdaksins	Leson Topik an Aktiviti 1
2. Eneji	Leson Topik
	Aktiviti 2
	Aktiviti 3
	Aktiviti 4
3. Riniuabol Eneji Teknoloji	Leson Topik
	Aktiviti 5
	Aktiviti 6
4. Riniuabol Eneji an Komiuniti	Leson Topik
	Aktiviti 7

Disfala Lenas Waka buk (LW) hemi teken aot from Treinas Gaed (TG) wea kam wetem. Olketa infomesin insaet long disfala LW olketa bin mekem isi an sot. Olketa raetim daon noma olketa mein aedias noma an wea olketa fokas na long olketa piksas, daegramas an olketa aktivitis blong hem wea alaom na lenas fo engeij wetem olketa trenas taem blong trening. If yu laekem eni adisinol infomeisin long eni seksin insaed, yu save luk go nao long Trenas Gaed (TG) blong Lenas Wakabuk (LW) ia.

Foto Long Buk Kava: Difren riniuabol eneji taeps: Sos: Foto by Elena Zhuravleva from Pixels (Top -left) Pico- Haedro tebaen in opereisen. Sos : Paoaspaots, Niu Zilan (New Zealand) (Top raet), Graon Maonted Sola PV lo rimot Fiji Aelan. Sos: Zack Maraf (Botom senta).

Stetment fo diklearem no eni risponsibiliti: Global Green Growth Institute hem no promesem, long toktok o mining, o hem no gareem eni ligol laeabiliti o risponsibiliti long hao stret, kompliit o hao eni nara mek tri pati hem iusim, o risalt blong olketa iusim, eni infomeison, tul, prodakt, o proses wea hemi stap insaed long infomison long disfala dokument o hem representim dat eni yus bae hem no brekem lo blong olketa praevet ona raet.

MINING BLONG OLKETA WODS IA (GLOSARI)

Baeomas - Hemi oganik mata yius osem fiul, plant meteriols en animol rabis wea save yiusim osem sos blong fiul.

Klaemet Sens - wanfala sens insaed long globol o risinol patens.

Kol - kol hemi wan kombastibol blak o braon- blak taep sedimentri rok wetem wan hae amaont long kabon en haedrokabons. Kol hemi klasifaed osem wan nan-riniuabol eneji sos bikos hemi tekem milion yias fo hemi kam ap or fom.

Eneji - eibol fo save duim waka.

Eneji Sekiuriti - no save finis (riniuabol) sosos blong eneji long wanfala praes wea everiwan save baem.

Fosil Fiul - fiul wea osem kol o gas wea hemi fom kam lo jiolojikol pas from oketa rabis blong olketa laef oganisim.

Fiul Sel - hemi wanfala elektrokemikol sel wea save konvetim kemikol eneji blong fiul (haedrojin) en oksidaesing (oksijin) eijent insaet go long elektrisiti.

Globol - wolwaed.

Globol Woming - hemi jenrol inkris lo tempreja blong atmosfera longo et hemi gogo ap en hemi help fo kontribiut nao long grinhaus ifekt wea kos bae raes long lefols blong kabondaeoksaed, CFC's an olketa narafala rabis.

Hit - hemi gred blong hae tempresa.

Impakt - mak blo ifekt o influens.

Najurol Gas - hemi wan nan-riniuabol haedrokabon wea hemi yius osem sos blong eneji fo hotim, kuki an givim na elektrisiti.

Non-riniuabol eneji - sosos wea baebae run aot o baebae no save gareme moa staka blo hem fo taosan o million yias.

Oel (krud Oel) - petroliam wea oketa no klinim, wanfala nogudfala wota wea hemi aot kam from petroliam wea save yusim osem fiul or likwid wea save yusim fo daonim na samting paspas (frikson).

Petrol (anleded gasoline) - laet fiul oil wea save tekem taem distilim na petroliam an yused insaet lo kombuson enjins.

Poluson - samting wea hemi insaet or jas abaot for go in long envaeromen blong samting wea gareme nogud ifekts.

Riniuabol Eneji - Eneji sos wea hemi nosave finis.

Temol - semsem osem hit. Proses blo hem osem noma taem hotim samting.

1

Aes Breka -
Introdaksins

AKTIVITI 1

Talem lelebet abaotim iuseleva. Tok abaot wat na iu laek save an tekemaot from disfala trening ia en lelebet talem tu privias ekspienses iu garem wetem riniuabol eneji en faenansing in jenerol.

2

Eneji

2.1 Wanem nao Eneji?

Eneji iumi save diskraebim osem samting wea garem staka foms en save janjim oketa fom ia fo givim iumi samting iusful. Samfala foms blong eneji hemi:

Hit Eneji – ting ting go baek taem yu stat laetim faea fo boilam wata. Taem yu muf kosap go long faea ia yiu fil hot bikos long eneji.

FIGA 1: Yiu save tingting go baek lo hao wota save hot?¹



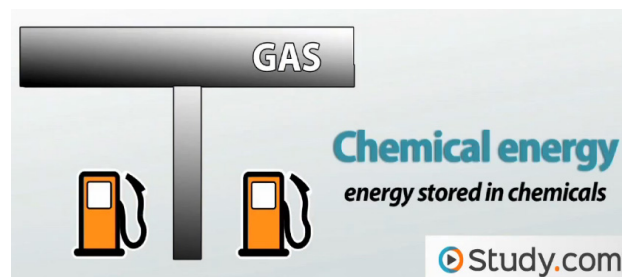
Mekanikol Eneji – hemi potensol en kinetic eneji ad ap tugged.² Diswan nao taem eneji blong aot bod enjin save pusim nao boat blong yiu.

FIGA 2: Mekanikol Eneji hemi na draevim bot ya³



Kemikol Eneji – Insaet long olketa bateri, kemikols save stoarim nao elektrikol eneji so save yiusim nao fo tanem on reidio. Taem fiuls bo ne, kemikol eneji hemi rilis en konvet go long hit or mekanikol eneji.

FIGA 3: Fiul hemi sos blo kemikol eneji⁴



Elektrikol Eneji – Diswan nao hemi eneji wea hemi save flou thru na long olketa waeas fo givim nao paoa fo save laetim ap nao olketa haoses, skuls etc.

2.2 Soses blo Eneji

Garem nao 10 meija soses blong eneji wea save yius fo jenereitim paoa wol waed. Olketa soses ia nao :

1. Sola Eneji
2. Win Eneji
3. Baeomas Eneji
4. Jiotemol Eneji
5. Taedol Eneji
6. Weiv Eneji
7. Haedro Eneji
8. Haedrojin Eneji
9. Niuklia Eneji
10. Fosil Fiuls (najurol Gas, Oel, Kol, petrol etc)

Oketa soses blo eneji ia oketa divaeded into 2 fala kategories

Rinuabol Eneji an Non-Rinuabol Eneji

Rinuabol Eneji - hemi eneji wea save tekem from risoses wea save najuroli ripleis lo human taemskel, osem sunlaet, win, ren, taeds, weivs en Jiotemol hit etc. Rinuabol Eneji olweis provaedim nao eneji long 3fala impotant erias: Elektrisiti jenereison, hiting/kuling en transpoteisin.

1 Photo credit: Vanuatu Team, GGGL.

2 Wikipedia, "Mechanical energy", [https://en.wikipedia.org/wiki/Mechanical_energy#:~:text="](https://en.wikipedia.org/wiki/Mechanical_energy#:~:text=)

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

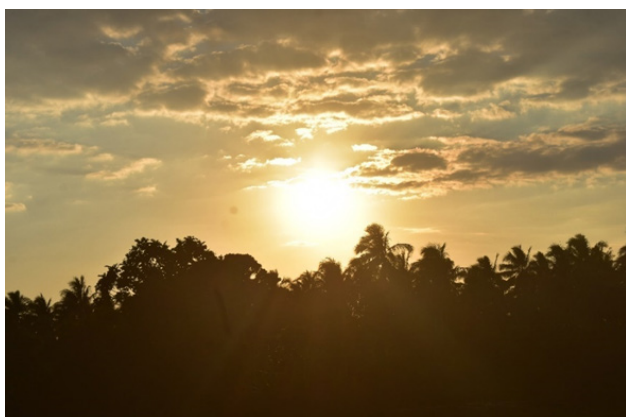
4 Source: Study.com, "Chemical energy", <https://study.com/>

Non-Rinuabl Eneji - hemi najurol risoses wea no save redili ripleis long najurol mins lo kwiktaem peis fo kip ap wetem konsampson osem fosil fiuls : kol, disol, petrol, najurol gas, haedrojin etc.

2.2.1 Sola Eneji

Sola eneji hemi taken from Sun. Difren teknolojis olketa developim fo yusim nao eneji blong sun. Tufala komon Eneji save tekem from sun nao elektrisiti an hit.

FIGA 4: Sunlaet – Sos blo Eneji⁵



2.2.2 Win Eneji

Win Eneji hemi barava in yus tumas distaem. Win tebaens oketa save yusim fo sensim nao win eneji go long elektrisiti. Domestikli, yumi save yusim win eneji fo draeim o separeitim dast from agrikaljarol prodaks.

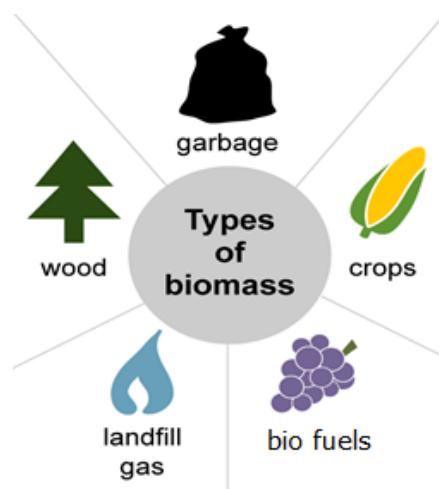
FIGA 5: Separeiting proses yusim win⁶ en win tabaen fo elektrisiti⁷



2.2.2 Baeomas Eneji

Baeomas hemi plant o metiriol wea save yusim stret fo mekem eneji. Insaed long didifren indastriol waka steps hem osem wanfala sabstans fo wakem na didifren prodaks wetem (manufakjuring) waka weist yusim nao fo mekem eneji. Baeomas eneji save yus fo mekem nao paoa (elektrisiti) hit.

FIGA 6: Taeps blo Baeomas⁸



2.2.4 Jiotemol Eneji

Jiotemol Eneji hemi temol eneji jenereited an stap insaed long graon (et)⁹.

FIGA 7: Jiotemol – sut aot¹⁰



2.2.5 Taedol Eneji

Taedol Eneji hemmi fom blo haedropaoa wea konvetim eneji from taeds go lo yusful fom blo paoa, meinwan na elektrisiti.¹¹

5 Source: GGGI, Vanuatu.

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

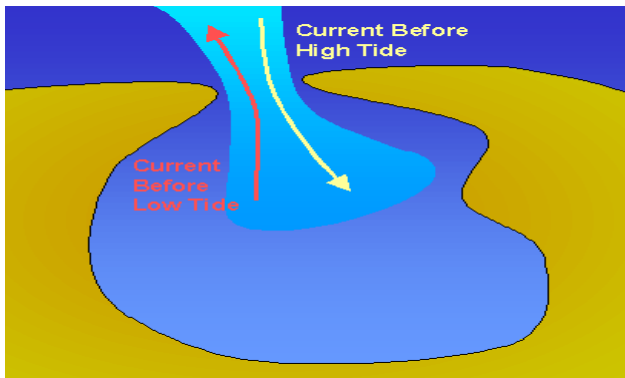
7 Source: Wikimedia Commons, Wind-Turbine, <https://upload.wikimedia.org/wikipedia/commons/a/ad/Wind-turbine-icon.svg>

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

9 Adapted from International Renewable Energy Agency (IRENA), <https://www.irena.org/geothermal>

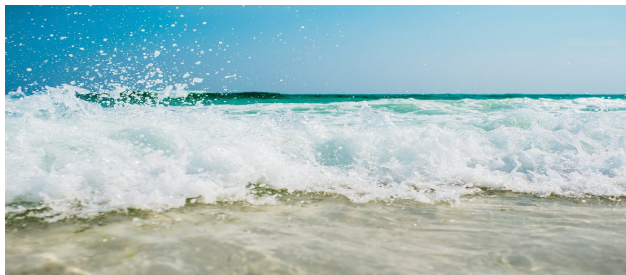
10 Clean Economy Center, <http://cleaneconomycenter.org/benefits-and-disadvantages-of-using-geothermal-energy/>

11 Intertek, "Tidal Energy", <https://www.intertek.com/energy-water/tidal-energy/>

FIGA 8: Hao taedol karent bihev lo diferen taeds¹²

2.2.6 Weiv Eneji

Weiv eneji (weiv Paoa) hemi transpot an kapja blong eneji from osen safeis weivs. Eneji wea hemi kapjad den yius fo staka difren kaens of impotent waka, inkludim elektrisiti jenereisin an mekanikol eneji.¹³

FIGA 9: Osen Weivs¹⁴

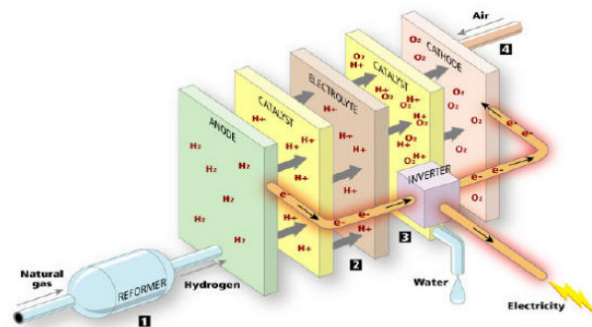
2.2.7 Haedro Eneji

Haedro-eneji o watapaoa hemi eneji wea teken from eneji blong wata wea hemi foldaon o wata wea run fast, wea save yiusim fo gudfala risons.

FIGA 10: Wata flou from hae ples wetem hae spid¹⁵

2.2.8 Haedrojin Eneji

Haedrojin hemi wanfala pat blong wata (H₂O) an hemi wanfala elemen wea staka save abaotim wea aveilabol lo et. Wata garew nao tu-teds blong haedrojin an save faendim wetem olketa narafala elemens. Taem hemi separeited, then save yiusim osem fiul fo jenereitim na elektrik o ranem nao intenol kombason enjin. Haedrojin hemi wanfala gudfala sos blong eneji an save yiusim osem sos blong fiul wetem yius blong fiul sel osem Figa 11 som.

FIGA 11: Fiul Sel¹⁶ an Haedrojin Ka¹⁷

2.2.9 Niuklia Eneji

Niuklia eneji hemi yius blong niuklia riaksons wea rilisim niuklia eneji fo jeneretim nao hit, wea staka taems hemi yius insaed long stim tabaen fo wakem nao elektrisiti insaed long niuklia paoa plan.

¹² Source: The Scuba Tutor, Tidal currents, <http://www.scuba-tutor.com/diving-environment/dive-site-conditions/tidal-currents.php>

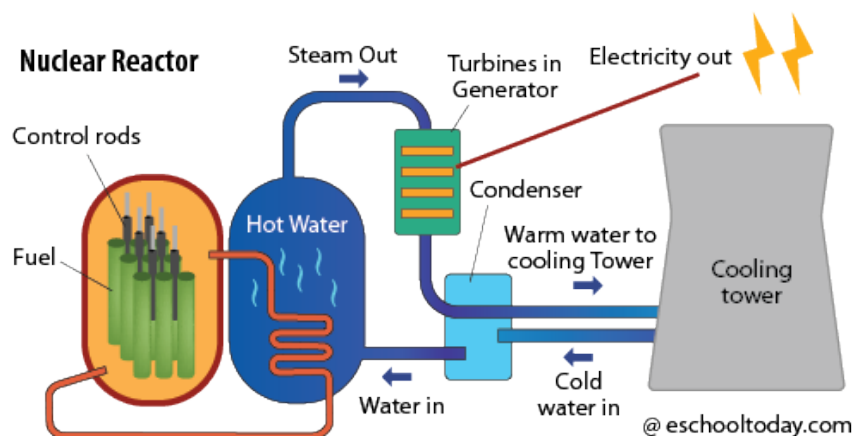
¹³ Open EI, "Wave Energy", https://openei.org/wiki/Wave_Energy

¹⁴ Source: Wqpmag, "Water quality", <https://www.wqpmag.com/water-quality>

¹⁵ Source: The Conversation, <https://theconversation.com/rivers-rain-and-releases-what-happens-when-you-dam-a-waterway-3934>

¹⁶ Source: Know It Info, "What is Uranium Energy", <https://knowitinfo.com/what-is-uranium-energy/>

¹⁷ 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>

FIGA 12: Niuklia Riakta¹⁸

2.2.10 Fosil fiuls (najurol gas, oel, kol, petrol etc)

Fosil fiul hemi wanfala fiul wea hem fom from najurol proses osem anaerobik dikomposison blong oketa oganisims wea dae an oketa berem, wea garem nao oganik molekuls orijineit tru ancient fotosintesis wea rilisim enei insaed kombason.¹⁹ Fosil fiul garem hae pasenteij long kabon an hemi inkludim nao petroliam, kol an najurol gas.

FIGA 13: Taeps blong fosil fiuls²⁰

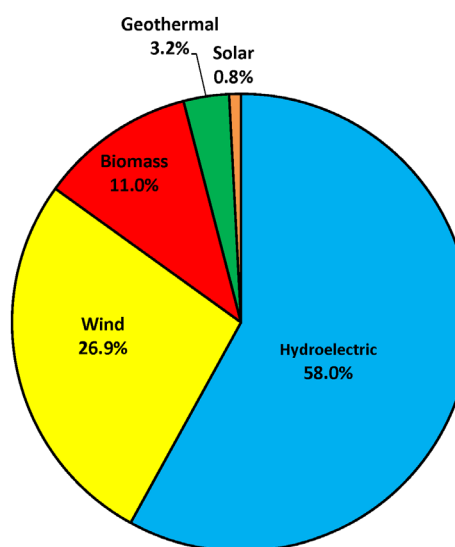
► **Coal-** is a solid fossil fuel

► **Petroleum-** is a liquid fossil fuel.

► **Natural Gas**



2.3 Globol Eneji yius an impact blong hem long envaeromen

FIGA 14: Riniuabol Eneji (Elektrisiti) Mix in 2015²¹

Osem hemi som lo Figa 15 ia, haedroelektrik paoa nao hemi enei sos wea staka laekem, then win baeomas an jiotemol enei. Gogo kasem distaem, onli 24% blo enei lo wold ia nao kam from riniuabol enei sos. Tekem enei from non-riniuabol sos garem na staka impaks long wold ia.

¹⁸ Adapted from, KnowItInfo, "What is Uranium Energy?", <https://knowitinfo.com/what-is-uranium-energy/>

¹⁹ Wikipedia, "Fossil fuel", [https://en.wikipedia.org/wiki/Fossil_fuel#:~:text="](https://en.wikipedia.org/wiki/Fossil_fuel#:~:text=)

²⁰ Slideshare.net, "Slide 2 -Fossil Fuels", <https://pt.slideshare.net/jbshopgms/fossil-fuels-5668194>

²¹ Information adapted from "World Energy Consumption", Wikipedia, May 2021, https://en.wikipedia.org/wiki/World_energy_consumption

2.4 Impakt blo enej yus wolwaed

Kosap everiwan long wol ia noma yiusim nao nan-riniuabol enej from fiul blong fosil so gareem nao staka negative impakts na lo et blong yumi. Samfala long oketa impakts ia na:

2.5 Globol woming an Si level raes

Hem nao wat bae bae happen if yumi yiusim nao fosil fiul. Oketa fiuls ia yiusim nao olketa gas wea stopem nao hit from eskeipim nao et an hem nao umi everiwan filim na hit ia inkris everi yia ia.

Grinhaus gases (wea inkludim nao CO₂, wata veipa an aerosols) ia olketa save lukim nao insaed long atmosfia antap nao long safeis blong et. Waka blong olketa na hemi fo trapim na hit blong sun wea hemi riflek lo et from sun.

FIGA 15: Industriol imisons gareem nao grinhaus gases²²



Diswan kosim nao aes long not an saot pols blong et fo sens go long wata bikos long ova hae temprejas an hemi minim moa an moa wata baebae go insaed long si. Diswan hemi inkrisim nao si levols long olketa aelan kosts blong yumi an iven save fladim nao olketa vilijis long taem taeds hemi hae. Hemi save spoelem tu olketa krops taem hemi pusim go nao solt wata go insaed long lan.

FIGA 16: Si levols raes hemi tretenim nao olketa aelan homs blong yumi²³



2.6 Klaemet Sens

Bikos wolwaed tempreja hemi gogo ap, klaemet blong yumi hemi afekted tu . Klaemet blong wol ia hemi save nogud kwiktaem an hem dipend long tempreja blong osens an lan. Umi gareem staka flads an drae taem. Umi gareem nao deis wea hemi hot tumas long hot sison an deis wea hemi save kol tumas insaed long kol sison. Diswan hemi minim dat oketa krops blng yumi baebae oketa afekted.

FIGA 17: Klaemet sens afektim na rut krops²⁴



2.7 Enej Sikiuriti

Wetem no staka tumas saplae blong domestik fosil fiuls, umi mas impotim nao fiuls osem disol fo produsim nao elektrisiti an transpoteisin. Diswan hemi minim osem dat staka long olketa seleni blong yumi hem go fo olketa nara kantri noma fo fiul, an tu if seke noma oel praes hemi inkris o gareem na wo wea kosim na oil fo sot lo saplae o wanfala pandemic o wolwaed ivent hemi happen, baebae yumi afekted isi tumas. Umi no barava ful independent an umi dipend noma long oketa nara kantri for saplaem nao oel an fiul saplae.

²² 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

²³ Source: Pinterest.com "Traditional houses of the South Pacific Islands", (Solomon Islands), <https://id.pinterest.com/pin/548594798340985958/>

²⁴ Source: GGGI, Vanuatu.

AKTIVITI 2

Diskraebim wanem nao rinuabol enei? Wae nao yumi shud yusim nao riniabol enei? Diskas an searem nao nolej blong yiu wetem oketa long klas.

AKTIVITI 3

Poentem aot nao difren taep long enei soses an makem nao "Rinuabol Enei" o " Nan-Rinuabol Enei ".Fo ij figa, talemaot na wat na sos?

Figa 19: Win²⁶



Figa 20: Fossil Fiul (Kol)²⁷



²⁶ Wikimedia Commons, "Blowing wind", https://commons.wikimedia.org/wiki/File:Blowing_wind.jpg

²⁷ Lumen learning.com, "Energy Independence", <https://courses.lumenlearning.com/boundless-politicalscience/chapter/energy-and-environmental-policy/>

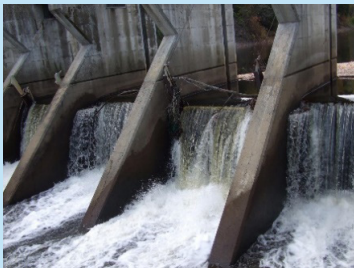
Figa 21: Baeomas²⁸



Figa 22: Baeomas²⁹



FIGA 23: Haedro (Wata)³⁰



Figa 24: Sola³¹



Figa 25: Giotemol³²



28 Sourced from https://greenliving.lovetoknow.com/Making_Biodiesel_at_Home
29 Wikimedia Commons, "Sugar cane", https://commons.wikimedia.org/wiki/File:Sugar_Cane_rows.jpg
30 Wikimedia Commons, "Hydro dams", https://commons.wikimedia.org/wiki/File:Hydro_dams.jpg
31 Source: DepositPhotos.com, <https://depositphotos.com/stock-footage/sun.html>
32 Clean Economy Center, <http://cleaneconomycenter.org/benefits-and-disadvantages-of-using-geothermal-energy/>

AKTIVITI 4

1. Wanem nao samfala nogud impakts blong yusim nao fosil fiuls (osem petrol)?

2. Diskas insaed long grup blong yiu abaotim nao olketa problems dat yiu feisim insaed long komiuniti abaotim nao weda. Trae fo ting abaotim nao wat na sens ova lo oketa yias ia.

3. Wanem nao yiu tingim save fiksime nao sensis long klaemet ia?

3

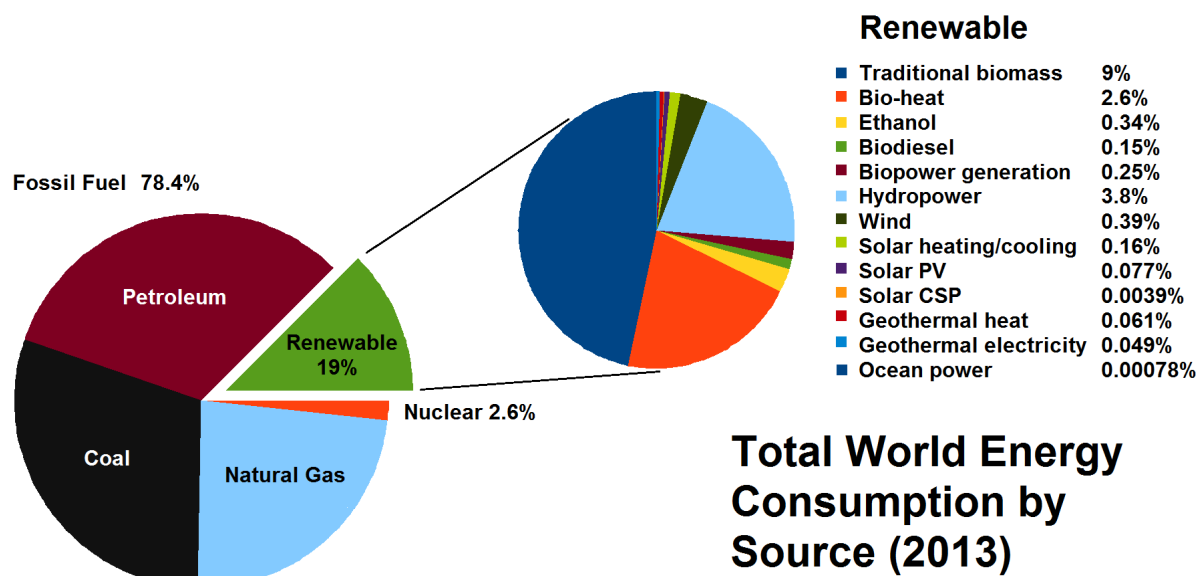
Rinuabol Eneji
Teknoloji

Riniuabol enei hemi enei wea olketa kolektim nao from riniuabol risoses wea hemi save risto najuroli noma long laeftaem blong hiuman Bings. Hemi wanfala enei wea pipol tingim hem klin enei wetem noma tu smol ifekt long envaeronmen. Riniuabol enei save givim nao enei long oketa erias ia.

- Elektrisiti jenereison
- Hiting an kuling
- Transpoteison

Long narasaed, nan-riniuabol enei hemi enei wea kam from najuroli risosis wea no save sensim long najuroli wei kwiktaem fo save kip ap wetem tu yus blong hem.

FIGA 26: Riniuabol an Nan-Riniuabol sosos³³



3.1 Hao fo yusim nao Riniuabol Eneji

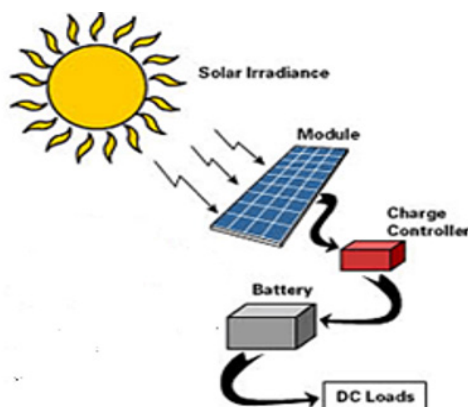
Long disfala sekson ia, difren teknolojis nao bae umi diskasim fo save nao long hao riniuabol enei hemi konveted go long yusful enei.

3.2 Sola Eneji

Yumi save yusim nao sola enei taem yumi tekem nao enei blong sun an tanem go nao long elektrisiti o hit.

Fo elektrisiti, umi nid fo yusim nao Sola PV modius wea konvetim nao sunlight go long elektrisiti. Disfala elektrisiti hemi insaed long DC (direct current) paoa.

FIGA 27: Elektrisiti from Sola Eneji³²



³³ Adapted from Power Technology, <https://www.power-technology.com/features/featurethe-worlds-most-used-renewable-power-sources-4160168/>

³⁴ Source: GGGI, Fiji.

Fo hit, yumi save yusim nao sola koltekas. Sola kolektas save help fo tekem nao hit from sun an transfam na hit ia go long wata wea provaedim nao hot wata. Umi save yusim nao sola eneji fo tradisinol draeing osem draem kava, fis etc.

FIGA 28: Hit from sola eneji³⁵



FIGA 29: Kava Draeing³⁶



Gudfala samting abaotem Sola

Sola panols no gaream na pats wea save muv an hemi nidim smol waka noma fo fiksism.

Sola eneji hemi stap noma lo hae amaont lo pasifik Rijon.

Smol sola hom paoa sistims save instolim isi noma, no nid fo biuldim nao dams o duim sivol waka.

Kontribiut nao long krietim grin waka.

Sola eneji hemi stap noma everi dei long eni amaonts.

Sola eneji hemi polutent fri an hemi no gim aot nao rein haus gases fo womim na et.

Nogudfala samting abaotim Sola

Sola eneji save aveilabol noma long dei, bat save yusim nao bateri fo storim na eneji fo yusim long naet taem.

Sola eneji storeij nidim nao bateris wea hemi dia an nid fo sensim olowe.

Sola eneji taem laek opereit bik, nidim nao staka lan fo instolim.

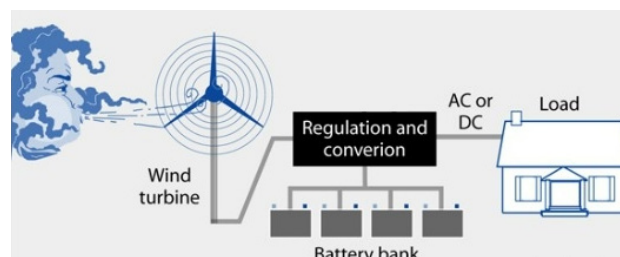
Hae stating kost fo meteriols an instolim.

Aplaensis wea ran lo DC hemi moa dia dan AC paoad wans.

3.3 Win Eneji

Kinetik eneji (win blou) long win save tekem taem mekem na win tebaen waka. Eneji long win ia tanem nao propela osem bleids speis raonim na wanfala roto. Roto ia hemi konekt go long mein saft wea draevem na jenereita fo wakam nao elektrisiti. Figa 30 an 31 long daon som nao diteil blong win paoa system an komponents blong win tebaen. Yumi no save lukim tumas nao olketa residensol homs yusim nao win tabaen bat hemi save yus osem komesol an oketa save kolem long win fam osem lo figa 32.

FIGA 30: Win paoa system³⁷



Wetem referens long figa 28 go lo waka blo oketa komponents:

- Bleids – apum an tane raon taem win go pas ovam oketa an kosim roto fo spin.
- Roto – bleids an hab tugged na fommim roto wea save konvetim noa win eneji go long eneji wea raon raon.
- Gia boks – konektim nao lo-spil saft wea roto tanem go long hae-spil saft an inkrisim nao raonraon spil fo opereitim na jenereita.
- Jenereita – prodiusim na AC elektrisiti.
- Anemomita – mesarim nao spil blo win an givim go nao win spil infomeisin go long man kontrolim.

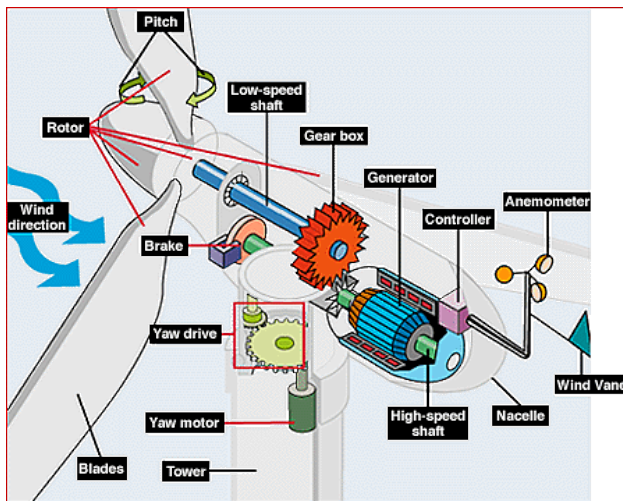
35 GGGI – Fiji, <https://gggi.org/global-program/gggi-gcf-portfolio/>

36 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>

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

- Kontrola – statim ap an satim daon nao masin long win spid blong hem.
- Pits sistim – tanem nao bleidsaot from win fo kontrolim nao roto spid an fo stopim nao roto fo tanem in na wins wea maet bi hae tumas or lou tumas
- Brek – stopem nao roto long taem blong imejensi
- Win Vein – mesarim nao win daerekson an komiunikeitim nao draev fo alaenim nao tebaen semsem wetem win.
- Yo draev – Alaenim nao teibaen fo fesim nao win taem win sensim na daerekson
- Tawa – sapotim nao teibaen strakja. Tol tawas alaom nao tebaens fo tekem nao staka eneji an bae save jenereitim nao elektrisiti moa.
- Nasel – haosim nao gia boks, safts, jenereita, kontrola an brek.

FIGA 31: Komponens blo win tabaen³⁸



FIGA 32: Aktiv win fam³⁹



Gudfala Saed blong win eneji

Win eneji hemi availabol noma lo olketa aelan kantris long risinabol amaont.

Win tabaen hemi isi fo instolim inkeis long hom skel fo paoa.

Win hemi stap noma evri taem, lo naet tu, long difren amaonts.

Win eneji hemi no polluted an hemi save gim aot nao grinhaus gases fo womim nao et.

Nogudfala Saed blong win eneji

Win tabaens hemi dia an nid fo meinteitim olowe.

Nid fo mesarim nao win spid fo meksua long olketa averej dei yu garem nao inaf win fo jenereitim nao elektrisiti.

Win maet stap bat bae no save prodiusim na paoa olowe.

Yumi bae bae no save talem nao hao mas paoa nao bae bae save prodius bikos win sens sens olowe.

Win tabaens save spoelem nao imij blong lanskeip an samfala save mekem nois tumas.

Win tabaens save kilim nao beds an flaefoks.

3.4 Baeomas Eneji

Baomas eneji hemi noa taem plan o animol matiriol hemi yius fo mekem nao eneji (hit an elektrisiti) . Hem save gro noma long eneji krops osem sugaken, wud o forest left ovas, weist from fud krops, animol fam osem maniua o human weist from siwij plans.

Taem yu bonem nao baeomas plans hemi rilisim nao kabon daeoksaed bat hemi osem rinuiabol eneji bikos niu plan tekem baek kabon daeoksaed taem hemi gro ap. Baeomas save konvet go nao long eneji yusim nao olketa komon metod ia.

- Taem plans bo ne (Temol proses) – Plan metiriol hemi bo ne fo givim nao hit wea save yusim fo mekem nao stim fo prodiusim nao elektrisiti. Disfala metod ia hemi barava wanfala metod wea pipol save yusim tumas lo oketa komiunities blong yumi.

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

39 Photo credit: Fiji Sun.

FIGA 33: Wud (Baeomas) yus na fo kuki⁴⁰**FIGA 34: Suga mil lo Fiji – Bo nem na sugaken Bagas fo produsim na elektrisiti⁴¹**

- Kemikol /Baeokemikol proses – Hem nao wea baeomas hemi yus fo mekem na baeogas (mitein) an baeofiul (baeodisol o baeoetanol) . Olketa Baeogas an Baeofiul bo ne (temol proses) or yius long boilas o injins fo produsim nao eneji.

FIGA 35: Baeogas plan – Solomon Aelans⁴²

Gudfala Saed blong Baeogas

Baeomas hemi aveilabol noma long gud amaont long olketa aelan kantris wea garem nao najurol fores o wea garem nao bikifala komesol agrikalsa fams.

Isi tumas fo yiusim - isi osem bonem rabis fo tekem na hit eneji.

Stap noma an fri o barava lou kost.

Hemi seif noma fo kipim den yiusim leita an no nidim noma batri etc.

Nogudfala Saeds blong Baegas

Nidim na masin wea hemi lelebet had fo yiusim fo jenereitim elektrisiti.

Bo nem nao fo rilisim kabon daeoxaed an smok osem bae prodaks.

Tekem taem fo gro moa so havest shud not duim olowe bat speisim taem fo taem grot hemi save yu fo onli fiul.

Bo nem noa baomas o baeofiul save krietim na nogud helt impakts.

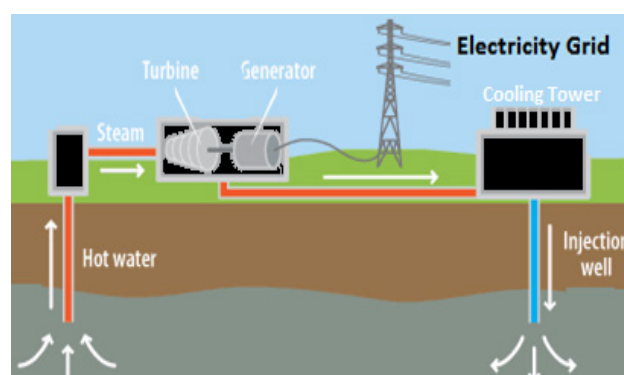
Hemi no ifisient nao osem fosil fiuls.

Baomas plans hemi nidim nao staka speis.

Save lid go nao long diforesteisin.

3.5 Jiotemol Eneji

Jiotemol Eneji hem nao temol eneji wea hemi stap na long insaed long et. Jiotemol paoa plan hemi waka taem tapim go long stim or hotwata resivuas undanit long graon, hit ia hemi save yus fo draevim nao elektrikol jenereita.

FIGA 36: Giotemol Teknoloji⁴³

⁴⁰ Source: Biomass Stoves in Bengaluru, <https://dir.indiamart.com/bengaluru/biomass-stoves.html>

⁴¹ Source: The Fiji Sugar Corporation Ltd.

⁴² Source: SolBridge "Creating Renewable and sustainable energy from waste", <https://www.solbridgeltld.com/biogas-for-home>

⁴³ Source: EPA- Student's Guide to Global Climate Change, <https://mbgna.umich.edu/geothermal-energy-what-it-is-how-it-works/>

Gudfala Saeds blong Jiotemol

Jiotemol eneki hemi garem nao saplae wea no save finis sapos sos blong hem stap.

Jiotemol eneki hemi no ap an daon tumas an hemi alaom nao stedi paoa jenereison.

Jiotemol eneki yusim nao hotwata hit ap from graon wea save kul daon an yusim baek.

Jiotemol eneki save yusim fo ea-kondisining (kul or hit).

Jiotemol eneki hemi poluson fri an no save givim at na grinhaus gas fo womim na et.

Nogudfala Saeds blong Jiotemol

Jiotemol eneki hemi onli stap lo samfala ples noma lo pasifik.

Jiotemol plants oketa bik tumas an oketa nidim na dia ikwipment fo stat mekem na elektrisiti.

Jiotemol eneki hemi save ekspensiv tumas if laek yusim lo haus iven if Jiotemol plant ia hemi kosap lo haus.

Jiotemol eneki maet save kosim na etkweik bikos lo samfala senses lo strakja blo et.

Gudfala Saeds blong Taedol Eneji

Taedol eneki hemi stap olowe noma long difren amaont long difren saet (ples/plant).

Taedol eneki save yus fo paoarem nao bikifala skeil elektrisiti jenereitas fo ful komuniti.

Taedol eneki save pridiktim raet noma fo ful yia ia.

Taedol eneki save isi fo kontrolim an planim fo grid konekson.

Taedol eneki hemi no garem rabis ea long hem an hemi no aotim na grinhaus gas fo womim nao et.

Taedol eneki sistem hemi no dia noma fo kipim gud.

Taedol eneki garem nao hae densiti den olketa narafala rinuiabol eneki foms.

Nogudfala Saeds Taedol Eneji

Taedol eneki hemi onli stap insaed long osen blong samfala ples noma.

Taedol Eneji stat ap kost wea rileit go long andawata tebaen an konstraksin hemi hae tumas.

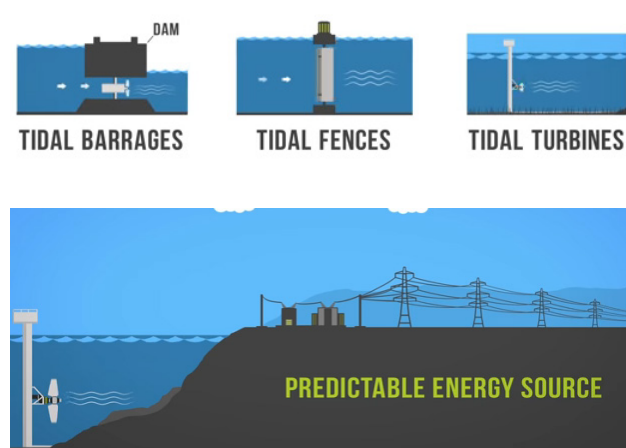
Taedol eneki nidim nao staka meintenens an spesol metiriols fo hemi waka gud.

Taedol eneki save afektim nao marin animols an plants.

3.6 Taedol Eneji

Taedol eneki hemi na fom blong haedro paoa wea save sensim nao eneki wea tekem na from taeds go na long elektrisiti.

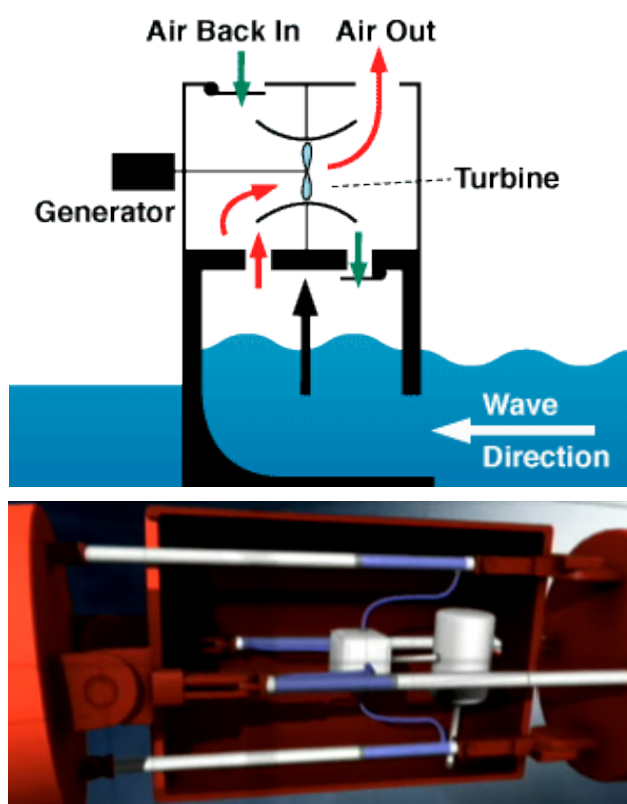
FIGA 37: Taedol Teknoloji⁴⁴



3.7 Weiv Eneji

Weiv eneki hemi nao transpot an kapja blong eneki bae osen safeis weivs. Hemi plant wea kontrolim an mek yus long weiv paoa hemi nao eneki konveta. Wael oketa weivs ia mekem nao muvment, oketa fluid pus tru nao long wanfala haedrolik moto wea konekt go long elektrikal jenereita produsim nao elektrisiti.

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

FIGA 38: Weiv Konveta⁴⁵FIGA 39: Hao paoa hemi jenereited⁴⁶

Gudfala saed blong Weiv enej

Weiv enej hemi stap olowe noma long difren amaont long difren saet (ples/plant).

Weiv enej save yius fo paoarem nao bikifala skeil elektrisiti jenereitas fo ful komiuniti.

Weiv enej hemi aveilabol staka long olketa kostol komunitis.

Weiv enej no nid fo yiusim naol lo lan o aelan.

Weiv enej hemi no garem nao rabis gas an hemi nosave aotim nao grinhaus gas fo womim nao et.

Weiv enej save isi fo talem noma an save kalkuleitim nao amaont wea hemi save prodiusim.

Nogudfala Saeds blong Weiv enej

Weiv enej hemi onli stap insaed long osen blo samfala ples noma.

Weiv enej hemi stap olowe bat hem sens olowe tu so paoa blong hem bae sens sens tu.

Weiv enej nidim nao dia tebaen an bikifala sivil waka or anda wata konstraksions wea hemi fisibol.

Weiv enej nidim nao staka metiriols an meintenans.

Hemi hard tumas fo stap awei from sirias dameij from bikifala osenik stoms.

Onli oketa paoa plant an taons kosap long osen noma bae save benefit from daerektli.

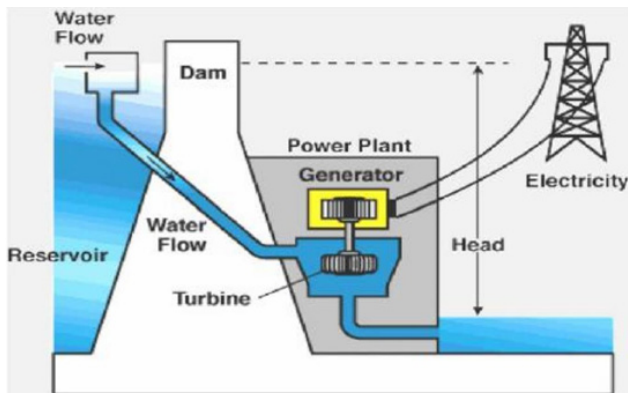
45 Source: Wikipedia, Wave Power, https://en.wikipedia.org/wiki/Wave_power#/media/File:Pelamis_at_EMEC.jpg

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

3.8 Haedro Eneji

Haedro eneji hemi eneji wea kam from eneji blong wata wea hemi run/faldaon fast tumas. Garem olketa smol (pico o maekro) haedro dams wea save yus fo produsim nao elektrisiti fo haushol o komiunities.

FIGA 40: Haedro eneji teknoloji⁴⁷



Gudfala saed blong Haedro Eneji

Haedro Eneji hemi olweis stap long diferen amaonts long wan ples fo long taem sins gareme nao inaf rein fo kipim na amaont wea hemi nidim.

Haedro Eneji save yus fo paoarim nao bikifala skeil elektrisiti jenereitas fo ful komiuniti.

Pico Haedro eneji save yus fo paoarem nao wanfala haus isi tumas.

Haedro Eneji hemi stedi tumas so hemi isi tumas fo kontrolim an planim fo grid konekson.

Haedro Eneji hemi poluson fri an givim aot nao grinhaus gas fo womim nao et

Staka long oketa bikifala pasifik aelans an inlan komiunitis gareme staka riva an maontens so haedro barava fit nao fo olketa.

Nogudfala Saed blong Haedro Eneji

Haedro Eneji hemi no stap long smola aelans wea no gareme rivas an maontens.

Haedro tabaens nid fo mas instolim gudfala bae krietim nao dams o dug ap hols fo putim na paeping.

Haedro Eneji nid fo kipim gud olowe spesiali taem bikifala ren taem olketa deti blong graon an rabis save pas nao long tebaens an oketa filtas.

Lower level of water during dry seasons could affect power generation.

Lou level blong wata taem drae sison bae save afektim nao paoa jeneresin.

3.9 Haedro Eneji

Haedro eneji hemi involvim nao yus blong haedrojin fiul fo jenereitim nao eneji. Haedro eneji fiul hemi wanfala ziro imison fiul blong eneji wetem oksijin. Hemi save yus lo fiul sels or intenol kombastson enjins. Fiul sel hemi wanfala elektrokemikal sel wea konvetim nao kemikal eneji blong fiul an wanfala oksidaesing eijent insaed long elektrisiti thru tufala ridoks riaksons. Hemi jas stat noma fo yusim long komesol fiul sel veakols osem pasenja kas an bin yusim lo fiul sel bases fo staka yias nao. Hemi olso yus osem fiul fo speiskraft popalson.

FIGA 41: Haedrojin Fiul sel bas⁴⁸



Gudfala saed blong Haedro Eneji

No gareme nao nogud imison an hem givim aot noma klin wata.

Haedrojin save jenereitim an kipim fo leita ius – hemi potabol tu.

Difren rinuiabol eneji save yus fo jenereitim nao haedrojin gas.

Isi tumas fo yusim nao fiul sels bikos no gareme nao muing pats – hae eneji ifisiensi.

Nogudfala saed blong Haedro Eneji

Haedrojin hemi denjaras tumas an save eksplod isi tumas.

Stat ikwipmen fo jenereitim nao haedrojin hemi dia tumas.

Teknoloji ia hemi ova advansd tumas an no save sevis isi.

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

48 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 an diskas insaed long klas blong yiu abaotim nao wat taep eneji soses na yiu save lukim wea olketa save yiusim nao long lokol eria or kantri. Indikeitim weda hemi rinuabol o nan-rinuabol eneji ?

AKTIVITI 6

Diskas insaed klas abaotim nao wat kaen rinuabol eneji teknoloji nao bae prifea fo komiuniti an wae nao ia?

Raetem not blong yiu long hia:

4

**Riniuabol Eneji an
Komiuniti**

Taem riniuabol enei save helpem nao haos blong yiu givim elektrisiti an enei fo aplaensis, hemi save stat fo bildim na beta an strong komiuniti. Riniuabol enei save pleim nao impotent rol tumas lo sensim nao komiuniti fo beta. Umi lukluk nao lo wat kain ifekts nao riniuabol enei save garem lo komiuniti.

4.1 Komiuniti Bonding

FIGA 42: Komiuniti projekts build bonds⁴⁹



4.2 Moa pipol – les kost

Fo komiuniti levul rinuiabol enei fo ful vilij o provins – kosts hemi seard, bae staka pipol en bae u end ap peim les noma fo enei wea bae u risivim. Lo samfala keises gavman an nangavman oganaesesin (NGO) barava hapi tu ia fo helpim nao komiuniti efots fo reisim nao seleni fo rinuabol enei projekts.

FIGA 43: Divaeding kosts hem minim ij peson pei les⁵⁰



4.3 Seard waka, komiuniti onasip – rilaeabol enei

Osem yu save finis, waka hemi seard insaet long komiuniti taem bikfala kaikai o taem olketa ekstenol ofisols kam visit. Hao waka hemi seard hemi dipen nao long taep of ivent an vilij hedman. Disfala divaedin nao waka ia hem waka gudtumas fo staka yias. Osem oketa praemari kea givas, oketa woman lo komiuniti save karem na bikfala waka ia an hem nao wanfala samting wea nid fo tingim taem implimentim nao rinuabol enei projek ia.

FIGA 44: Wetem staka pipol insaed, meintenens hemi bae isi⁵¹



4.4 Ekonomik benefits

Bikfala skel komiuniti beis rinuabol projekts krietim moa ekonomik benefit fo komiuniti. Membas blong komiuniti save statim nao bisnis wea save jenereitim selen insaed long komiuniti an ri-invest fo olketa narafala komiuniti projekts osem bildim nao komiuniti hols, helt sentas, moa klasrums an helpim nao membass blong komiuniti. Seleni from rinuabols save yusim fo ripearim nao dameij kos bae saeklon o flads.

FIGA 45: Seleni wea tekem from oketa rinuabol enei projekts save yus na fo buildim komiunties⁵²



49 Source: GGGI, Solomon Islands.

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

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

52 Source: United Nations Office for the Coordination of Humanitarian Affairs, <https://www.unocha.org/story/solomon-islands-worst-flooding-history>

4.5 Komiuniti responsibiliti

Umi oketa pasifik aelandas umi barava kipim gudfala na oketalan an si. Yumi barava klos tumas long neija. So bae hem afektim nao yumi taem yumi spoelem na neija blong yumi. Osem risponsibol komiuniti yumi nid fo stop kosim nao ham long oketa komiuniti an oketa preses risosis bae katem daon nao oketa fosil fiul yius.

FIGA 46: Kostol iroson ifekts hemi daerektli link go nao long yusim nao fosil fiul long keales wei wea hemi kosim nao globol woming⁵³



Raetim not long hia

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

AKTIVITI 7

Insaed lo grups, diskasim nao olketa kuestin ia

1. Hao nao rinuiabol eneji helpim na komiuniti?

2. Komiuniti blong yu bae save mitigeit klaemet sens?

Diskason an Kuestin Taem



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