



Modiul 6 – Lenas Wakabuk

Riniuabol Eneji Projek Faenansol Manejmen

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Slen fo fanding hem kam from:

KOICA
Korea International
Cooperation Agency

An patna wetem:



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

- Luksave na lo oketa RE projekts wea stap finis o potensol fo niu RE projekts insaet lo komiuniti.
- Somaot na besik levlo lo save blo yu abaotim na faenansol menejmen lo riniuabol eneji projekts.
- Luksave lo oketa weis fo garem akses lo fans fo RE komiunit projekts.
- Somaot besik save blo yu lo reveniu an ekspens blong riniuabol eneji projekts.
- Save hao fo engej wetem impoten gavman, an developmen patnas fo help wetem olketa riniuabol projek.

LESON PLAN AN TAEMS

TEBOL 2: Leson plan

Olketa Sapta insaed wakabuk ia	Olketa Leson insaed wakabuk ia
1. Aes Breka – Introdaksin	Leson Topik an Aktiviti
2. Wanem nao Riniuabol Eneji Faenans?	Leson Topik
	Aktiviti 2
	Aktiviti 3
3. Olketa Fanding opotuniti	Leson Topik
4. Reveniu an Ekspens blong Riniuabol Eneji Projekts	Leson Topik
	Aktiviti 4
5. Engejim Donas fo fand	Leson Topik
	Aktiviti 5

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 engej wetem olketa trenas taem blong treining.

If yu laekem eni adisinol infomeisin long eni seksin insaed, yu save luk go nao long Trenas Gaed (TG) blong Lenas Wakabuk (LW) ia.

Kava foto: <https://www.maxpixel.net/Home-Coin-Investment-Money-Finance-Business-Bank-2724238>

Stetment fo diklearem no eni responsibiliti: Global Green Growth Institute hem no promesem, long toktok o mining, o hem no garem eni ligol laeabiliti o responsibiliti long hao stret, kompli 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 WOD IA (GLOSARI)

AC: Olterneting karent hemi wan taep elektrisiti wea prodius bae oketa bigfala Jeneretas fo bigfala divaeses osem TV o wasing masin.

Bukkiping: kipim rekod blo slen kam insaed an go aot lo bisnis.

Saj: konektim waes go lo bateri fo mekem volteij blo hem go ap. Hemi nomoli konekt go lo sola panol taem saj.

Saj Kontrola: samting wea kontrolim na taem bateri hem saj an save stopem for noken ovasaj.

Karent: hemi na wanem save flo insaed lo oketa waeas fo givim na paoa tugeda wetem volteij.

DC: Daerekt Karent hemi wan taep lo elektrisiti prodius bae sola panols. DC paoa save daerektli ranem laets an smol divaesesis.

Grant: Selen wea oketa givim fo projekt but yu no hav tu givim baek.

Inveta: samting wea jajim dc eletrisiti go lo ac elektrisiti.

Lod: Eniting wea tekem na paoa from bateri o sola panol. Hemi save laet, fan o frij. Eniting wea save yusim na elektrisiti hemi lod.

Lon: Selen wea oketa givim fo yusim bata mas ritenim bihaen wetem intrest.

Maonting: samting wea save yusim fo holem na oketa pats in ples (tugeda) osem yumi yusim fo holem oketa piksas. Semsem noma osem fiksime na panols lo ruf gud wetem maonting so hemi bae no save flae aot.

NGO: Oganaeseson wea no blo gavman – oketa save helpem na komiunities.

Ovajaj: taem yu jajim noma bateri taem hemi ful finis – Osem noma taem baket hemi fulap lo wata an hemi ova flo, bateri ia bae bae spoel.

Paoa: hemi eneji wea samting givim ova seten taem.

Projek: sam impotent waka wea yumi save duim fo seten taem noma eksampol osem biuldim haus hem wan projek.

PV Arei: hemi minim staka sola panols konekt tugeda.

Sola Panol: save koleme osem 'PV modiol' or 'PV panol'. Oketa braet blu plets wea save konvetim na eneji blo sun go lo elektrisiti.

Sponsa o Dona: oganaeseson or man wea save givim slen fo projek.

Volteij: volteij lo waea wetem karent fo givim na paoa lo umi.

1

Aes Breka –
Introdaksin

AKTIVITI 1

Introdusim iu seleva lelebet lo everiwan taem treina askem iu. lu bae bae ask for talem nem blo iu, talem save blo iu lo topic ia en wat na oketa expekteisons blo iu from disfala trening ia.

2

Wanem nao Riniuabol
Eneji Faenens? _____

2.1 Riniuabol Eneji

Riniuabol Eneji hemi eneji wea hemi taken from riniuabol risoses wea hemi najuroli save fulap baek lo laeftime blo hiuman, ekssampol na sunlaet, win, ren, weves an jiotemol hit.

2.2 Faenensol Maneijmen

Faenaesol meneijmen hemi diling an analaesing mani, investment an profit wea man save mekem o wanfala bisnis wea save helpim man for save mekem gudfala disisins.

FIGA 1: Risks fo olketa RE teknoloji¹

Typical RE risks of the different RE technologies	
RE type	Key Risk Issues
Geothermal	- Drilling expense and associated risk (e.g. blow out) - Exploration risk (e.g. unexpected temperature and flow rate) - Critical components failures such as pumps breakdowns - Long lead times (e.g. planning consents)
Solar PV	- Component breakdowns - Weather damage - Theft / vandalism
Small hydro-power	- Flooding - Seasonal / annual resource variability - Prolonged breakdowns due to offsite monitoring (long response time)
Windpower	- High upfront costs - Critical component failures - Wind resource variability - Offshore cable laying
Biomass power	- Fuel supply availability / variability - Resource price variability - Environmental liabilities associated with fuel handling and storage
Biogas power	- Resource risk - Planning opposition associated with odor problems
Tidal/wave power	- Survivability in harsh marine environments - Prototypical / technology risks, Various designs and concepts but with no clear winner at present - Small scale and long lead times

Source: UNEP - Financial Risk Management Instruments for Renewable Energy Projects, Summary Document, 2004

2.3 Riniuabol Eneji Projek Freimwaka

Tradisinol riniuabol eneji projeksa garem na freimwaka ia

1. Aedentifaem Projek

- Aedentifaem eneji rikwaement (saez an rikwaement).
- Risoses fo riniuabol eneji hemi aedentifaed (e.g. availabol wata strim) wea save diteminim na riniuabol eneji teknoloji (e.g. fo wata stim, haedro eneji sistim save instolim).

- Agrimen blo everi stekholdas if no save intolim wanwan (e.g. vilijas).
- Aedentifaem na ples (saet).

2. Fanding

- Aedentifaem na oketa pipol wea bae benefit an haomas na bae hem kost.
- Hu nao bae fandim (e.g. man seleva lon o gavman sapot).
- Samtaems paoa pajeis agriment save saenim so dat ekse eneji save ekspotim (salem) lo grid.

3. Biding

- Aedentifaem hu na bae bild (e.g. vilejas o kontrakta).
- instoleison hemi kompliit.
- estim an komisonim.

4. Onam an Operetim

- Sapos wanfala ejensi hemi givim slen for faenansim na projek ia, oketa bae save ranem an saj til oketa rikavam na kost blo oketa, taem oketa tekem baek cost den onasip hemi transfa.
- If lokol na faenensim, vilijas o individual haushol onas bae onam an oparetim.
- Sapos paoa peje agriment hemi saen, adisinol eneji hemi expoted an mani wea tekem hemi bae yused fo baem na lons wea hemi bim yused for instolim na sistim.

2.4 Aedentifaem Riniuabol Eneji Projeksa

Riniuabol eneji projek hemi ani aktiviti wea hemi yunik an hemi karid aot fo produsim na eneji from sosos wea riplenis baek.

Potensol fo niu riniuabol eneji projeksa hemi depen lo staka aspekse osem oketa ia:

1. Wanem nao eneji sos ?

Oketa eneji sosos ia osem sola, haedro, win fo smol komiuniti projeksa. Hemi depend noma lo wea na yu stap an wat na yu garem akses lo hem.

1 UNEP- "Financial Risk management Instruments for Renewable Energy Projects Scoping", Summary Document, 2004, <https://wedocs.unep.org/20.500.11822/9450>

FIGA 2: Sola Eneji²FIGA 3: Haedro Eneji³

2. Hao mas eneji nao nid fo prodius?

Total amaont blo eneji wea hemi rikwaed hem kalkuleited lo hao mas eneji nao wanfala haoushol hemi nidim an hao mas fala haushols na nidim eneji.

3. Hao, Sos ia hemi fitim noma fo prodiusim na eneji rikwaed/nidim ia?

Hemi impotent tumas fo savegud haomas eneji na sos save prodiusim. If hem sola sistim den bae no gareem na problem an ij haushol save onam sola sistim bat if hemi haedro sistim, den wata strim ia mas bi inaf fo prodiusim na enaf eneji fo a haus o fo komiuniti na.

4. Wat na bae sistim kapasiti?

Lukluk lo eneji rikwaement insaed lo wanfala haus, umi save lukim na sistim kapasiti an yu save aedentifaem tu total paoa rikweament fo haushol or fo komiuniti.

5. Hao mas na bae hem kost?

Sapos paoa rikwaemens yu save finis an taep lo sistim ia (e.g. sola o haedro) hemi aedentifaem den quotasin save tekem from oketa lokol saplaeas.

6. Hu nao bae fandim?

Sapos valiu blo projek ia yu save finis, fand nids to bi aedentifaed. Fandim save kam from vilijas o save aplae lo gavman grants or fands from oketa donas. Lokol gavman an dipatmen blo Eneji save givim samfala kaed lo fands an grants avelabel.

7. Waen na peibaek taem?

Peibaek taem hemi minim, lo haomasfala yias na bae yu save peimbaek investmen blo yu. Fo eksampol, yu laek fo instolim na sola sistim wea bae hemi kost \$500 fo instolim. Sapos yu instolim na sistim ia bae yu seivim na \$10 lo wan manis lo ful. So insaed lo wanfala yia bae yu save seivim na \$120. So peibaek taem hemi:

$$\text{Playback Period (years)} = \frac{\text{Total installation Cost}}{\text{Yearly Cash inflow}}$$

$$\text{Playback} = \frac{\$500}{\$120} = 4.16 \text{ years (4 years, 1 month and 28 days)}$$

$$\text{Peibaek} = \$500/\$120 = 4.16 \text{ yias (4 yias, 1 manis an 28 deis)}$$

Bat if yu tekem na lon fo instolim na Sola Paoa den total kost bae no \$500. Tekem lon wetem interest reit lo 20% lo wanfala yia, fo 5 yias, den ekstra yiali kost babae hemi:

$$\text{Interest cost per year} = \frac{\text{interest\%}}{100} \times \text{Loan amount}$$

$$\text{Interest per year} = 20/100 \times 500 = \$100 \text{ per year}$$

$$\text{Interest lo wan yia} = 20/100 \times 500 = \$100 \text{ wan yia}$$

So insaed lo 5 yias lon tem yu bae pei ekstra \$500 (5 yias x \$100). Distaem ovarol kost blo projek hemi \$500 (lon amount) + \$500 (interest) = \$1000.

Sotfala peibaek taem hemi moa gudfala. Everi sistim gareem laeftaem so yu no laek gareem na peibaek period wea kosap na lo sistim laeftaem. Fo Eksampol, if wanfala sola sistim gareem na laeftaem blo 10 yias den yu bae no laek peibaek taem blo yu for hemi go ovam 7 yias adawaes yu bae no save yusim na sistim blo yu fri.

So diswan hemi minim osem if peibaek taem antap ia hemi 4 yias, 1 manis an 28 deis an ekspekted laef blo sistim ia hemi 10 yias (minim osem afta 10 yias sistim ia maet no save opereit o no gareem eni waranti left), bae yu yusim fri eneji fo 5 yias, 10 manis an 7 days.

2 Source: Europe for Culture, 2018, <http://anoeeuropeu.patrimoniocultural.gov.pt/index.php/resultados-do-ano-europeu-do-patrimonio-cultural-2018/>

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

Olketa narafala eneji wea bae yu save garem hemi kiln eneji, bae yu garem akses go lo eneji evritaem, gudfala laet etc.

2.4.1 Bajet Templet

Bajet hemi faenansol plan (hemi estimeit blo inkam an ekspens) fo wanfala set taem (piriod). Fo riniuabol enei, wanfala isi templet yu save yusim fo rekodim na oketa impotent infomeisin osem oketa ia:

Diskraebem infomeisin		Diskraebem infomeisin	
Wanem nao eneji sos		Kost blo instoleison ekspektim (leiba)	
Aedentifam paoa rikwaement (kW)		Kost blo metiriol an parts	
Individuol o vilej projek		Ripea (mentenans) kost	
Grant, Lon o kas		Hao long bae projek tekem	
If lon, wanem deposit na hemi nidim?		Wanem nao karent eneji kost?	
Hao mas na bae seiving if yusim na riniuabol eneji?		Peibaek diuresin (taem)	

2.4.2 Manejim Fand

Lo samfala keses, paoa pejes agrimens givim na gudfala sos blo inkam fo riniuabol eneji projeks fo yusim na fo fixim lo fuja. Wetem diswan, gudfala faenansol manejmment hemi impotent tumas. Samfala tips fo menejmim n akas flo lo riniuabol eneji projeks.

- Mas meksua dat everi inkam kam insaed an everi ekspenses hemi rekod daon bae wanfala tresara nomineited, sapoted bae a komiti lida wea bae givim na apruvol fo yus blo fand.

- Kipim na everi risit an invoices osem pruf blo ekspenses o inkam.
- Mekem sua komiti wea luk afta rinuabol eneji projek mit evri mans fo faenansol brifing.
- Ij yia komiti shud presentim na odit ripot blo faenans go lo oketa stekholdas an iven yusim sans ia fo jiusim tu niu komiti membass fo luk aftam na oketa projek if gareme ani intrest from stekholdas fo joinim na komiti ia.

Raetem not blong yu long hia :

[illegible]

AKTIVITI 2

1. Nao (lo 7 antap) lon amaont blong yu inkludim intrest hem \$1000. Yiusim na annual seving blong \$120, kalkuletim na peibaek taem (period).

AKTIVITI 3

1. Sapos vilej blo yu diskasim na insaed lo vilij miting dat oketa laek fo instolim wanfala riniuabol enoji sistim fo vilij, paoa rikwaements na osem:

- a. garem 10 fala haus na lo vilij.
- b. ij haushol nidim na 50 watts paoa.
- c. Ij haushol bae garem na DC paoa onli wetem laet an radio.

Vilij garem na akses go lo wata strim. Hed lo vilij faendim na katalog from dipatment blo enoji wea garem na samfala infomeisin abaotim na riniuabol enoji sistim an praes. Infomeisin ia osem:

- a. Wanafala 600 W piko-haedro (tabaen an jenereita) sistim kost \$700.
- b. Oketa narafala kost fo garem na piko-haedro sistim (waering, batri, kontrolas) opereisonal kost.
- c. A 75W sola panol, batri an kontrola kost \$ 180 inkludim na instoleison.

Ij haushol insaed lo vilij blo yu garem na fiul kost blo \$5/wik fo provaedim na laet an \$ 2/wik fo redio batri.

Sins yu na bin atendem na kos ia from vilij blong yiu, vilij hed laekem na fo yiu advaesim hem.

- i) Wanem nao total paoa rikwaed insaed lo vilij?

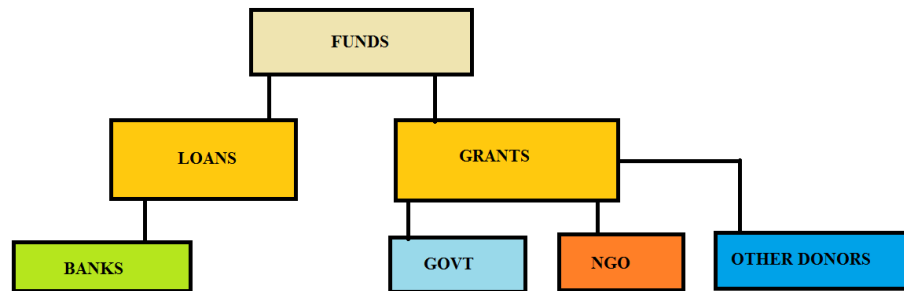
ii) Wanem nao bae simpol beibaek if vilij disaed fo intolim na piko-haedro an weda vilijas bae kontribiut fo baem na sistim?

iii) Wanem nao bae simpol peibaek if vilij laek fo instolim na sola sistim an vilijas bae tekem na loan from bank lo intrest reit blo 20% pe yia fo wanfala ripei taem of 5 yias?

3

Olketa Fanding
opotunitis

FIGA 4: Lons an Grants⁴



3.1 Lons

Oketa rijinol banks save givim na lons fo smol projekts bat oketa komesol banks nidim na wanfala garanta o sikiuriti bifo jas givim aot na lon. Sekuriti hemi samting wea hemi garem valiu wea oketa bank save tekem if yu no save peim baek loan blo yu. In Solomon Aelans fo eksampol, garem na Saot Pasifik Bisnis Developmen (SPBD) sola laeting lon hemi for oketa rurol wimen's asosiasion espeseli.

FIGA 5: Kampanis save tekem lon an individuals tu⁵



3.2 Grans

Samfala lo oketa fanding wea hemi komon fo oketa komiuniti beised lo riniabol eneji fands hemi kam from grands. Grands save kam from difren soses, samfala lo oketa hemi.

3.2.1 Gavman

Gavman save risivim na extenol grants o oketa save yusim na reveniu blo oketa fo krietim grants fo promotim na riniabol eneji projekts. Fo eksampol, lo Solomon Aelans garem na gavman fand wea kam anda lo Eneji divison insaed lo Ministri blo Maens an Eneji an Rurol Elktrifikeison fo Sola Projekts fo oketa rurol komiunitis an skuls.⁶

3.3 Dona Ejensis

NGO's an Dona eijensis oketa also provaedim na grants fo RE porjekts. Samfala lo oketa aktiv eijensis wea yu save rij aot lo oketa insaed lo rijon hemi:

3.3.1 Korea International Cooperation Agency (KOICA)

KOICA⁷ provaedim na fanding insaed lo rijin lo diferent levols an fo waed reinj lo filds from eneji to helt to ediuksin. Fo Eneji, the mison fo KOICA hemi "kontributing tu CO2 ridaksin thru sasteinabol eneji an rilaezing inklusiv grot". Oketa bigfala programs listed bae KOICA hemi:

- Establismen blo macro – grid sistims
- Distribusin blo sola hom sistims
- Distribusin blo kiln kuk stovs
- Promosin lo riniabol eneji risoses
- Establishment lo macro-grid sistims
- Establishment lo grid konekted paoa jenereisin sistim
- Developmen lo instituson fo riniabol eneji promoson
- Transmison an distribuson lo otomeisin an ifsiensi impruvment
- Hiting an temol ifsiensi impruvmen
- Kapasiti building an R& D infrakstrakja sapot

If yu intrested, yu mas kontaktim na pasifik ofis blo oketa beis na lo Suva Fiji, fo faendim aot na hao oketa fandim projekts insaed lo rijon an fo faedim aot if projek proposal blo yu hemi fitim for tekem grant.

⁴ Source: GGGI, Fiji.

⁵ CBS Power Solutions, May 2021, <https://www.worldbank.org/>

⁶ Adapted from "Review of Solomon Islands Electricity Act and Rural Electrification Framework", Final report, https://prdrse4all.spc.int/system/files/2_si_rural_elect_framework.pdf

⁷ Korea International Cooperation Agency, http://www.koica.go.kr/sites/koica_en/index.do

3.3.2 Departmen blong Foren Afeas and Treid Australia (DFAT)

Objektiv blo hem hemi fo helpim na developmen kantris katem daon an poveti an ajivim na sasteinabol developmen. Hem provaedim olso polisi advaes an sapot go lo Minista an palament sekretari lo development isus an plans an koodinaetim poveti ridaksin aktivitis wetem lo patnasip wetem developping kauntries.⁸

3.3.3 Klaemet Sens Fand (CCF) an Asian Developmen Bank (ADB)

CCF hemi etablis lo Mei 2008 fo fasiliateim na greta investmen lo developim na memba kantries (DMCs) fo ifektivli adresim na oketa koses an konsikwenses blo klaemet sens. CCF hemi ki mekanisim fo putim tugeda na risoses witin ADB fo adresim na klaemet sens tru teknikol asistens (TA) an grant komponensblo invesmen projek.⁹

3.3.4 Globol Envaeronmen Fasiliti (DEF)

Lo most keisis GEF provaedim na fanding fo sapotim na gavman projek an programs. Gavman na hem save disaed lo wat kain eijensi na fo karem aot waka osem oketa sivol sosaeti oganaesesi, praevet sekta kampanies, an rises institusens. Garew staka isus na fo ting raonim taem faendim na fanding. Hu na for kontaktim?, kantri blo mi fit fo tekem fanding ia tu? Hu na bae karem aot projek ia? Wat kain projek na mi sud ting raonim? Fo help wetem oketa kain kwestin osem yu mas go luk na lo websaet blo oketa o askem na lokol gavman ofisol.¹⁰

3.3.5 NZ AID or Ministry of Foreign Affairs and Trade (MFAT) New Zealand

Osem noma DFAT Australia, MFAT New Zealand o bifo oketa kole lo NZ Aid, hemi olso sponsam na komiuniti rileited projek insaed lo Saot Pasifik. Ministri blo Foren Afeas an Tred (MFAT) hemi nao pablik sevis blo Niu Zilan wea save advaesim na gavman lo foren polisi an promotim na Niu Zilan's intrests lo tred an intanasinol rileisons. MFAT waka wetem na ova 30 difren gavman eijensis fo dilivam na developmen kopereisin akros na lo pasifik.¹¹

3.3.6 European Union

Fand menejmen kampanies, faenansol institusons, projek divelopas o individuals wea minim fo developim a kiln eneji investmen fand o ekspandim fand wea hemi eksist finis go lo kiln eneji, save sabmitim na proposols fo sikim na faenans. Divelopas blo kiln eneji projek save sabmitim tu proposols fo investment fands. Oketa proposols ia oketa mas:

- Presentim faenansoli sastenabol bisnis plan wea bae jenereitim na fea riten fo investas an wanfala.
- Spesifaem envaeromentol an sosio-ekonomik impaks.
- Fokas lo smol an midiam saez klin eneji projek (<30 MW) an kampanis.
- Nidim na long tem peisent invesmen capitol.

Lokoli graonded, profesonal fand maneijmen tim, prifebli wetem trak rekod lo eneji sekta o garew na kapasiti fo kwalifae o save lias wetem na oketa nara patis fo pepos ia.¹²

3.3.7 Agence Française de Development (AFD - France)

Aplikeisins bae sabmited bae oketa lokol kontrakting atoritis fo go lo AFD ofis wea bae aedentifaem na projek ia. Fisibiliti stadis wea inkludim na teknikol stadi, maketing savei an faenansol projeksons oketa karem aot.¹³

3.3.8 International Climate Initiative (Germany)

Disfala program hemi ran bae Jemen Ministri blo Envaeroment an provaedim na faenansol sapot go lo intanasinol projek lo klaemet sens mitigeisin, adapson, REDD+ an baeodaesesi konseveison. Faenansing bae mas meksua dat oketa invesmens ia bae helpim na oketa narafala fanding strims an enkarijim na praevet sekta patisipeisen.¹⁴

3.3.9 Japan International Cooperation Agency (Japan)

Japan International Cooperation Agency (JICA) hemi gogohet wetem oketa aktivitis blo hem wea hemi beisim na lo pilas blo fild-oriented aproj, human sikiuriti an enhans

8 Australian Government Department of Foreign Affairs and Trade, <https://www.dfat.gov.au/>

9 Asian Development Bank, "Climate Change Fund", <https://www.adb.org/what-we-do/funds/climate-change-fund>

10 Global Environment Facility (GEF), "Least Development Countries Funds-LDCF", <https://www.thegef.org/topics/least-developed-countries-fund-ldcf>

11 New Zealand Foreign Affairs & Trade <https://www.mfat.govt.nz/en/>

12 Global Energy Efficiency Renewable Energy Fund (GEEREF), <https://geeref.com/about/what-geeref-is.html>

13 Agence Française De Development, <https://www.afd.fr/en>

14 International Climate Initiative (IKI), <https://www.international-climate-initiative.com/en/about-iki/iki-funding-instrument>

ifektivnes, ifisiensi an spid. Etablis osem wanfala inkoporeted Adminsitretiv Eijensi anda lo akt blo Inkoporeted Adminsitretiv Eijensi – Japan Intanasinol koporeisin Eijensi (Akt Namba 136, 2002), JICA hemi eim fo kontribut fo promotim na intanasinol koopereisin an saon developmen blo Japanese an globol ekonomi bae sapotim na sosioekonomik developmen an rikavari o ekonomik stability blo developing rijin.¹⁵

JICA hemi olso ranem na “introdaksin blo Haebrid Paoa Jenereisin Sistim lo PICS 2017 -2022 insaed lo Pasifik.

3.3.10 USAID

USAID lidim na intanasinol development an humanitarian efots fo sevim laef, katem daon poveti, strongim democratic gavanans an helpim pipol fo go biyon asistens. USAID waka blo hem fo advansim na U.S. nasinol sikiuriti an ekonomik prosperity, somaot na jenerositi blo Amerika an promotim na wei fo tekem na self-rilians an risiliens.¹⁶

3.3.11 IUCN

The International Union for Conservation of Nature (IUCN; officially International Union for Conservation of Nature and Natural Resources) hemi wanfala intanasinol oganaeseson waka lo fild blo neija konseveisin an sastenabol yu blo risosis. Hemi involve insaed lo putim data tugeda an analisis, risel, fild projeks, advokasi an ediukeisin. IUCN's misin hem fo “influens, enkareij an assist sosaetis lo wolf o oketa save kipim gud neija an fo meksua dat ani yus blo najurol risosis hemi ikwitabol an ekolojikoli sastenabol”.¹⁷

Garem staka narafala donas wea oketa save provaedim na semsem asistans an hu bae save sikim opotunitis lo rispektiv kaontris blo yu, hemi gudfala samting fo kontaktim na lokol gavman representetivs an gavman ofisols, nan-gavman oganaesesis inkludim na univesitis fo tekem moa infomeisin abaot grants an donas.

Raetem not blong yu long hia:

15 Japan International Cooperation Agency (JICA), <https://www.jica.go.jp/english/countries/oceania/index.html>

16 USAID From the American People, <https://www.usaid.gov/pacific-islands>

17 International Union for Conservation of Nature, <https://www.iucn.org/regions/oceania>

4

**Revenu an Ekspensis
blong Riniuabol Eneji
Projeks**

4.1 Riniuabol Eneji Projek

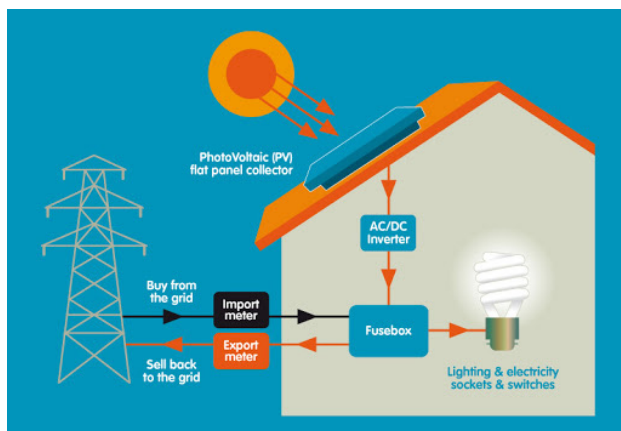
Lo Riniuabol eneji projek kost hemi insaed finis long tufala mein pats – Revenu an Ekspens.

4.2 Revenu lo riniuabol eneji

Revenu hem na selen wea projek ia hem jenereitim o sevim. Fo eksampol, instolim sola hem minim dat eneji hem kam fri, wea yu yused to pei fo elektrisiti bil o pei fo kosts blo jenereita, distaem hemi fro everi mans bikos lo sola paoa. Yu save sevim na \$50 lo wan mans lo baem na disol fiul fo jenereitas or peim na grid fo elektrisiti, den.

Adisinol go moa lo diswan, lo komiuniti projek, sapos yu laek pei fo mantenans yu bae nid fo jajim na smol fi o bil fo yus blong eneji an diswan hemi also revenu blong projek. In kes RE projek hemi grid konekted, lo samfala instensis yu save sel go lo grid an tekem na peid yunits blong eneji yu salem.

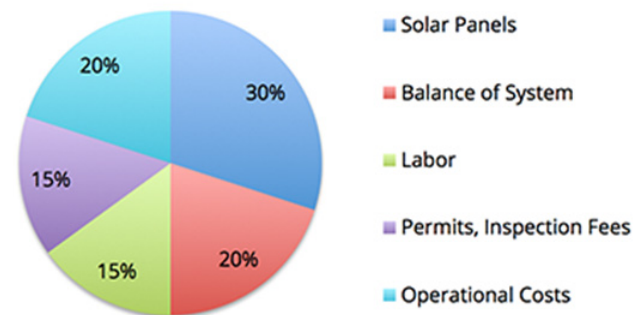
FIGA 6: Grid konekted sola save alaom yu fo sel go lo grid¹⁸



4.3 Oketa kost taeps

Garem na staka ekspensis fo ting abaot lo riniuabol eneji projek. Oketa ekspensis ia save stap insaed lo trifala mein kategoris, oketa nao, capitol ekspens, opereisonol ekspens an meintanens kosts.

FIGA 7: Kosts involv lo Sola PV sistims¹⁹



Kapitol Ekspens fo Instoleson: Ekspens ia involvim na inisol saezing, disaen an pajesing blo oketa ikwipmen wetem leiba an transpot kosts. Hem ia na hemi bigfala kost tumas lo staka lo oketa projek an disfala ekspens grant bae save kavam.

FIGA 8: Kapitol Kosts lo Haedro projek hemi hae bikos oketa involvim na Dam konstraksins²⁰



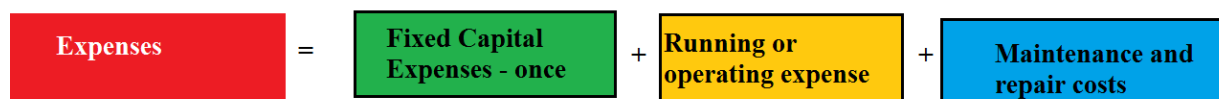
- **Opereiting kosts o ekspens:** Disfala kost hemi involvim na everi ekspensis fo ranem na riniuabol eneji projek propali afta instoleison feis hemi komplit. Diswan hemi nomoli 10 % tu 20 % blo ovarol kosts blo Projek. Fo Eksampol, wanfala disol jenereta instol lo wanfala skul bae nid fo baem na fiul osem opereiting kost blo hem.
- **Mantenans kosts:** Kost ia hem komon tumas lo oketa riniuabol eneji projek an hem gare na bikfala sea den opereiting kosts. Fo eksampol, afta sola PV sistim hemi instol, bateri bae nid fo jenjim insaed lo wanfala yia noma. Bae bae nid fo haerim na wanfala teknisian fo karem aot na meinytenans an sekem na sistim ia).

Den yumi save lukim na ovarol ekspensis lo wanfala projek hemi gare na 3 fala kategoris blo ekspensis ia an yumi save se dat everi ekspensis save addim ap.

18 Adopted from RJ SOLAR, "What is Solar PV and how does it work?", <http://www.rjsolar.co.uk/>

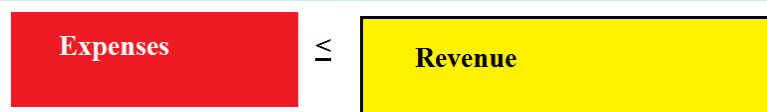
19 VU PHONG, "How much does a Solar Power System Cost?", <https://vuphongsolar.com/how-much-does-a-solar-power-system-cost/>

20 <http://panasianpower.com/>

FIGA 9: Total Ekspensis kalkuleisin²¹

Mein aedia fo sostenabiliti blo projek ia lo long run – reveniu hemi sud be greta den ekspensis o hem shud semsem wetem.

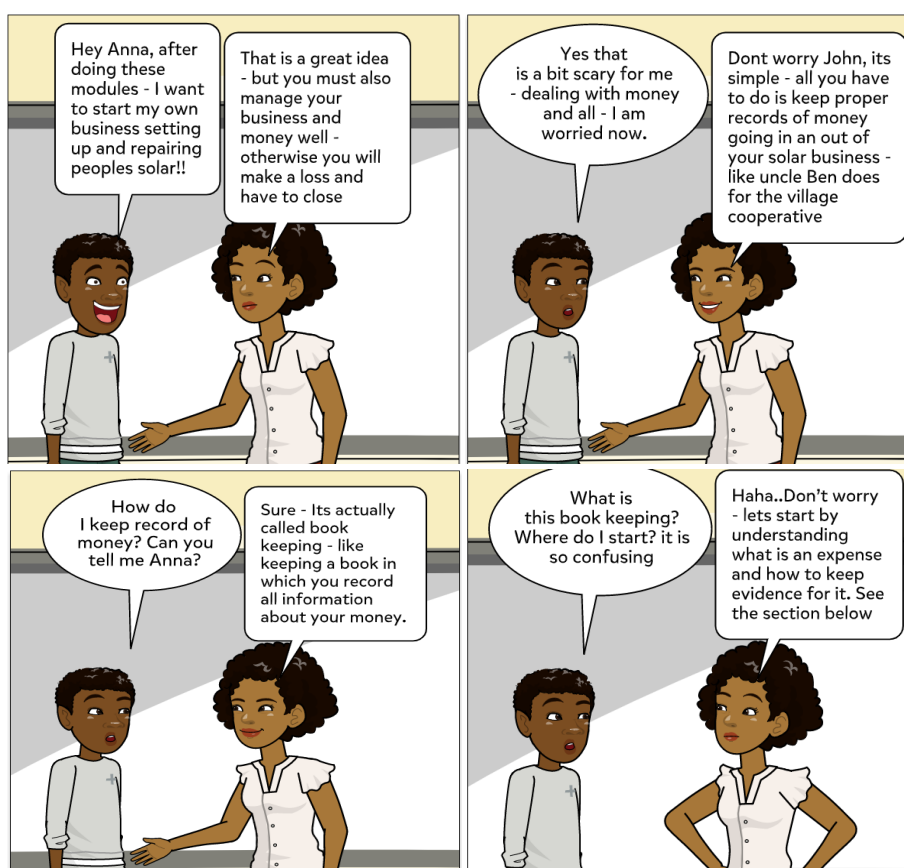
Grants for fundim na opereiting kosts hem no komon tumas so projek mas garem na samfala reveniu fo seiv ap fo meintenans.

FIGA 10: Revenu mas semsem wetem o bik ovam na ekspensis²²

4.4 Besik Bukkiping

Buk kiping hemi impotent tumas lo staka bisnis an oketa projek. Yu maet garem na kooperetivs insaed lo eria blo yu wea yu maet bi wanfal memba tu? Hao na yu tingim oketa kipin na rekod blo slen kam insaed an go aot lo kooparetiv ia?

Yumi duim na wanfala simpol rol plei –o yu save ridim noma konvesesin blo Ana an Jon lo daon ia:



²¹ GGGI, Fiji.

²² GGGI, Fiji.

4.4.1 Ekspensis

Taem yu baem aniting (rileit go na lo bisnis o projek) – anitaem slen go aot long paos blo samwan fo bisnis or projek, yumi kolem ekspensis. Hemi impotent fo kipim na rekod blong ekspensis. Hemi gud tu fo kipim na rekod blong evidens blong ekspensis fo verifaem lo papos blong ekspens if nidim bihaen.

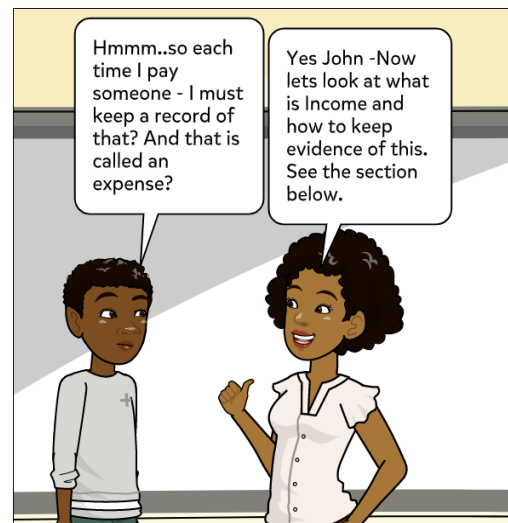
4.4.2 Evidens blong ekspens

Fo eksampol, if yu baem 15 LED laet balbs from taon stoa kol Supa Hadwea fo \$40 – Bae yu peim na stoa ona ia an tekem na balbs ia kam baek long vilij. Bat wat abaotim na evidens fo pruvim dat yu baem na oketa balbs ia from Supa Hadwea? Hem nao wae hemi olweis gud fo yu mas OLWEIS ASK FO RISIT. Risit hem pis dokumen wea pruvim dat mani hem bin eksens fo samting bitwin tufala pipol.

FIGA 11: Sampol risit yu save tekem taem yu baem samting²³

RECEIPT		DATE <u>06/02/21</u>	NO: <u>1234</u>								
RECEIVED FROM <u>John</u>											
ADDRESS <u>Rock Island</u>											
		s <u>\$40</u>									
FOR <u>15 LED LIGHT BULBS</u>											
<table border="1"> <tr> <th colspan="2">ACCOUNT</th> </tr> <tr> <td>AMT. OF ACCOUNT</td> <td><u>40</u></td> </tr> <tr> <td>AMT. PAID</td> <td><u>\$40</u></td> </tr> <tr> <td>BALANCE DUE</td> <td></td> </tr> </table>		ACCOUNT		AMT. OF ACCOUNT	<u>40</u>	AMT. PAID	<u>\$40</u>	BALANCE DUE		☒ cash ☐ CHECK ☐ MONEY ORDER	
ACCOUNT											
AMT. OF ACCOUNT	<u>40</u>										
AMT. PAID	<u>\$40</u>										
BALANCE DUE											
		BY <u>Super Hardware</u>									

Kas risit or simpli a risit hemi yusful tumas fo kipim na rekod long tings insaed lo bisnis blong yu. Staka long oketa risit ia garew na namba long hem – oketa bae garew na kopi wetem sem namba inkes yu laek go ask abaotim leita on . Eksampol risit antap ia namba hemi “1234”.



4.4.3 Inkam

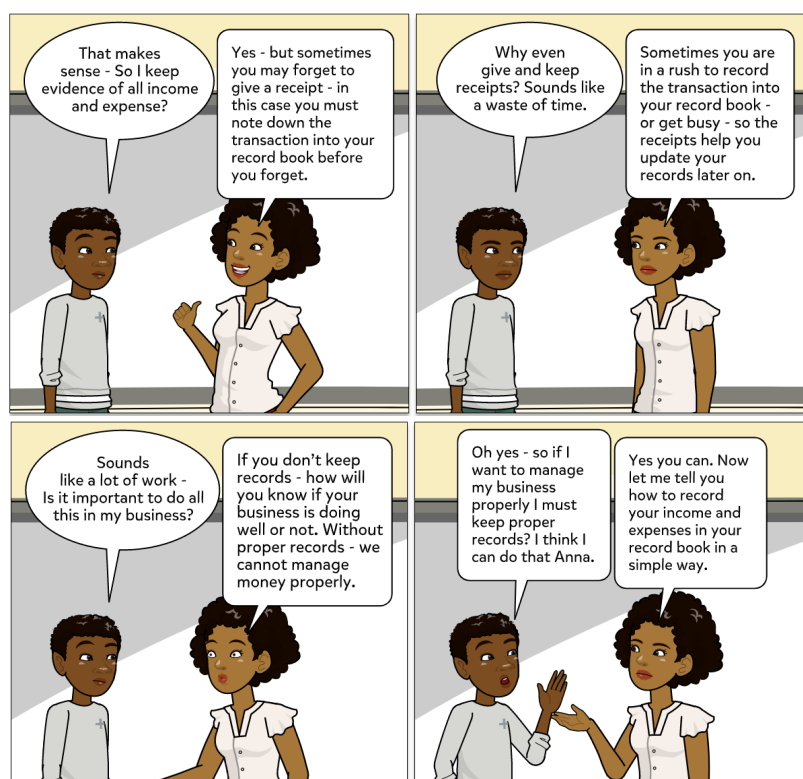
Taem samwan givim yu slen and slen kam insaed lo bisnis hemi kol inkam. Yu mas givim tu risit lo oketa taem yu risivim slen. If yu Salem na eni aetem o duim na waka fo samwan in eksans fo slen – givim oketa risit. Eksampol if yu salem na 5W laet balb go lo Tol Tom – yu bae raetim aot na lo risit buk an givim na orijinol kopi go long Tom an kipim na kopi blo risit. Leita bae yu yusim na risit kopi blong yu fo apdatim na rekod blo buk blong yu. Oketa risit buk ia garew na risit wetem risit namba oketa raetem long hem in red kala. Disfala namba ia hemi yusful fo kipim na insaed lo rekods blong yu.

FIGA 12: Sampol lo risit wea yu save givim aot from risit buk²⁴

RECEIPT		
No. 0008	DATE <u>26/06/2021</u>	
RECEIVED FROM <u>TALL TOM</u>		
<u>FOR ONE 5W LIGHT BULB</u>		
THE SUM OF <u>\$5.00</u>		
CHEQUE		<u>JOHN</u>
CASH	<u>5 - 00</u>	
DISCOUNT		

²³ GGGI, Fiji.

²⁴ GGGI, Fiji.



4.4.4 Wanfala (Singol) Entri BukKipping

Yu sud save dat garem staka weis fo duim bukkiping. Bat simpol wan na hemi kol singol entri bukkiping. Long singol entry, yumi maenasim olketa ekspensis from na inkam.

FIGA 13: Sampol blo singol entri bukkiping tebol²⁵

DATE	DESCRIPTION	RECEIPT NUMBER	INCOME \$	EXPENSE \$	ACCOUNT BALANCE

Ij kolom hemi lebol wetem wanem nao mas stap lo dea. Hemi isi tumas – sapos dadi blong Jon hemi givim na \$100 fo Jon statim na bisnis blo hem fo salem na sola laeting an prodaks an

duim na instoleisen fo olketa pipol – Slen ia kam in osem inkam or go aot lo bisnis osem ekspens fo Jon? yes, hem kam in osem inkam. Ok yumi filim aot na rekod buk ia.

FIGA 14: Sampol Entri blo inkaminsaed lo bisnis rekods²⁶

DATE	DESCRIPTION	RECEIPT NUMBER	INCOME \$	EXPENSE \$	ACCOUNT BALANCE
15/05/21	Cash from Dad for Business start		100		100

Nambawan entri hemi fo inkam blo \$100 wea dadi blong Jon hemi givim long hem fo statim ansola bisnis blong hem. Diswan hemi kol capitol. Fas entri ia na hemi den bikam akaont balans. OK den yumi trae putim in na ekspens Jon

mekem taem hem baem na 15 laet balbs fo \$40 from Supa Hadwea. Olweis rimemba dat long singol entri yumi adim na inkam an maenas na ekspensis from akaont balans. Long samfala buks ekspensis oketa raetem wetem negative saen.

FIGA 15: Sampol entri blo ekspens an faendim niu balans²⁷

DATE	DESCRIPTION	RECEIPT NUMBER	INCOME \$	EXPENSE \$	ACCOUNT BALANCE \$
15/05/21	Cash from Dad for Business start		100		100
20/06/21	Bought 10 bulbs from Super Hardware	1234		40	60

Subtract expense from account balance

Den, yumi tekem awei na ekspens \$40 from na akaont balans blo \$100. Diswan hemi mekem na niu akaont balans fo bikam \$60 an yumi bae raetim na lo sem laen andanit na lo akaont

balans. Neks umi tingim na taem Jon salem na wan laet balb go lo Tol Tom. Luk lo risit antap wea Jon givim go lo Tol Tom wea hemi pei \$5 fo wan laet balb.

FIGA 16: Sampol entri blong narafal inkam an updeit blong oketa rekods²⁸

DATE	DESCRIPTION	RECEIPT NUMBER	INCOME \$	EXPENSE \$	ACCOUNT BALANCE \$
15/05/21	Cash from Dad for Business start		100		100
20/06/21	Bought 10 bulbs from Super Hardware	1234		40	60
26/06/21	Sold one 5W bulb to Tall Tom	8	5		65

Add income to account balance on above line

Yumi adim na \$5 go lo akaon balance blong \$60 dolas ia an niu balans na hemi \$65. Ok yumi trae fo lukimnao hao Jon .

kompaleim na transakson blong hem fo wan mans wetem difrent ekspenses an inkams.

²⁶ GGGI, Fiji.

²⁷ GGGI, Fiji.

²⁸ GGGI, Fiji.

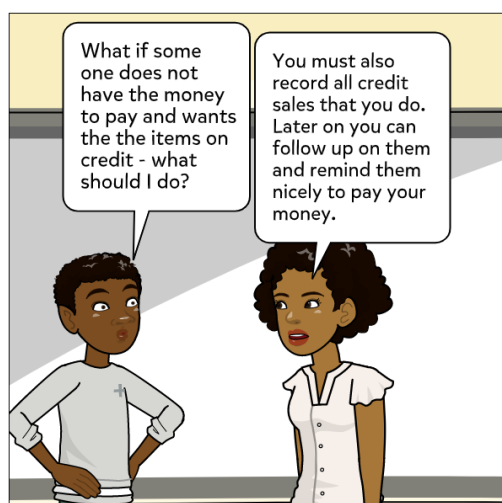
FIGA 17: Sampol blo hao klosing balans lo end lo mans save wakamaot²⁹

DATE	DESCRIPTION	RECIEPT NUMBER	INCOME \$	EXPENSE \$	ACCOUNT BALANCE \$
15/05/21	Cash from Dad for Business start		100		100
20/06/21	Bought 10 bulbs from Super Hardware	1234		40	60
26/06/21	Sold one 5W bulb to Tall Tom	8	5		65
29/06/21	Sold six 5W bulbs to village cooperative	9	45		110
29/06/21	Païd Pita to deliver the bulbs to store			5	105
30/06/21	Balance at end of June		150	45	105

Lo end long mans, yumi nomoli luk long oketa rekod buk so dat yumi save hao na yumi gogo so fa. Yumi adim evri ekspenses an raetim daon long laen wea yumi steitim en balans blong mans. Fo eksampol, fo Jon yumi save lukim dat antil lo deit ia hemi mekem na \$150 inkam an spendim na \$45 long ekspensis. Taem yumi tekem awei ekspensis from inkam, yumi save lukim na profit wea Jon mekem ovam wan mans. So \$150 maenas \$45 is \$105 profit wea hem garem osem balans blong hem.

Long samfal keisis yumi noken tritim na stat capitol osem inkam. So if yumi tekem na transaksons fo Jun fo bisnis blong Jon ia an aotim na \$100 dola inkam ia – hem garem na \$45 ekspensis an \$50 inkam. So datfala manis profit blong Jon hemi \$5. Hemi yiusful fo tekem nao profit an los fo ij manis separeitli so dat Jon save nao hao na bisnis blo hem pefom lo ij mans.

Gudfala rekod kiping hemi alaom yumi fo save hao na Bisnis hemi gogo.



4.4.5 Salem long kredit/kaon

Hemi impotent tumas for kipim na gudfala rekod blong pipol wea oketa tekem aetems long kaon. Simpol kredit rekod save osem na taep long figa 18. Imajin tufala pipol long vilej blong Jon – Timoti an Bobo baem na samfala aetems bat no save pei in ful amoant. So Jon letem tufala tekem aetems long kredit wetem deposit fastaem an bae peim na balans leita. Diswan mas rekodim daon insaed lo kredit sels buk o kreditas rekod. Lukim eksampol long daon.

DATE	NAME	DESCRIPTION	RECIPT NUMBER	TOTAL CREDIT \$	PAID \$	BALANCE LEFT \$
27/07/21	BOBO	2 X 5W BULBS - CREDIT	1102	10	5	5
30/07/21	TIMOTHY	20 M ELECTRICAL WIRE AND FAN	1103	50	40	10
2/8/2021	BOBO	2 x 5w bulbs second payment		5	5	0

Bobo clears the full payment of \$10 in second payment

Timothy has to pay \$10 to settle his account

Raetem not blong yiu long hia:

[illegible]

AKTIVITI 4

Ting raonim na keis stadi long daon ia an traem duim na simpol bukkiping o kas rekod kiping tebol. Yu save ask fo help long treina blong yu. Yu also save go baek long olketa nots long buk kiping ia fo helpem yu duim na aktiviti ia. Diswan hemi very yiusful aktiviti fo eni smol bisnis o projek.

Wanfala smol komiuniti projek hemi plan na long wanfala vilej kosap long Visale. Olketa vilejas laek disaed fo setim ap na wanfala komiuniti sola paoa sistim kooperativ. Kost blong oketa panol ia bae hem araon \$300 ij. Ij panol bae save jenereitim araon 300W. Vilej sistim ia nid fo jenereitim araon 3000W paoa. Olketa olso nidim na bateri backup blong araon 10 x 100Ah bateris. Ij bateri hemi kost araon \$450 ij. Waeas an oketa narafala balans blongg sistims kost araon \$2000 wetem simpol laets fo 10 hauses. Oketa lokal teknisians se bae oketa save setim ap na sistim insaed lo 7

deis so oketa teknisians bae harim oketa fo \$50 dolas lo wan dei fo 7 deis. Orijinol sistim bae gavman grant of \$10, 000 na peim. Sola sistim ia bae bateri blo hem nid fo sens in 7 yias taem an fo keita long diswan an oketa nara meintenans, vilij disaed fo jajim na 10 haushols \$2 long wan mans osem wanfala sesaj fo reisim na slen fo sensim na komponents. Everi 6 manis wanfala teknisian hemi nid fo inspektim na sistim long \$220 kost.

Trae an imajin dat yu na akaonts man fo komiuniti sola kooperativ ia. Traem mekem simpol buk kiping rekod beisim na long infomesin fo fas siks manis blo projek ia. Yusim na bukkiping rekod fo disaed na if haushols nid fo inkrisim na kontribusin blong olketa go lo koopereitiv or noma? \$2 lo wan manis peimen yia hem ok noma fo save kipim an menteinim na sola sistim?

[illegible]

KEIS STADI: WANFALA SIMPOL COMPARISIN BLO SOLA MINI –GRID SISTIMS

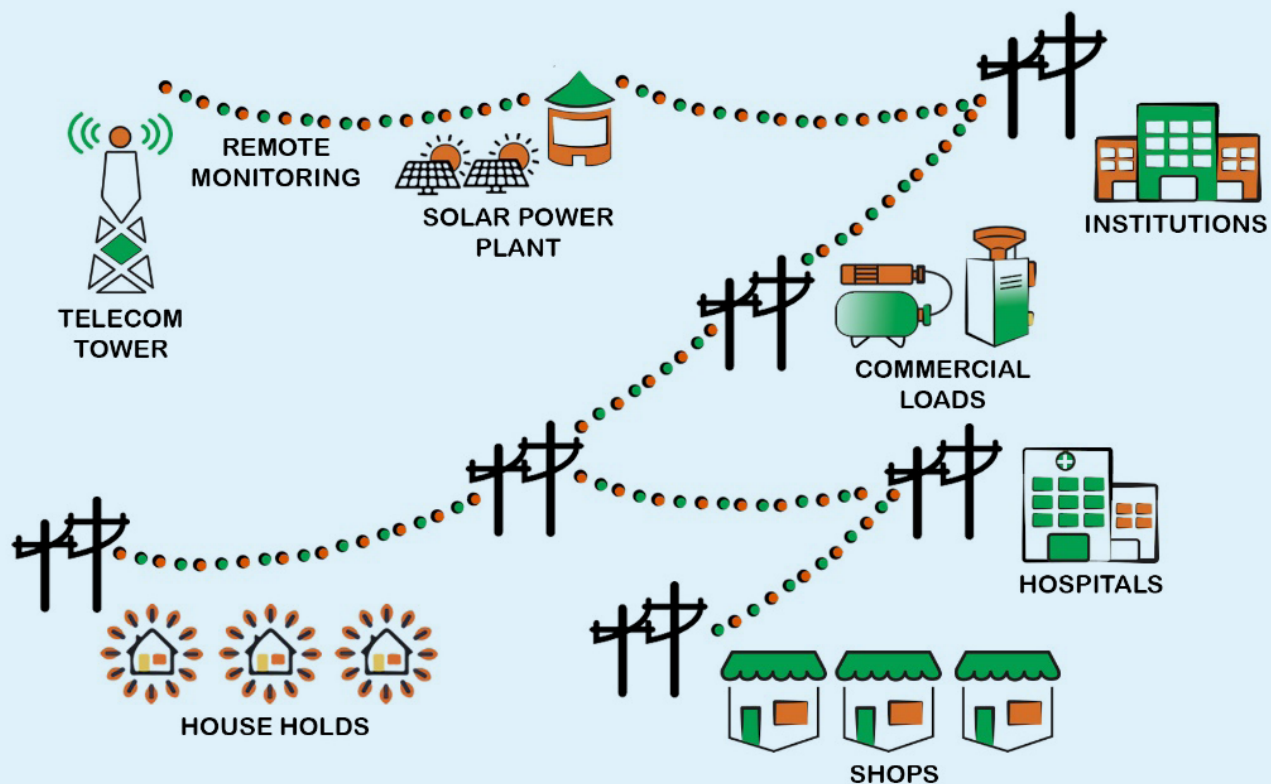
Provaedim paoa go long rimot an rurol lokeisins bae ekstendim na yutiliti grid (paoa laens) hemi dia tumas ia staka taems bikos long bikfala distens, hadfala plesis osem maontens, rivas etc o iven hem maet not hapen if komiuniti ia oketa no wan o si divaedem nao ples ia. So hao nao bae yumi save provaedim na klin yutiliti taep paoa long bikfala skel fo oketa rimot lokeisins osem ia? Yusim mini-grid sistim na ansa.

Taem yumi bin diskasim na samfala sola mini-grid sistim insaed sola modiuks, long modiuks ia, umi bae traem fo lukim na simplified faenansol saed. Bae umi mas traem fo andastandim

na faenansol jalenjes blong putim ap na sistim osem, wanem na hemi tekem fo kipim hem gohet yet an impotently, wanem pat na komiuniti sud pleim fo ensuarim na dat sistim waka fo long taem.

Sola mini-grid sistim hemi wanfala bikfala AC taep sistim wea hemi instol fo paoarim na hol komiuniti an no singol haus

FIGA 19: Sola Mini grid sistims³¹



Kwaliti blong paoa sistim ia hemi semsem noma osem oketa wea grid/paoa line provaedim long eben taon o sitis so yu save paoarim na evri taep AC aplaenses lo diswan but bae garem ristriksin stap fo stopem na pipol traem fo paoarem na bikfala ikwipmen wea bae save ovalodim o spoelem na paoa sistim ia. Sistim ia save inkludim na sam fom blo tariff mitaring sistim dat kaontim na eneji wea ij haushol yusim an ij haushol hemi mas paeim na eneji oketa yusim.

Selen wea oketa kolektim from mitaring sistim ia hemi fo wanfala impotent waka, bikos hem save go baek lo oketa bos wea instolim na mini-grid sistim o oketa nomineited paoa komiti, wea save yusim fo rikavam na sistims kost blo instolesin, duim sistim mantenans, ripleisim pats o save peim oketa nara ekspensis wea tu duim wetem ranem na paoa sistim.

31 Source: <https://www.tauria.com/mini-grid-model/>, Accessed on 4/11/2020.

Yumi duim na kompea an Kontrast eksesaes bitwin tufala sistims. Bae yumi kalem oketa sistim ia osem sistim A an sistim B. Bae yumi trae fo luk na lo simpol faenansol aspek, beisik teknikal infomeisin an oketa jalenjes feis taem blong

instoleisin, opereisin an menteinans periods (taem). Bae yumi diskasim tu wanem nao komiuniti save duim fo katem daon na o risolvim na jalenjes fo benefitim na hol komiuniti. Afta everiting, paoa sistim ia barava benefitim na komiuniti.

Paramitas	Sistim A	Sistim B	Koments
Teknikol Infomeisin			
Sola sistim saez	5 kW	50 kW	Note: (1 kW = 1000 watts). Hemi ia total paoa blo sola instold (not: 1KW = 1000 wats).
Beta kapasiti	45 kWh	200 kWh	Diswan hem total saez blo sola batris instold.
Baekap Disol Jenereita	10 kW	60 kW	Hem ia provaedim na baekap paoa fo rijajim na batris taem weda nomas gud lelebet long taem wea sola PV hem no save jajim gud na batris.
Namba blo haushols konekted	haushols	haushols	Hem ia total namba blo haushols wea paoa saplaed go lo oketa from the sistim.
Faenansol Infomeisin			
Projek Kost	\$800,000 SBD	\$4.5 million SBD	Total kost blo instolim na sistim.
Sos blo fand	Grant (grant)	Grant	Grant mins fanding hemi provaeded ba gavman o narafala oganaeseisin an komiuniti no nid fo pei fo sistim ia.
Kost blo yusim elektrisiti	\$9.00 SBD/unit	\$3.00 SBD/unit	Diswan hem na pe yunit kost blo elektrisiti wea ij haushol mas peim, moa yunit yu yusim, moa yu pei – Not: 1 yunit = 1kWh.
Total Revenu	\$36, 000 SBD/year	\$50,000SBD/year	Diswan hem total mani koleked ij yia from evri haushols fo yusing elektrisiti. (Not: amaont ia hem no fiksd an dipen lo hao mas elektrisiti komiuniti yusim).
Total Expenses (Total Ekspensis)	\$6,500 SBD/year	\$8,700 SBD/year	Diswan hem kost blo baem an transpotim disol an kost blo opereiting an menteining sistim (inkludim salari fo oketa pipol wea meinteinim, monitam, kolekt revenu, intanet jajes an transpot kost inkeis lo ani saet visit etc).
Total Profit (Total Revenu)	\$24,200 SBD/year	\$28,000 SBD/year	Diswan hemi total Revenu – Total Ekspensis.

Diskason Taem

Diskason/ Jalenj	Wat na komiuniti save duim?
1. Projek kosts hemi hae tumas (A: \$800, 000 SBD and B : \$ 4.5 Million SBD) Hem hard tumas fo komiuniti reisim na kain bik slen osem oketa seleva. Iven if oketa laek tekem lon lo bank bae hem hard tumas an bae garem na bikfala risk fo peim baek)	• Luksave dat grants provaedim na bik rilif fo mekem na kain sistim osem instold fo fri fo oketa lo komiuniti, sapos noma bae kain sistim bae no save posibol fo instolim nao. • If yu garem finis kain sistim ia, yu sud ting lo yuseleva osem wan laki man o mere an dum best blo yu fo lukaftam. Rimemba nomad at garem staka komiunities wea no garem garem na kain privilig osem iet ia an oketa save dipen noma oketa smola an moa dia mins blo laet an elektrisiti. • If komiuniti blo yu no garem na elektrisiti, traem waka tugeda wetem na komiuniti lidas an lokol gavman fo putim go na rikwests an proposols. Yu mas peisen bikos oketa samting ia tek taem fo statim. Hemi impotent tumas fo mas waka tugeda osem wan komiuniti. Yuniti hemi nao bikfala strong blo yufala. • Yu mas trae fo open ap an risnabol lo oketa niu aedias an rikwests an kipim gud komiunikeisins wetem na oketa narafala pipol wea trae fo duim gud fo komiuniti blo yu. Eksampol, sapos laek instolim na sola sistim insaed lo komiuniti, bae yu nidim na lan spes. If komiuniti wka tugeda lo yuniti fo provaedim na lan spes den projek ia bae save posibol. Garem na staka keises wea komiunitis lus aot na lo oketa gudfala opotiunitis ia bikos lo insaed konflikts. • Wanem moa nay u save tingim wea bae save helpim komiuniti blo yu garem na hae sans fo mekem na paoa sistim osem ia instold o help mekem na sistim wea stap finis stap long taem.
2. Sistem A hemi smol (5 KW) den sistim B (50 KW) but tufala everiwan sevim na sem namba blo haushol ij (50 haushols ij) Hem minim dat haushols in sistim A save yusim noma lelebet an smol aplaensis (diswan fo stopem na ovalodim na smol sistim) bat haushols in sistim B save yusim na laja sistim witaot ovaloadim na sistim.	Komiuniti mas rialaesim from stat dat solamini-grid sistim ia garem noma limited amaont blo eneji fo fo evriwan yusim. Hem na rison wae yumi evriwan mas menejim na ekspekteisins blo yumi an yusim na elektrisiti taem yumi nidim noma an waesli tu • Bae yumi save na lo saez blo wanfala sistim beis lo staka difren and had samting. Mein idia na hem fo sistim ia yumi shud makem fo save fitim na everi haushol's aplaensis eneji nids, but bae hem hard lelebet fo estimet since komiuniti no garem elektrisiti bifo. Yumi mas duim na wanfala savei fo ij haushol's nid an den save estimetim na eneji yus. If yumi andaestimeit den bae hem risalt na lo smol an lou sistim. Faedim na fand fo smol sistim hem bae isi tumas bat everi haushol bae garem noma elektrisiti wea fitim noma, lo narasaed moa, if yumi ova estimeit, bae yumi kam ap wetem bikfala an moa dia sistim an faedim na fand fo kaen sistim yia bae hem hard lelebet o iven bae no sabve faendim an den end ap yumi no garem ani sistim na. • Osem yu save lukim, diswan hemi wan balans akt yia, yu hard fo go ova smol an yu no save go ova bik tu but nomata osem, sistim wea instol, yumi everiwan mas duim na part blo yumi fo katem daon na eneji yus ia. Lelebet eneji yu yusim, bae hem kostim yu smol an bae sistim stap an waka fo long taem lelebet. Sistim wea hem ovalod bae save nogud kwik taem den andalod wan. • Wanem moa komiuniti save ting abaotim fo meksua yu save duim na eneji seavings, sevim slen an helpim na sola sistim fo stap long taem?

3. Kost blo yusim na elektrisiti lo sistim A hemi haea (\$9.00SBD/yunit) than sistim B kost (\$3.00 SBD/yunit) Wae na garem difrens? an wae na hem no sem fo everi komiunitis?	• Insaed lo aedil wol, kost blo elektrisiti (yumi save osem tariff) hem sem noma for evriwan bat lo realiti, kost blo elektrisiti hemi beisd na lo bisinis modul yumi yusim, wea luk nao lo staka hadfala faktas osem, kost for instolim na sistim, kost blo sevisis lo ples, transpot, wei fo tekem slen (fand) osem grant, lon etc. Evriting ia hem minim dat everi sistim hem spesol an rikwaerim na we blo hem seleva fo waka. • Fo eksampol if wanfala projek hem fanded bae grant, den stating kost blo instolim na sistim ia hem no nid noma fo peim baek, wea hemi minim dat kost blo elektrisiti save go daon (lo). Lo narasaet, if stating sistim ia tekem na lon fo instolim (yumi se \$4.5 milion SBD lon from Bank) den lon bae nid fo peim baek bae kolektim na mani from elektrisiti wea sel ia. Diswan hemi minim dat kost blo elektrisiti baebae haea fo alao fo repeimen hem kwik insaed lo taem wea bank alokeitim • Stori an diskasim (konsalteisin) na kain osem ia hem yusali dan long taem bifo projek hemi stat an kost blo elektrisiti hem olredi diskas wetem evriwan fo trae fo wakem aot weda projek ia bae save afodim o noma. Osem wanfla komiuniti, yufala sud ask fo moa klarifikeisin lo kain osem fo meksua no garem eni hiden costs, hao mas elektrisiti bae yu saven tekem fo wan spesifik amaont (mani) an hao long nao baebae hem save stap beisim na lo oketa aplaensis yu yusim. Yu mas setim na ekspekteisins (wanem yu laekem) beisd lo raetfala infomeisin den yu sapraes bihaen. Osem everitaem, konsevim eneji bae yusim na eneji ifsient aplaensis an limitim na eneji yus blo yu hemi raet fala aproj fo mekem na mani yu spendim fo baem na elektrisiti wea save stap long taem. • Wanem moa komiuniti save duim fo helpem mekem moa fand fo projek fo meksua garem na self-rilaens taem nidim lo fiuja?
4. Tufala sistims ia tufala mekem profit wea hem minim dat oketa mekem moa mani den wat hemi rikwaerim fo ranem na sistim ia . Wae na yumi sud mekem profit? Wae na yumi sud ridiusim na kost blo elektrisiti for mekem noma inaf slen fo kavam na sitim raning ekspensis an no mekem profit ?	• Hemi impotent tumas fo meksua na sistim hem save mekem an sevim inaf slen fo save kavam na ekspens blo ranem sistim an save kolektim ekstra man fo save tek kea na lo oketa nara bikfala costs wea bae save happen. Invetas save brekdaon an bae nid fo fiksime wea baebae hem dia fo duim, najurol disasta save kosim na dameij lo oketa sola panols wea bae nid fo sensim. Iven if sistim no brekdaon o no eni dameij hapen bat bae sistim hemi ol an bae feil leita. • Fo eksampol, if sistim A's bateri hem feil lo 5 yias taem an niu batris kost na hem \$50, 000 SBD fo ripleisim. If Sistim A hemi mekem na \$7,200 SBD/yia, wea hem minim insaed lo 5 yias hemi sevim na $\\$7,200 \times 5 = \\$36,000\text{SBD}$, diswan hemi not inaf fo ripleisim na batris ia an yu bae nidim na ekstra \$14,000 SBD. Wea na bae yu tekem ekstra seleni ia? If yu no save faedim na seleni ia kwiktaem den bae hol sola sitim ia bae sat daon an no aniwana bae garem na eletrisiti insaed lo komiuniti. Semsem noma osem if wanfala inveta hemi kost \$15,000 SBD fo ripleisim, sola panols bae save kostim na \$300 SBD ij fo ripleisim etc. Gavman an ekstenol donas maet no garem na seleni redi an availabol fo help. Osem na hemi impotent tumas fo eni projek fo mas rilae lo hem seleva an save sevim inaf slen fo save peim na pats fo ripleisim an fiksime sistim seleva so dat sitim save ran gud an save kontiniu fo saplaem na elektrisiti go lo hol komiuniti. Hem na risonwae evri projek mas garem na seivings wea kam from profit blo oketa seleva. • Rimemba dat smola sistims prodiusim les eneji, komponents blo oketa hemi smol an no ekspensiv tumas fo ripearim o ripleisim kompead go na lo bikfala sistims. • Wanem moa nay u save tingim wea bae save helpim na komiuniti fo save helpim oketa seleva an meneijim na sola sistim lo wei wea hem sastenabol, wea bae no nidim noma help from aotsaed taem tings hemi brekdaon?

- | | |
|--|---|
| <p>5. Wanem nao samfala jalenjis wea oketa narafala ril-laef projeks feisim wea yumi save lane from an wanem oketa komiunitis save duim fo help faendim solusions.</p> | <ul style="list-style-type: none"> • Komiunitis save involve na lo intenol (insaed) konflikts osem la nisas, bleimim na sistim ona or paoa komiti fo sas tumas, no maneijim gud na fand kolekted, praktis wea hemi dishonest etc, evriwan ia hem save kosim na komuniti fo lus aot. Osem yumi diskasim finis hemi impotent tumas mas fo adastandim na everi saeds lo stori, kipim na gudfala komiunikeisin wetem evriwan involve an meksua everiwan oketa talem tru samting. • Paoa komiti wea tek kea na lo sistim osem insaed lo komiuniti oketa pipol no save andastandim oketa gud an pipol save bleimim oketa fo isus wea oketa no kosim. Hem gudala samting if paoa komiti kipim na gudfala faenansol rekods releit go lo sistim an garem na gudfala komiunikeisin wetem komiuniti osem komiuniti miting lo regiula beisis fo searim an diskasim na faenans an oketa narafala samting. • Haushols traе fo tempa wetem pri-peі mitas o traе fo baepasim fo stilim na elektrisiti witaot peі fo hem, diswan save lid go lo los blo revenu fo hol komiuniti an krietim na bikfala risk bikos no garem funds. Diswan save kosim tu totol satdaon fo staka sistims sins everiwan no peі na fo elektrisiti bikos lo kain dishonest praktis osem. Hemi impotent tumas fo everi komiuniti memba fo save dat onli sos blo revenu hem tru elektrisiti sels, an hemi kritikol, nid fo ranem an meintenim sistim o duim ripeas an sensim (ripleisim) . • Hem garem les teknikol save an kapasiti insaed lo komiuniti fo operet lo raet wei an kipim na sistims wea kosim na staka isus an save iven lid go lo sistim laef hemi katdaon. Samfala taems onli treind pipol insaed lo komiuniti go an no garem aniwan moa fo tek kea lo sistim. Hemi ekspensiv tu fo haerim o tekem kam na teknikol pipol aotsaed lo komiuniti fo assist. Gudfala samting komiuniti save duim noma hem fo tekem onasip an gudfala kea lo sistims an traе fo faendim na asistens fo trenim an apskilim na komiuniti membas lo save hao fo opereit an menteinim sistim ia lo raetfala wei. Everi projeks olweis save garem na kapasiti building an training komponen fo oketa lokols. Komiuniti save kam tugged a fo save nomineitim na not onli oketa man bat moa yuths an mere fo pat lo training ia . Staka taems oketa man an yuths save livim na komiuniti fo traе go faendim na weis fo enim na living fo oketa familis blo oketa an onli oketa woman na stap bihaen. Sapos everiwan na involve lo training bae mekem oketa jenereisin distaem an lo fuja fil pat lo sistim ia an save kontiniu fo tekem kea lo sistim osem ia fo long taem. • Yu save lo eni ada projeks wea garem jalenjes? Hao, yu save sajestim eni solusons fo oketa jalenjes ia tu? |
|--|---|

5

Engeijim Donas
fo fand

Olketa gavman bodis, NGO's, donas etc , ekspektim na fomol intaksin wetem yu fo yu save sikiurim na fands. Komunikaisin pleim impotent rol lo hia. Garem tufala mein weis fo komiunikeit fo engeij wetem hu nao bae dona eijensi.

5.1 Vebol Komunikaisin

Vebol komunikaisin hemi involvim na tok tok wetem gavman eijensis o donas siking fands. Komunikaisan mas bi fomol fo dona fo tekem yu sirias, Yu mas duim lelebet rises abaotim tu projek blo yu wetem impotan dokumens redi an availabol stap so yu save eksplenin na projek kliali. Diswan bae givim na dona konfidens dat yu save nao lo wat yu duim an tok abaot wetem oketa.

5.2 Riten Komunikaisin

Riten komunikaisin na wei fo komiunikeit olowe wetem potensol donas espeseli oketa wea stap farawe. Mos taems dona o fanding eijensis olketa luk na fo tu taeps blo riten dokumens bifo oketa givim na grans. Wanfala projek proposal o projek konsept nout.

5.3 Raeting Proposals

Olketa donas an eijensis save garem na on proposal fomat an templet blo oketa wea yu nid fo filim in taem lukluk fo asistens lo riniuabol eneji projek. Hemi gud fo notim dat diswan lo andanit ia hemi no fo yusim lo projek proposal bat mas yusim na templet wea oketa donas an eijensis givim fo yu yusim.

Nem blo Projek: Givim nem blong projek ia lo hia – e.g. Sola paa fo Viwa Vilej.

Projek Lida: Nem blong man o oganaesesin o vilej lidim na projek – e.g. vilej hedman.

Total amaont rikwested: Total amaont blong seleni yu nidim fo projek yia – e.g. \$ 13,000 USD.

Total Taemfreim blo Projek: Hao long nao bae projek tekem – e.g. 8 mans.

Samari: Givim brif samari blong projek ia. Yusim abaot 300 wods an talem wanem na problem yu trae fo solvim ya. Talem wanem nao yu laek duim an hao na bae hem benefitim komiuniti blong yu.

Problem steitmen: Diskasim na problem yu laek trae fo solvim lo diteil

Projek Gol: Tok abaotim na jenrol gol blo projek blo yu e.g. Fo provaedim na laet fo komiuniti blo mi lo naet so dat oketa pikinini save stadi.

Projek Objektivs: Tok abaotim na wanem yu laek fo duim lo diteil. Oketa samting ia yu sud save mesam e.g Instolim 2000 W sola pv sistim. Osem lo hia ia, yu barava talem klia na saez blo panol lo objektivs blo yu.

Projek aotkams an benefits: Tok abaotim na wanem nao bae en aotkam blo projek ia an hu na bae benefit lo hem.

Waka plan: Lo hia, diskasim na wat kain waka nao bae yu duim and wat taem nao bae yu finisim. Nomoli , yu save mekem tebol na fo diswan.

Oganaesesin Diteils: Diskas abaotim na koopereitiv o vilej o tim fo maneijim an opereitim na projek ia. Raet abaotim na everi save o waka tim blo yu save duim.

Bajet Brekdaon: Yu mas save everi ekspensis wea bae hapen insaed na lo projek ia. Yu maet hav tu go raon an askem na praes blo samfala tings. Listim daon evri ekspensis an trae fo wakem aot eksakli hao mas na ij ekspens bae save kostim yu.

Andanit ia hem wanfala sampol blong projek proposal wea hemi olredi filap fo yu fo save ridim an minim bifo yu trae fo mekem proposal blo yu seleva.

Nem blong Projek: Sola Paoa fo Rok Aelan

Projek Lida: Jon Keri

Total amaont rikwested: \$15,600

Total taemfreim blong Projek: 12 Mans

Samari: Rok aelan no garem na ful elektrisiti distaem. Hem minim oketa pikinini garem lelebet taem fo stadi long naet an pipol bae no save lisen lo redio o TV nius lo dei taem. So kopretiv blo mifala long Rok Aelan wea hemi kol Rok Aealan Kopretiv hem disaed fo instolim nao sola paoa sistim fo garem paoa olowe lo Rok Aelan. Mifala laek fo stopem tu everi smok an nois from jenereita ia fo spoelem nao envaeronmen. Mifala laek fo setim ap na sola fo everi 30 haus long rock aelan wetem laets an TV. Kopretiv ia kolektim \$ 4925 fo projek ia finis an hem rikwestim moa narafala \$15,600 fo komplitim na projek ia.

Problem Steitmen: Dstaem ia garem na intamiten elektrisiti lo Rok Aelan. Gavman Jenereita on kam fo onli 3 aoas deili lo 6pm an stop lo 9pm. Hemi mekem staka nois an smok. Oketa stiudens no save finisim waka blo oketa lo taem. Pipol no save lisen lo redio or TV nius lo deitaem. Kerosin laet tu hemi denjares tumas fo onim lo naet. Fiul an meintenans blo ol jenereita tu hemi ekspensiv kos diswan bae kostim na inkris everi yia. Samfala taem fiul no save araev from meinlan lo taem tu.

Projek Gol: Fo provaedim nao projek wea hem frenli lo envaeronmen an sos blo elektrisiti go long olketa pipol blo Rok Aelan.

Projek Objektivs:

1. Baem na 30 sola paoa sistims of 50 W ij wetem 3 laets.
2. Instolim na 50 W paoa sistims lo evri 30 haoses wetem help blo oketa teknisian.
3. Treinim lokol pipol fo meinteinim na sola paoa sistims.

Projek aotkams an benefits:

Aotkam na hemi fo evri houses long Rok Aelan bae garem nao elektrisiti from sola wea olketa save yiusim ful naet long wei wea hem seif. Olketa pikinini nao bae benefit bikos bae olketa save ridim na buk blong olketa seifli an bae hem klia tu fo olketa rid long naet. Olketa pipol bae save lisen na long impoten nius an sajim nao fon blong olketa so dat oketa save kontak wetem meinlan.

Waka plan:

Tasks to do	Months											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Determine how much power is needed in one home												
Size the solar power system												
Make a list of components needed for the project												
Ask local companies for quotations												
Cooperative discusses and finalizes company to buy from												
Pay the company and ask them to visit the village												
Company technicians arrive and put de lights in all houses												
Technicians mount the solar panel and othe things on houses												
Commissioning of solar power systems and ceremony												

Disfala fom long tebol ia hemi save yius olowe – yu stetim nao olketa waka an aktiviti an seidim nao manis wea olketa waka ia bae yiu duim – yu save yiusim tu wiks o deis insted lo manis.

Oganaesesin Diteils: Rok Aelan Kopretiv luk afta na jenereita long aelan so dat everi haus save garem laet long naet. Everi haushol heds olketa kopretiv membass. Mista Jon Keri hemi nao bos blong Kopretiv. Risentli 10 pipol from kopretiv ia oketa bin trein long sola insaed long komiuniti.

Badjet Brekdaon:

Item	Cost per item \$	Quantity	Total cost \$
50W Solar PV Panel	150/item	30	4500
Charge controller 20A	90/item	30	2700
Battery 30Ah	300 each	30	9000
DC light bulb kit of 3	20 each	30	600
double core 10A wire	1.89 / meter	500	945
Boat hire cost	200 / trip	4	800
Technician cost	80/day	20	1600
Food and catering cost	300/day	1	300
Travelling cost	20/trip	4	80
Total cost			\$20,525

Raetem Not blong yiu long hia:

AKTIVITI 5

- Tingabaotim wanfala posibol riniuabol enoji projek wea save tek ples insaed long komiuniti an save krietim nao benefit fo komiuniti blong yiu. Hem save eniting from sola tu haedro instoleisin o enoji seving treinings.
- Nao ting aboat hao nao bae yiu save fandim nao kain projek ia.
- From list blong olketa donas wea yumi bin diskasim insaed long training ia , pikim aot aniwan an draftim aot na wanfala proposal fo projek ia. Ivin if yu no raetim daon na proposal – raetim daon nao long bulet poens erias wea nid fo adresim anda ij seksin blong proposol ia. Presentim diswan oroli an diskasim long front blong olketa treinis.

Nem blo Projek

Projek Lida

Total amaont rikwestim

Total taemfreim blo projek

Samari

Problem Steitment

Projek Gols

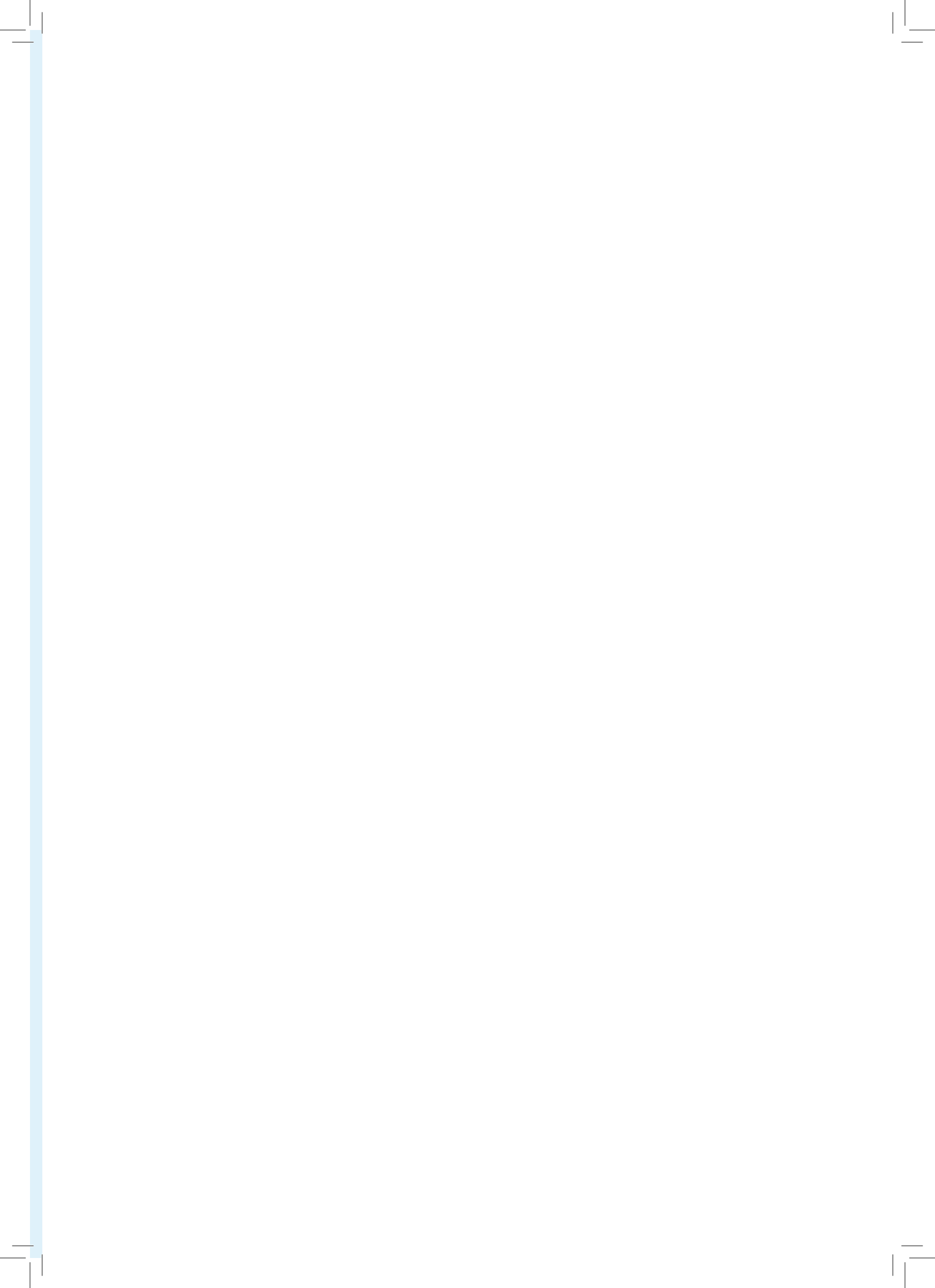
Projek Objektivs

Projek aotkams an benefits

Ples blo waka

Oganaesesin Ditels

Bajet Brekdaon





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