

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

sufta ganvi Tarebis meqanizmi  
saproeqto dokumentis forma **CDM-SSC-PDD**  
versia **03**– Sedis Zal aSi 2006 wl is 22 dekembridan

Sinaarsi

- A. mcire zomis proeqtis saqmianobis zogadi arweril oba
- B. sabaziso monacemebis da monirotingis meTodol ogiis gamoyeneba
- C. proeqtis xangrZl ivoba/sakredito periodi
- D. garemoze zemoqmedeba
- E. dainteresebul i mxareebis Seni Svnebi

dandarTebi

dandarTi 1: mcire zomis proeqtSi monawil eTa sakontaqto informacia

dandarTi 2: informacia saxel mwifo dafinansebis Sesaxeb

dandarTi 3: sabaziso informacia

dandarTi 4: monitoringis informacia

dandarTi 5: datvirTvis faqtori

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

winamdebare dokumentis istoria

versiis nomeri	Tari Ri	dokumentis xel axal i gadaxedvis mi zezi da gadaxedvis aRweril oba
01	21 ianvari, 2003	pirvel adi mi Reba
02	8 ivlisi 2005	<ul style="list-style-type: none"> <li>• sabWo SeTanxmda, rom xel axl a ganxil avda sufta ganviTarebis meqanizms daj gufebul i proeqtebis dokumentacias da Seitanda Sesabamis cvl il ebebs imisaTvis, rom masSi aisaxos is SeniSvnebi da ganmar tebebi, roml ebi c mi ewoda sabWos/komisi as winamdebare dokumentis 01 versi is gamocemis Semdeg.</li> <li>• Sedegad, gadaxedul iqna sufta ganviTarebis meqanizms daj gufebul i proeqtebis dokumentaci is dasasrul ebl ad saWiro instruqciebi me-2 versi is mi xedvi T. sabol oo versi is naxva SeiZl eba saitze: <a href="http://cdm.unfccc.int/Reference/Documents">http://cdm.unfccc.int/Reference/Documents</a>.</li> </ul>
03	2006 wl is 22 dekemberi	<ul style="list-style-type: none"> <li>• komisia SeTanxmda, rom gadaxedavda sufta ganviTarebis meqanizms daj gufebul i proeqtebis dokumentacias mcire-zomis proeqtebi sTvis sufta ganviTarebis meqanizms – proeqtis dokumentaci isa da sufta ganviTarebis meqanizms gaTval iswi nebi T</li> </ul>

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

nawil i **A.** mcire zomis proeqtTan dakavSirebul i saqmianobis zogadi aRweril oba

**A.1** mcire zomis proeqtTan dakavSirebul i saqmianobis dasaxel eba:

>>

saqarTvel os mcire hidro sadgurebis reabil itaciis proeqti. nomeri 2. versia 9. proeqtis monaxazi dasrul ebul ia 2008 wl is 28 Teberval s.

**A.2.** mcire zomis proeqtTan dakavSirebul i saqmianobis aRweril oba:

>>

saqarTvel os mcire hidro sadgurebis reabil itaciis proeqti. nomeri 2 moicavs eqvs, el eqtro qsel Tan mierTebul mcire hidro el eqtro sadgurs (hes): kabal i, kaxareTi, nergeTi (xani - 2), okami, l opota da fSavel i.

winamdebare proeqtis dokumenti aRwers el eqtro qsel Tan mierTebul , eqvs , Camdinare wyal ze momuSave mcire hidro-el eqtro sadgurebis j gufis reabil itacias da axal i sadguris mSenebl obas saqarTvel oSi. eqvsi sadguridan xuTi (kabal i, kaxareTi, nergeTi (xani-2), okami da l opota) gamomuSavebis mocul obis aRsadgenad sareabil itacio samuSaoebs eqvemdebareba. meeqvse ki, fSavel i, axal mSenebl obas warmoadgens. igi arsebul sarwyav sistemaze iqneba mierTebul i. zemoTmoyvanil i mcire sadgurebi saval al o teqnukur mdgomareobaSi imyofebian da amj amd ar funqcionireben. isini reabil itacias saWiroeben. mcire hidrosadgurebi amJamad ar funqcionireben da saremontosaamSenebl o Catareba aucil ebel ia maTi kvl av eqspl uataciaSi dasabrunebl ad. sareabil itacio da samSenebl o samuSaoebi mimdinareobs da navaraudevia, rom hidrosadgurebi funqcionirebas daiweben 2008 wl is Sua periodisaTvis.

aSS-is saerTaSoriso ganviTarebis saagentos (USAID)-s mier dafinansebul i proeqti “energetikul i ganviTareba sofl ad” (REP) xel s uwyobs saqarTvel oSi mcire hesebis reabil itacias. saqarTvel oSi arsebobs mraval i sasofl o Temi, romel Ta energomomargeba metad arasaxarbiel oa. mraval i sasofl o sawarmo da oj axi damokidebul ia sakmaod Zvir da garemos dacvis Tval sazrisiT mavne el .generatorebze el eqtroenergiis gamosamuSavebl ad da ukanonod moWril SeSaze gaTbobisaTvis. proeqti “energetikul i ganviTareba sofl ad” (REP) saqarTvel oSi miznad isaxavs qveynis Sida Sesazl ebl obebis gazrda mcire hidro energoresursebis gamoyenebisa da sofl ad energoefturobis potencial is real izebis kuTxiT. sasofl o energo proeqtis mTavari amocanebia: 1) sasofl o raionebis gazrdil i energomomargeba; 2) adgil obrivi energowarmoebis gaumj obesebul i marTva; 3) qveynis Sida Sesazl ebl obebis gaumj obeseba sasofl o sazogadoebesSi ganaxl ebadi energoresursebis ganviTarebisa da moxmarebisaTvis; 4) adgil obrivi energoresursebis bazis ufro efturad gamoyenebisa da dacvis Sesazl ebl obebis gazrda.

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

qveMoT, winamdebare saproeqto dokumentSi warmodgenil i eqvsi proeqti aRweril ia cal -cal ke:

*hidrosadguris dasaxel eba: kabal i hesi*

kabal is mcire hesis mfl obel ia Sps. kabal ihesi-2006. igi mdebareobs mdinare kabal ze da eqspl uataciaSi Sevida 1953 wel s. misi Tavdapirvel i mizani iyo miwodebina el eqtro energia axl o mdebare sofl ebisaTvis da, amastanave, xel i Seewyo regionSi sofl is meurneobasTan dakavSirebul i saqmianobisaTvis. igi Sedgeba dabal i wyal mimRebisagan, roml is simaRI e 5.4 metria, xol o sigrZe – 66.4 metri. wyl is xarji - 2.5 m<sup>3</sup>/wm. el eqtro sadguri amJamad aRWurvil ia 3 horizontal uri, frensisis tipis turbiniT, sul 1,500 kW (500 kW TiTo).

am mcire hesis erTi danadgari (danadgari 1) muSaobda srul i datvirTviT - 500 kW, 2006 wl is maisamde. bol o Svidi wl is ganmavl obaSi (2000-2006) el eqtro energiis saSual o wl iuri gamomuSaveba aRwevda 2.58 milion kvtsT-s. ori danadgari (danadgari 2 da danadgari 3) gaCerde 2001 wel s. asakis, araswori eqspl uataciisa da cveTis gamo mcire hesi amJamad ar funqcionirebs. saWiroa mcire hesi seriozul i saremonto samuSaoebis Catareba. wyal mimRebi Zl ieraa dazianebul i, wina mxare gadarecxilia, wyal sataria da el eqtro sadguri saWiroeben SekeTebas da ganaxl ebas. yvel a turbina (RerZi, muSaTval i da regul atori) saWiroebs SekeTebas. reabil itaciis Semdeg misi jamuri simZl avre iqneba 1,500 kW da wl iurad navaraudevia, rom gamoimuSavebs 6 milion kvtsT-s. sadguris reabilitacia ar moaxdens gavlenas wyal gadasaSvebis mTli an simaRI eze an ar Sevl is mis Tavdapirvel fizikur TviSebebs.

es mcire hesi l agodexis raionSi momuSave erTaderTi sadguria. igi 5 wl is ijariT gadaeca Sps "saqarTvel os rkinigzas" 2005 wl is oqtombris dasawyisSi. sareabilitacio da saremonto samuSaoebis damTavrebis Semdeg, el eqtro energias gamoiyenebs Sps "saqarTvel os rkinigza" (49 %), xol o danarCens miawdian yazbegis l udsaxarSs (13 %), saqaeronavigacias (30 %), "sante rZis produqtebs" (8 %), an sxva myidvel ebs kaxeTis el eqtro energiis sadistribucio kompaniis (KEDC) meSveobiT

*sadguris dasaxel eba: kaxareTis mcire hesi*

kaxareTis mcire hesis mfl obel ia Sps. angl o-mesxeTi. igi mdebareobs mdinare kvabl ovanze da eqspl uataciaSi Sevida 1957 wel s. misi Tavdapirvel i mizani iyo miwodebina el eqtro energia axl o mdebare sofl ebisaTvis da regionSi sofl is meurneobis saqmianobisaTvis xel is Sewyoba. igi Sedgeba 5 metri simaRI is da 40 metri sigrZis dabal i wyal gadasaSvebidan xarjiT 6.2 m<sup>3</sup>/wamSi. el eqtro sadguri amJamad aRWurvil ia 2 horizontal uri hidro danadgariT, frensisis tipis turbinebiT sul 2,080 kW (1040 kW TiTo).

mcire hesi ar funqcionirebs 2001 wl is Semdeg. sadgurze uaryofiTad imoqmeda gaumarTaobam da bol odroindel i wyal didobebiT gamowveul ma dazianebebma. amJamindel i sareabilitacio gegmis fargl ebSi moxdeba gacveTil i generatorebis, wyal gadasaSvebis, saturbino wyal satarisa da el eqtro sadguris Senobis SekeTeba. reabil itaciis Semdeg sadguris mTli ani simZl avre

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

iqneba 2,080 kvt wel iwadSi saSual od 10.84 mil ion i kil ovatisaaTi gamomuSavebiT. sadguris reabilitacia ar moaxdens zegavl enas misi wyal gadasaSvebis simaRI eze an ar Secvl is mis mTI ian fizikur maxasiaTebI ebs/Tvisebebs.

reabilitaciis Semdeg am sadguris mier gamomuSavebul i el eqtro energia gamoyenebul i iqneba adgil obrivi sadistribucio kompaniis mier, gaerTianebul i energo sadistribucio kompania.

*sadguris dasaxel eba: nergeTis (xani-2) mcire hesi*

nergeTis (xani-2) mcire hesis mfl obel ia saTemo organizacia "ubani 2004", romel ic mdebareobs mdinare xaniswyal ze. igi eqspl uataciaSi Sevida 1952 wel s da misi Tavdapirvel i mizani gaxl daT mimdebare sofl ebis el eqtro energiIT momarageba da raionSi sasofl o-sameurneo saqmianobis xel Sewyoba. igi Sedgeba 46 metri sigrZis betonis dabal i wyal mimRebi kaSxal isagan. el eqtro sadguri amJamad aRWurvil ia erTi 10 kvt-iani turbiniT yinul isa da nayinis sawarmoebI ad.

nergeTi mcire hesi funqcionirebda 1964 wl amde. 1996 wel s mcire sawarmo Sps xani-2-ma SeierTa nergeTi (xani-2). 2000 wel s ki, igi gaixsna, rogorc yinul is mwarmoebel i qarxana, romel ic dReSi erT tonas awarmoebda. asakisa da Sesabamisi saremonto samuSaoebis nakl ebobis gamo misi kaSxal i, arxi da wyl is mimRebi seriozul ad dazianda. amJamad, mas ar miwodeba saWi roadenobiT wyal i, rac misi dangrevis real ur saSiSroebas qmnis. Sesabamisad, saTao nageboba saWi roebis seriozul SekeTebas. unda damontaJdes axal i 300 kW-iani frensisis tipis turbina, xol o arsebul i yinul is saamgro unda daingres. reabilitaciis Semdeg misi mTI iani simZI avre iqneba 300 kW, xol o wel iwadSi saSual o generacia miaRwevs 2.1. milion kvt.sT-s. sadguris reabilitacia ar moaxdens zegavl enas sadguris wyal gadasaSvebis mTI ian simaRI eze an ar Secvl is mis Tavdapirvel fizikur maxasiaTebI ebs.

reabilitaciis Semdeg sadguris mier gamomuSavebul i el eqtro energia gamoyenebul i iqneba gaerTaianebul i sadistribucio kompaniis (UEDC) mier.

*sadguris dasaxel eba: okamis mcire hesi*

okamis mcire hesma, romel sac fl obs Sps "ama", mdebareobs mdinare qsanze. misi mSenebl oba daiwyes 2003 wel s da ver daamTavres SezRudul i finansebis gamo. amdenad, sadgurs arasodes ar gamoumuSavebia el eqtro energia. misi umTavresi mizani iyo el eqtro energia miwodebnina axl o-maxl o sofl ebisaTvis da raionSi biznesis saqmianobisaTvis Seewyo xel i. igi agebul ia Tezi-okami sarwyav sistemaze wyl is xarjiT 2 m<sup>3</sup>/wuTSi. sadguris Semdegi komponentebi srul ad an nawil obriv aigo: sadawneo auzis rezervuari/avzi hidroizol aciis kameriT da saavario wyal gasaSvebiT, saturbino wyal satari da ori frensisis tipis turbiniT. el eqtro sadguri amJamad aRWurvil ia ori horizontal uri hidro-danadgariT, frensisis tipis turbinebiT, srul i simZI avriT 1,600 kW (TiTo 800 kW).

am sadgurs arasodes umuSavia, magram arc Zal ian dazianebul ia. igi saWi roebis umniSvnel o SekeTebas da samSenebl o samuSaoebis. amJamad, damontaJebul ia ori

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

sinqronul i Zrava, roml ebic generatoris funqcias ver Seasrul eben siCqaris gadamrTvel isa da aRgznebis sistemebis gareSe. ori hidro generatori (TiTo 800 kvT) aRmgznebebTan erTad unda iqnas SeZenil i da damontaJebul i. reabil itaciis Semdeg mcire hidro el eqtro sadguris mTI iani simZI avre iqneba 1,600 kvT, jamuri saSual o wl iuri generaci iT 10 milioni kvT.sT.. sadguris reabil itacia ar moaxdens zegavl enas sadguris wyal gadasaSvebis mTI ian simaRI eze an ar Secvl is mis Tavdapirvel fizikur maxasiaTebI ebs.

reabil itaciis Semdeg sadguris mier gamomuSavebul i el eqtro energia gamoyenebul i iqneba sofel okamis mier (2000 koml i) da Rvinis, cementisa da asfal tis sadgurebis mier adgil obrivi sadistribucio kompaniis "kaspi energosistema"-s meSveobiT, romel ic warmoadgens gaerTianebul i sadistribucio kompaniis fil ial s.

*sadguris dasaxel eba: l opotas mcire hesi*

l opotas mcire hesi, romel sac fl obs Sps. "energia", mdebareobs mdinare l opotaze. misi mSenebl oba daiwyes 2003 wel s da ver daamTavres SezRudul i finansebis gamo. igi gaxl avT derivaciul i tipis hidro el eqtro sadguri, romel ic Sedgeba 6.4. m. siganis, 5 m. sigrZisa da 4 m. simaRI is sadawnevo auzisgan, sal eqarisgan, dabal i kaSxal isgan, romel ic simaRI iT eqvsi metria, siganeSi 6 metri, sigrZeSi ki 36 metri, wyal is xarji T - 4.1 m<sup>3</sup>/wamSi. el eqtro sadguris Senoba aRWurvil ia 2 horizontal uri hidro danadgar iT, frensisis tipis turbinebiT, rac sul udris 2,000 kW (1,000 kW TiTo).

hidro el eqtro sadguri ar aris sagrZnobl ad dazianebul i. mas sWirdeba umniSvnel o SekeTeba. aseve saWiroa kaSxal is ageba da el eqtro danadgarebis Seqmna. reabil itaciis Semdeg misi mTI iani simZI avre iqneba 2,000 kvT, wl iuri savaraudo gamomuSavebiT 13 mil ioni kvT.sT. sadguris reabil itacia ar moaxdens zegavl enas sadguris wyal gadasaSvebis mTI ian simaRI eze an ar Secvl is mis Tavdapirvel fizikur maxasiaTebI ebs.

l opota am raionSi erTad-erTi hidro sadguria. reabil itaciis Semdeg, gamomuSavebul i el eqtro energia gamoyenebul i iqneba adgil obrivi sawarmoebis mier: GWS – Rvinis qarxana, Tel avis Rvinis qarxana, marmaril os karieri, Tel ianis Rvinis qarxana gaerTianebul i sadistribucio kompaniebis meSveobiT.

*sadguris dasaxel eba: fSavel is mcire hesi*

fSavel is hidro el eqtro sadguris mSenebl oba dagegmil ia arsebul naurdal is sarwyav sistemaze, romel ic mdebareobs mdinare storze. naurdal is sarwyavi sistema gamoiyeneba Tel avis raionis 6.3 aTasi heqtari miwis mosarwyavad (mSenebl obis pirvel i stadia). sarwyavi sistema Sedgeba Semdegi Senobanagebobebisagan: wyal gadasaSvebi kaSxal isgan fariT SemSvebis marcxena mxares, wyal satarisgan erTi gvirabiT. amJamad sistemiT sargebl obs mel ioraciis departamenti. naurdal is mTavari arxis xarj ia 11 m<sup>3</sup>/wamSi, xol o arsebul i sarwyavi sistemis wyl is maqsimal uri moTxovnaa 4.2 m<sup>3</sup>/wamSi.

unda aSendes mcire hidro el eqtro sadguri erTi 500 kW-iani erTi frensisis tipis turbiniT. sadguris mTI iani simZI avre iqneba 500kvT. saSual o wl iuri

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

gamomuSavebiT 2.8 mil ionikvt.sT. sadguris mSenebl oba ar moaxdens zegavl enas sadguris wyal gadasaSvebis mTI ian simaRI eze an ar Secvl is mis Tavdapirvel fizikur maxasiaTebI ebs. generirebul i el eqtro energiis moxmareba daiwyeba adgil obrivi sadistribucio kompaniis (KEDC) mier.

*proeqtTan dakavSirebul i saqmi anobis mizani*

winamdebare proeqtis dokumentaciaSi aRweril i proeqtTan dakavSirebul i saqmi anobis mizania:

- mcire hidro sadgurebis amoqmedeba, roml ebic amJamad arseboben, magram ar funqcionireben, anda arasdros ufunqcioniriaT.
- reabil itaciis Semdeg 6 mcire-hidro sadguris simZI avris gazrda 7.98 mgvt-iT da saqarTvel os el eqtro qsel isaTvis damatebiT wl iurad 45.3 mil ionil kil ovatsaaTi energiis miwodeba

warmodgenil i sufta ganviTarebis meqanizmis proeqtiT gaTval iswinebul i saqmi anoba saSual ebas miscems mcire hidro sadgurebs gamoimuSaon el eqtro energia hidro resursebis gamoyenebiT, gamomuSavebul i energia mihyidon el eqtro qsel s da Seitanon Sesabamisi wvl il i gl obal uri kl imatis cvl il ebis Sencirebis saqmeSi. es ganaxl ebadi energia Caanacvl ebs Termul i el eqtro sadguris mier gamomuSavebul energias da Seamcirebs saqarTvel os damokidebul ebas wiaRiseul i sawavis saSual ebiT gamomuSavebul i el etroenergiaze. saTburis gazebis mTI iani Sencireba sakredito periodis ganmavl obaSi wel iwadSi saSual od udris CO<sub>2</sub> eqval ents (CO<sub>2</sub>e) 14, 270 tonas an 99, 890 tona CO<sub>2</sub>e pirvel i sakredito periodis, 7 wl is ganmavl obaSi ufro naxSirbad intesiuri el eqtro energiis Canacvl ebis xarj ze.

*mdgradi ganviTarebis xel Sewyoba*

proeqtis monawil eTa miXedviT, winamdebare proeqti xel s uwyobs saqarTvel os mdgrad ganviTarebas. kerZod, proeqti xel s uwyobs mdgradi ganviTarebis Semdeg sam aspeqts: ekonomikuri, garemos dacvsa da social uri:

*ekonomikuri aspeqti*

- *zegavl ena regionze*: proeqti xorciel deba saqarTvel os sasofl o, SedarebiT araxel sayrel ekonomikur mdgomareobaSi myof regionebsi. Sesabamisad, proeqtis Sedegad mozidul i investiciebi dadebiT zegavl enas moaxdens adgil obrivi ekonomikis ganviTarebaze.
- *dasaqmeba*: mcire hesis sxvadasxva obieqtebze samSenebl o samuSaoebis msvl el obisas gaCndeba samuSao adgil ebi. am sadgurebis amuSaveba aseve warmoqmnis dasaqmebis axal Sesazl ebl obebs regionis saTvis.
- *proeqtis zegavl ena sxva mimdinare seqtorul programebze da gegmebze*: proeqti warmoadgens ufro farTemasStabiani samTavrobo programis nawil s, roml is mizania Seamciros saqarTvel os damokidebul eba energiis pirvel ad

wyaroebze sul cota 15 megavatiani mini hidro el etro generaciis sadguris mSenebl obisa da reabilitaciis meSveobiT, raTa daexmaros saqarTvel os miaRwios saqarTvel os energetikis saministros mier dasaxul mizans "uzrunvel yos energetikis usafRTxoeba arsebul i energo simZl avris ganaxl ebiT da axal i sadgurebis mSenebl obiT". (saqarTvel os energetikis saxel mwifo seqtoris ZiriTadi mimarTul ebebi). proeqti diversificirebas ukeTebis el eqtro generaciis wyaroebs da amcirebs damokidebul ebas importirebul bunebriv airze. imis gaTval iswinebiT, rom saqarTvel os energetikis seqtori Zl ier damokidebul ia importirebul airze, romel ic asrul ebs el . energiis damxmare wyaros funqcias hesebis saSual ebiT gamomuSavebul i el eqtroenergiisTvis deficitis pirobebSi (da roml is importisaTvis, qveynis mier yvel a importirebul produqtebs Soris, yvel aze meti Tanxebi ixarj eba), gazis importis Semicireba mniSvel ovan dadebiT zegavl enas moaxdens saqarTvel os savaWro bal ansze.

garemos dacviTi aspeqtebi

- *wiaRiseul i sawwavis Canacvl eba*: proeqti Caenacvl eba saqarTvel oSi el eqtro sistemis zRvrul el eqtro sadgurebs. eseni gaxl avT Termul i sadgurebi, roml ebic bunebrivi airs moixmaren
- *haeris xarixi*: proeqtis saSual ebiT Sesazl ebel ia wl iurad 14,270 tCO<sub>2</sub> –ze metis gafrqvevis Semicireba. garda amisa, proeqtis saSual ebiT moxdeba sxva damabnZurebel is (NO<sub>x</sub>, SO<sub>2</sub>, VOCs) emisiaTa Semicireba, roml ebic dakavSirebul ia saqarTvel oSi el eqtrogeneraciasTan da amit pozitiur gavl enas axdens adgil obrivi mosaxl eobis j anmrTel obaze
- *garemos dacvis konvenciebSi wvili is Setana*: proeqti xel s Seuwyobs kiotos protokol is miznebis miRwevas saTburis gazebis emisiebis Semicirebis gziT.

social uri aspeqtebi

- *dainteresebul i mxareebis wvili is*: moxda dainteresebul i mxareebis komentarebis moTxovna aSS-is saerTaSoriso ganviTarebis saagentos programis "energetikis ganviTareba sofl ad" saSual ebiT. momzadda detal uri programul i garemosdacviTi Sefasebis dokumenti, romel ic 2007 wl is Teberval Si ganTavsda energoefturobis centris veb-gverdze komentarebis moTxovni<sup>1</sup>. informacia proeqtisa da programul i garemos Sefasebis dokumentis Sesaxeb aseve daigzavna energoefturobis centris yovel kvireul i biul etenis da kavkasiis garemos dacvis arasamTavrobo organizaciaTa qsel is (CENN) yovel dRiuri daijestis meSveobiT 2007 wl is Teberval Si. dRemde komentarebi ar aris miRebul i. proeqtis monawil eebi gaiTval iswineben nebis mier komentars, romel sac momaval Si miiReben.

<sup>1</sup> energoefturobis centri, saqarTvel o, damatebiTi informaciisaTvis, ixil eT:  
<http://www.eecgeo.org/en/projects.htm>



**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

- *xel misawvdomoba ukeTesi sacxovrebel i pirobebisadmi*: proeqti zogadad xel s uwyobs qveyanaSi gazrdil energousafirTxoebas, gansakuTrebiT ki, regionebsi, radganac hesebi gaumj obeseben energomomargebis saimedoobas.
- *intel eqtual uri Sesazl ebl obebis ganviTareba*. adgil obrivi muSaxel is treningi da maTi Sesazl ebl obebis zrda sasofl o energo programis meSveobiT, roml is mixedviTac xdeba am hesebis rehabilitacia, Sesabamis wl il s Seitans saqarTvel os intel eqtual uri Sesazl ebl obebis ganviTarebaSi.

**A.3.** proeqtis monawil eni:

>>

dainteresebul i mxaris dasaxel eba (mimRebi) miuTitebs mimReb mxareze	kerZo da/saj aro piri (pirebi) proeqtis monawil e (monawil eni) (*) (Sesabamisad)	gTxovT, miuTitoT Sesabamis mxares surs Tu ara moxsenebul iyos, rogorc proeqtis monawil e (diax/ara)
saqarTvel o (mimRebi)	energoefeqturobis centri saqarTvel o	ara
niderl andebis saxel mwifo	rekonstruqciisa da ganviTarebis saerTaSoriso banki, rogorc sazogadoebrivi ganviTarebis naxSirbadis Fondis meurve	di ax
(*) sufta ganviTarebis meqanizms modal obebsa da procedurebTan Sesabamisad, sufta ganviTarebis meqanizms proeqtis dokumentaciis saj arod gamocxadebis dros damtkicebis etapze, Sesabamisma mxarem, romel ic CarTul ia saqmianobaSi, Sesazl oa warmoadginos an ara misi Tanxmoba. registraciis moTxovnis dros, saWiroa yvel a saqmeSi CarTul i mxaris Tanxmoba		

**A.4.** mcire-zomis proeqtis saqmianobis teqnikuri aRweril oba:

**A.4.1.** mcire-zomis proeqtis adgil mdebareoba:

>>

kabal is mcire hesi mdebareobs mdinare kabal is marcxena sanapiroze, sofel baisubnidan 8 kil ometris daSorebiT kaxeTis regionSi, aRmosavl eT saqarTvel o

kaxareTis mcire hesi mdebareobs sofel kaxareTSi adigenis raionSi, samcxelj avaxeTSi, aRmosavl eT saqarTvel o

nergeTis (xani-2) mcire hesi aris hidro el eqtro sadguris kaskadis pirvel i done, romel ic mdebareobs mdinare xaniswyal ze baRdatis raionSi, imereTis regionSi, dasavl eT saqarTvel oSi

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

okamis mcire hesi mdebareobs sofel okamSi kaspis raionSi Sida qarTI is regionSi aRmosavl eT saqarTvel oSi

I opotas mcire hesi mdebareobs Tbil isidan 115 km. manZil ze sofel nafareul Si, Tel avis raionSi, kaxeTis regionSi, aRmosavl eT saqarTvel oSi

fSavel is mcire hesi dagegmilia arsebul naurdal is sarwyav sistemaze, romelic mdebareobs mdinare storze, sofel fSavel is Crdil o-aRmosavl eTiT kaxeTis regionis Tel avis raionSi, aRmosavl eT saqarTvel oSi. mdinare stori saTaves iRebs kavkasionis mTis kal Tis samxreT ganStoebaSi, eSveba didgverdis mTis samxreTiT, 2950 metri zRvis donidan da uerTdeba mdinare al azans marcxena mxridan, 4 kil ometri sofel sanioreze.

<b>A.4.1.1.</b>	mimRebi mxare (mxareebi):
-----------------	---------------------------

>>

saqarTvel o warmoadgens mi mReb qveyanas.

2003 wel s, sufta ganviTarebis meqanizmis modal obebisa da procedurebis Sesabamisad kl imatis cvl il ebis erovnul saagentos (NACC) mi eniWa erovnul i avtorizebul i organos (DNA) funqcia. 2005 wl is ianvarSi mTavrobis axal i rezol uciis Tanaxmad, es ufl ebamosil eba gadaeca saqarTvel os garemos dacvisa da bunebrivi resursebis saministros.

<b>A.4.1.2.</b>	regioni/Stati/provincia da a.S.:
-----------------	----------------------------------

>>

mcire hidro - el eqtro sadguri	regioni
kabal is mc hesi	aRmosavl eT saqarTvel o, I agodexis raioni, kaxeTis regionis
kaxareTis mc.hesi	aRmosavl eT saqarTvel o, samcxej avaxeTis regionis adigenis raioni
nergeTis (xani - 2) mc.hesi	dasavl eT saqarTvel o. imereTis regionis baRdaTis raioni
okamis mc.hesi	aRmosavl eT saqarTvel o, Sida qarTI is regionis kaspis raioni
I opotas mc.hesi	kaxeTis regionis Tel avis raioni, aRmosavl eT saqarTvel o
fSavel is mc.hesi	aRmosavl eT saqarTvel o kaxeTis regionis Tel avis raioni,

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

**A.4.1.3.** qal aqi/Temi da a.S.

>>

**A.4.1.4.** informacia fizikuri adgil mdebareobis SesaxeB, maT Soris is informacia, roml is meSveobiTac Sesazl ebel ia mcire proeqteBTan dakavSirebul i saqmianobis cal saxa identifikacia



surati 1: mcire hidro proeqtebis ganl ageba ruqaze saqarTvel oSi

mcire hesis dasaxel eba	grZedi	ganedi
kabal is mcire hesi	41° 54.26' 2'' N	46° 10.00' 1'' E
kaxareTis mcire hesi	41° 35' 39.7'' N	42° 44' 53.1'' E
l opotas mcire hesi	42° 03' 45.7'' N	45° 32' 19.9'' E
okamis mcire hesi	41° 59' 04.0'' N	44° 29' 34.0'' E
nergeTis (xani-2) mcire hesi	42° 03' 46.3'' N	42° 49' 44.4'' E
fSavel is mcire hesi	42° 55.8' 2'' N	42° 26.4' 0'' E

**A.4.2.** mcire zomis proeqtis tipi da kategoria (kategoriebi) da teqnoL ogia/zomebi :

>>

*tipi da kategoria*

proeqti ganxil eba sufta ganvitarebis meqniZmis mcire zomis proeqtad da Sesabamisad masze vrcel deba UNFCCC-is gamartivebul i modal obebi da procedurebi

eqsive daj gufebul i mcire hesis mTI iani simZl avris namati reabil itaciis Semdeg 7.98 megavati, rac nakl ebia mcire zomis proeqtebisatvis gansazRvrul maqsimal urad dasaSveb 15 megavati simZl avris maCvnebel ze. amdenad, proeqtTan

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

dakavSirebul i saqmianoba ganxil ul ia, rogorc sufTa ganviTarebis meqanizms mcire zomis proeqti.

eqvsive el eqtrosadguri el eqtroqsel Tan mierTebul i energiis ganaxl ebadi wyarodan el eqtroenergiis generaciis proeqtebia. proeqti iyenebs hidro potencial s el eqtro energiis gamosamuSavebl ad da gamomuSavebul el eqtro-energiis miyidid adgil obriv sadistribucio kompaniebs. sadistribucio kompaniebi ki, hidro el eqtro sadgurebidan el eqtro energiis miawdian sabol oo momxmarebl ebs (adgil obrivi Temi da regionSi arsebul i mcire biznesi), roml ebic mierTebul i arian el eqtro gadamcem qsel Tan. zogierTi hesi aformebs energiis Sesyidvis xel Sekrul ebas pirdapir sabol oo momxmarebl ebTan am regionSi. aseT dros, adgil obrivma sadistribucio kompaniam unda uzrunvel yos sabol oo momxmarebl ebs el eqtroenergiit momarageba, radganac sadgurebi el eqtro qsel Tan mierTebul i mcire hesiebia. arc erT hess ar gaaCnia pirdapiri kavSiri sabol oo momxmarebl ebTan.

mcire zomis sufTa ganviTarebis meqanizms modal obebis mixedviT, proeqtis saqmianoba Semdeg kategori ebad iyofa:

*moqmedebis sfero 1 : seqtorul i moqmedebis sfero – energetika (ganaxl ebadi/ara-ganaxl ebadi wyaroebi)*

*tipi 1 : kategoria ID – energiis ganaxl ebadi wyarodan el eqtroenergiis generacia misi el eqtroqsel isaTvis miwodebisaTvis*

*teqno logia*

teqno logiur, anu energiis gamomuSavebis procesSi gamoyenebul ia hidrosesurbebi imisaTvis, rom moxdes wyl is dinebis potenciuri energiis gardaqmna meqanikur energiad hidroturbinebis gamoyenebiT da Semdeg generatorebis gamoyenebiT misi el eqtrul energiad gardaqmna. gamomuSavebul i energia gadaecema saqarTvel os energosistemis uaxl oesi el eqtro gadamcemi qsel is qvesadgurs.

gamosayenebel i teqno logiebi ukavSirdeba hesebis reabilitacias imistvis, rom Sesazl ebel i iyos maTi komerciul i miznebisatvis gamoyeneba. TiToeul i hesis reabilitacia da ganaxl eba gul isxmobs bevri imgvari teqniki samuSaoebis Catarebas, rogor ebicaa: arsebul i generatorebis simZl avris modernizeba, el eqtro Zabvis maregul irebel i danadgarisa da aRgznebis sistemebis, el eqtro aparaturis/aqsesuarebis, blokis martvis, dacvis, monitoringis sistemebis, sicqaris regul atoris da l il vebis SekeTeba anda gamocvl a.

kabal is mcire hidro sadgurma muSaoba daiwyo 1953 wel s. igi amJamad aRar funqcionirebs. reabilitaciis gegma moicavs wyl mimRebis, tirol is tipis kaSxal is, wyl is sal eqari avzis, sicqarisa da nakadis maregul irebel i faris garemontebas; kal apotis gawmendas; wyal didobisagan damcavi kedl ebs agebas; sadawneo wyal sadenisa da saTao nagebobebis dazianebul i nawil ebs aRdgenas; hidro-meqanikuri danadgarebis reabilitacia saWiroebs SekeTebas special izirebul qarxnebsi, wyal sadeni arxebis, maregul irebl is, sayrdenis, sicqaris maregul irebl is, manometrisa da taqometris, Zravisa da mimmarTvel is

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

SekeTebasa da gamocvl as. mcire hehis Senobis SekeTebasTan erTad saWiroa 10kv-iani Zabvis gamanawil ebel i mowyobil obis SekeTebac

kaxareTis mcire hidro el eqtro sadgurma muSaoba daiwyo 1957 wel s. igi amJamad aRar funzionirebs. reabil itaciis gegma moicavs dangreul i wyal gadasaSvebis, arxisa da wyl mimRebis saremonto samuSaoebs. aseve saWiroa samarTavi faris da sadawneo wyal sadenis remonti. umniSvnel o SekeTeba sWirdeba el eqtro sadguris Senobas da hidro meqanikuri mowyobil obac saWiroebs reabil itacias orive turbinis frTebis, mTavar sarqvel ebs, l il vebs, regul atorebs, xol o Termo-signal izaciis, Termo-kontrol is sistemebs sWirdebaT Secvl a. saWiroa manometrebisa da vakuumis metrebis Sesyidva orive turbinisaTvis, maRal Zabvis aparaturis Secvl a da kapital uri Seremonteba. aseve unda moxdebs wyal sadeniebis, avzebisa da aS. remonti da gawmenda.

l opotas mc. hidro el eqtro sadguris mSenebl oba daiwyo 2003 wel s. mSenebl obis procesSi, igi dazianda wyal didobis gamo. amdenad, misi mSenebl oba ver dasrul da finansebis nakl ebobis gamo. reabil itaciis gegma moicavs dabal i wyal gasaSvebis aSenebas da mis aRWurvas saavario da dinebis maregul irebel i farebiT. SekeTebis samuSaoebis Sedegad moxdeba sal eqari avzis Secvl a da mas daemateba meore kamera. dazianebul i sadawneo wyal sadeni unda aSendes da unda daematos temperaturul i gafarToebis kvanZebi. el eqtro sadguri saWiroebs mcire saremonto samuSaoebs. ZiriTadi el eqtro sqemac saWiroebs ganaxl ebs da saWiroa maRal i Zabvis sistemebis da kabel ebis montaJi.

okamis mcire hesi mdebareobs Tezi-okamis sairigacio sistemaze, magram finansebis simciris gamo ver moxerxda misi samSenebl o samuSaoebis dasrul eba. sadgurs amJamad gaaCnia Semdegi komponentebi, roml ebic saWiroeben SekeTebasa da reabil itacias: sadawneo auzi kameriT da saavario wyal sagdebi, saturbino wyal satari, da el eqtro sadguri ori fransisis-tipis turbiniT. saTavo nageboba, samarTavi panel i da wnevis sazomi xel sawyoebi saWiroeben SekeTebasa da Secvl as. damontaJebul i sintronul i Zravebi generatorebad ver gamodgebian ami tom, unda ganxorciel des generatorebis Sesyidva da montaJi.

nergeTis (xani-2) mcire-hidro sadgurma funzionireba daiwyo 1952 wel s da imuSava 1964 wl amde. mas ar umuSavia 1964-1997 wl ebSi. 1996 wel s Sps. xani-2-ma, romel ic SemdgomSi Caanacvl a nergeTi (xani - 2). 2000 wel s man gaxsna yinul is mwar moebel i xarxana, dReSi 1 tona simZI avrit. damontaJda 10 kW simZI avris turbina el eqtro sadgurSi romel ic meqanikurad mierTebul ia kompresorsa da yinul isa da nayinis mwar moebel sam danadgarTan. sareabil itacio gegma moicavs kaSxal is, wyal gadasaSvebis, sal eqari auzebis, samarTavi farebis mSenebl obasa da SekeTebas. el eqtro sadguri dazianebul ia da saWiroebs mniSvnel ovan gadaxl ebas. axal i frensisis-tipis 300 kW-iani turbina unda damontaJdes, xol o arsebul i yinul is saamqro unda daingras.

Comment [T1]: Es gaurkvevelia radgan ar maqvs inglisiuri teqsti

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

fSavel is mchidro sadguri axal i sadguria, romel ic mdinare storze arsebul naurdal is sarwyav sistemas ukavSirdeba. mas gaaCnia tipiuri struqtura (wyal saSvebi kaSxali, samarTavi fariT: wyal gadasaSvebi WiSkari erTi gvirabiT, gasasvl el iT da marcxena sanapiro kedl iT), magram saWiroebs reabilitaciassa da damatebiT samSenebl o samuSaoebs. Sesyidul unda ignas da damontaJdes frensis-tipis 500kW-iani turbina. aseve unda moxerxdes kabel ebis gayvana da el eqtro-meqanikuri mowyobil obebis montaJi.

gamocdili adgil obrivi kompania, saqwyal proeqti (GWP) daasrul ebs teqnikur samuSaos mSenebl obis dawyebamde. isini aseve moamzadeben winaswar saoperacio gegmas. mcire hidro sadgurebis mfl obel ebTan erTad energetikul i ganvitaraba sasoflad(REP) xel s uwyobs reabilitacias. isini erTad muSaoben hesebis reabilitaciassa da tenderebis organizebaze aparaturisa da momsaxurebis Sesasyidad da amave dros uzrunvel yofen procesebis gamWirval obasa da konkurentunarianobas.

proeqti aseve iTval iswinebs adgil obrivi da ucxouri teqnikis (turbinebis) SeZenas. momzaddeba adgil obrivi special istebi, roml ebis Semdgom eqspl uatacias gauweven axal teqnologi ebs.

**A.4.3** emisიაTa Semcirebis savadauro raodenoba SerCeul sakredito periodSi:

proeqtisaTvis SeirCa Svid wl iani sakredito periodi (roml is ganaxleba orjer SeiZleba). proeqtis mier gamomuSavebuli el eqtro energiis mTI iani wliuri emisიაTa Semcireba udris 14,270t CO2e wel iwadSi. xolo sawyisi 7 wliani sakredito periodisaTvis (2008 wl is 1 ivl isidan 2015 wl is 30 ivnisamde) 99,890 t CO2e.

mcire hidro-el eqtros adguri	amJami ndeli samuSao simZlavre (kW)	amJami ndeli saSualo wliuri generacia ('000 kWh)	simZlavre reabilitaciis Semdeg (kW)	mosalodneli wliuri generacia ('000 kWh)	sabazo emisიაTa faqtori (EF <sub>s</sub> ) (kg CO <sub>2</sub> /kWh)	emisიაTa Semcireba (CO <sub>2</sub> tona)
kabali	500	2,588	1,500	6,000	0.3341	1,140
kaxareTi	-	-	2,080	12,000	0.3341	4,010
lopota	-	-	2,000	13,000	0.3341	4,342
okami	-	-	1,600	8,740	0.3341	3,342
xani-2	-	-	300	2,100	0.3341	502
fSaveli	-	-	500	2,800	0.3341	934
emisიაTa wliuri Semcireba sul						<b>14,270</b>
emisიაTa Semcireba 7 wliani sakredito periodisaTvis						<b>99,890</b>

\* 7 wl is saSualo wliuri generacia daangariSebulia 2000-2006 wl ebis monacemebze dayrdnobiT (wlebi, rodesac hesi ar gamomuSavebda energias, ar aris gaTvaliswinebuli)

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

qveMoT cxril Si mocemul ia 7 wl iani sakredito periodis ganmavl obaSi mosal odnel emisiaTa Semcirebis saprognozo monacemebis mokl e Sej ameba.

wel i	emisiaTa Semcirebis saprognozo monacemebi (tona CO2e)
ivlisi 2008 - dekemberi 2008	7,135
ianvari January 2009 – dekemberi 2009	14,270
ianvari 2010 - dekemberi 2010	14,270
ianvari 2011 - dekemberi 2011	14,270
ianvari 2012 - dekemberi 2012	14,270
ianvari 2013 – dekemberi 2013	14,270
ianvari 2014 - dekemberi 2014	14,270
ianvari 2015 – ivnisi 2015	7,135
<b>emisiaTa Semcirebis saprognozo monacemebi (tona CO2e)</b>	<b>99,890</b>
<b>sakredito periodis mTliani raodenoba</b>	<b>21(7 X 3)</b>
<b>emisiaTa Semcirebis wliuri saSualo sakredito periodis ganmavl obaSi (tCO2e)</b>	<b>14,270</b>

**A.4.4. mcire proeqtis Ronisziebis saxel mwifo dafinanseba**

eqvis hebis rehabilitaciisa da mSenebl obas xel s uwyobs sasoflo energo programa, romel sac afinansebs aSS saerTasoris ganvitarebis saagento da mas axorciel ebs uinroq interneSenel da pi ei konsal tingi. oTxi danadgari miRebs grants aSS-s searTasoris ganvitarebis saagentodan, ori ki gaeros ganvitarebis programidan, raTa dakmayofil des mTliani sainvesticio saWiroeba. TiToeul i danadgari sadguris sagranto komponenti rogorc sruli saWiro investiciis procenti moyvanil ia cxril Si.

mcire hesi	aSS.saerT.ganv.saag. granti	gaeros ganvitarebis proeqtis granti
kabali	20.03%	0.00%
kaxareTi	23.60%	0.00%
lopota	22.30%	0.00%
okami	23.71%	0.00%
nergeTi (xani-2)	0.00%	77.09%
fSaveli	0.00%	84.01%

amerikis saerTasoris ganvitarebis saagento da gaeros ganvitarebis programa ar miReben naxSirbadis im kreditebs, romlebic grovdeba am proeqtebidan. isini mxolos gamiznulia imisatvis, rom gadalaxul iqnanis barierebi, romlis winaSec dgananes proeqtebi da romar moxcdes saqarTvel oSi mimdinare sxva proeqtebsi fondebis gadamisamarTeba. es barierebi da amerikis saerTasoris ganvitarebis saagentosa da gaeros ganvitarebis programis mier gamoyofil i dafinanseba mocemul ia danarT 2-is B.5. nawil Si. ixile danarTi 2

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

(informacia saxel mwifo dafinansebis Sesaxeb) ufro detal uri informaciisaTvis. danarTi 2 Seicavs amerikis saerTaSoriso ganviTarebis saagentos werils, romelic adasturebs, rom ar moxdeba grantis gadamisamarTeba sxva dagegmil dafinansebidan.

**A.4.5.** imis dadastureba, rom mcire zomis proeqtTan dakavSirebuli saqmianoba ar warmoadgens didi zomis proeqtTan dakavSirebuli saqmianobis aradaj gufebul komponents:

sufTa ganviTarebis meqanizms mcire proeqtTan dakavSirebuli saqmianobis gamartivebuli modal obebisa da procedurebis danarT C, muxli 2-is mixedvit (FCCC/CP/2002/7/Add.3), mcire proeqti moiazreba aradaj gufebad komponentad didi zomis proeqtis saqmianobisa, Tu arsebobs registrirebul mcire zomis proeqtTan dakavSirebuli saqmianoba an wardgenilia ganacxadi sxva mcire zomis proeqtTan dakavSirebuli saqmianobis saregistraciოდ:

- igive proeqtis monawil eebiT;
- igive proeqtis kategoriiT da teqnol ogia/zomebiT;
- romelic registrirebულია wina ori wl is ganmavl obaSi;
- romlis proeqtis sazRvaric mdebareobs mcire zomis proeqtTan dakavSirebuli saqmianobis sazRvidan erTi kil ometris fargl ebSi yvel aze axl o adgil as.

proeqtis ganmaviTarebeli (energoefekturobis centri saqarTvel os) adasturebs, rom ar arsebobs aranairi mcire zomis proeqtTan dakavSirebuli saqmianoba, romelic daregistrიებულია gasuli ori wl is ganmavl obaSi maTi monawil eobiT, igive proeqtis kategoriiT da teqnol ogiit, romlis proeqtis sazRvari aris mcire zomis proeqtTan dakavSirebuli saqmianobis sazRvidan erT kil ometrSi yvel aze axl o adgil as.

amdenad, proeqti ar warmoadgens romelime didi zomis proeqtTan dakavSirebuli saqmianobis aradaj gufebad komponents

nawili **B.** sabazo da monitoringis meTodol ogiis gamoyeneba

**B.1.** damtkicebuli sabazo da monitoringis meTodol ogiis saTauri da miTiTeba, romelic gamoyenebul iqna mcire zomis saqmianobisas

proeqtis tipi: I-ganaxl ebadi energiis proeqti

proeqtis

kategoria: ID-el eqtro energiis qsel Tan mierTebuli ganaxl ebadi el eqtro energiis gamomuSaveba

versia: 13 (14 dekemberi, 2007)

miTiTeba: danarTi **B**, gamartivebuli **M&P** mcire zomis sufTa ganviTarebis meqanizms proeqtTan dakavSirebuli saqmianobisaTvis (UNFCCC, 2003b)

damtkicebuli sabaziso meTodol ogia SemoTavazebuli mcire-zomis proeqtTan dakavSirebuli saqmianobisaTvis saqarTvel oSi moiazreba, rogorc AMS-I.D.



**B.2** proeqtis kategoriis arČevanis gamarTl eba:

>>

*es kategoria moicavs ganaxl ebadi el eqtro energiis generaciis danadgarebs, rogoricaa hidro, tal Ris, qaris, geoTermul i da ganaxl ebadi biomasia, roml ebic el eqtro energiit amarageben el eqtro distribuciis sistemas da misgan gamoanTavisufl eben wiariseul sawvaviT gamomuS vebul el .energias.*

proeqtis saqmianoba moicavs xuTi mcire hidro sadguris reabil itacias. yvel a sadguri gamdinare wyal ze muSaobs da, amdenad, warmoadgens im saqmianobas, romel ic dakavSirebul ia ganaxl ebadi energiis wyarodan el -energiis generaciasTan. yvel a sadguri amaragebs el eqtro energiit saqarTvel os el eqtro qsel s anu amdenad, qsel Tanaa mierTebul i. mcire hidro sadgurebi qsel s awdian el eqtro energias, romel ic sxva SemTxvevaSi momaragdeboda wiariseul sawvavze momuSave generaciis danadgaridan.

*proeqtTan dakavSirebul i saqmianoba, roml is mizania ganaxl ebadi ergo generaciis arsebul i danadgarebis modernizeba da modifikacia, Sedis mcire zomis proeqtebis kategoriaSi, radgan reabil itaciis Semdeg eqvsive hesidan el .energiis damatebiTi gamomuSaveba iqneba 7.98 MW da es, ar aWarbebs modifizirebul i da modernizebul i danadgaris mTl iani gamomuSaveba gadaaWarbebs 15 MW l imi ts.*

**B.3.** proeqtis sazRvris arweril oba:

>>

rogorc mcire zomis sufta ganvTarebis meqanizmis proeqtis saqmianobis gamartivebul i modal obebisa da procedurebis danarT B–Sia mocemul i, proeqtis sazRvari Semdegnairadaa gamartebul i: *“proeqtis sazRvari moicavs ganaxl ebadi ergo generaciis wyaros fizikur, geografiul adgil s.”*

am proeqtis saqmianobis sivrcobrivi mocul oba moicavs proeqtis adgil s (mcire hesis adgil mdebareoba) da fizikur el eqtro sistemas, romel Tanac mierTebul ia hesi sadguri.

TiToeul i hesisTvis, proeqtis sazRvari moicavs mdinaris ganStoebis struqturas, arxs, sadawneo mil sadens, el eqtrosadguris Senobas, energiis qsel Tan mierTebis sistemas, yovel i generatorisaTvis da qvesadgurisaTvis mzmomowyobil obas da saqarTvel os el eqtro gadamcem qsel s.

radganac saqarTvel os erovnul ma avtorizebul ma organom (DNA) jer ver gansazRvra proeqtis el eqtro sistemis sivrcobrivi zRvrebi, saqarTvel os mTl iani el eqtro qsel i aris arweril i proeqtis winamdebare dokumentaciaSi, rogorc proeqtis el eqtro sistema. amastanave, saoperacio zRvaris gamosaangariSebl ad gaTval iswinebul ia el eqtro energiis importi ruseTidan, TurqeTidan da somxeTidan.

**B.4.** sabaziso donis emisia da misi gamoTvl is arwera:

saqarTvel os el eqtro qsel is emisiaTa faqtoris (EF,)gamoangariSeba proeqtis kategoria - ganaxl ebad i resursebidan el eqtro energiis generacia generacia erovnu l el eqtro sistemisTvis arsebul i danadgarebis ganaxl eba da modernizeba. amasTanave, modifitsebul i an modernizebul i danadgaris mTI iani damatebiTi warmadoba ar unda aRematebodes 15 MW limits. amdenad, Sesabamisi zRvari, romel ic "el eqtro qsel Tan dakavSirebul ganaxl ebad i resursebis saSul ebiT el eqtroenergiis generaciis" AMS-I.D –s me-12 versiiTaa gaTval iswinebul i, aris Semdegi:

9. sabaziso donis emisia aris kWh-ebis raodenoba, romel ic gamomuSavebul ia ganaxl ebad wyaroze momuSave generaciis erTeul idan gamravl ebul i emisiis faqtorze (izomeba kgCO<sub>2</sub>e/kWh-Si), romel ic gamoangariSdeba gamWvirval e da konservatul i gziT Semdegnairad:

- a) kombinirebul i zRvari (CM),romel ic Sedgeba saoperacio zRvarisa (OM) da mSenebl obis zRvaris (BM) kombinaciisagan im procedurebis mixedviT, roml ebic mocemul ia damtkicebul meTodol ogiaSi ACM0002. SesaZl oa Seirces nebismieri am oTxi proceduridan, rom gamoiTval os saoperacio zRvari, magram, aseve, unda iyos gaTval iswinebul i is SezRudvebi, roml ebic axasiaTebis martivi saoperacio zRvarisa da saSual o saoperacio zRvaris gamoTvl ebs.

ACM0002 sabaziso meTodol ogiis midgoma gamoyenebul iqna proeqtis saqmi anobaSi.

ACM0002 versia 06-is - "konsolidirebul i sabaziso meTodol ogia el eqtroqsel Tan mierTebul i energiis ganaxl ebad i wyaroebidan el eqtroenergiis generaciisTvis" - Tanaxmad,

sabazo emisiaTa faqtori (EF,) angariSdeba rogorc kombinirebul i zRvari (CM), romel ic Sedgeba saoperacio zRvarisa (OM) da mSenebl obis zRvaris (BM) faqtorTa kombinaciisagan Semdegi sami safexuris mixedviT. gamoangariSeba am kombinirebul i zRvarisa unda efuZnebodes monacemebs oficial uri wyarodan (Tu es SesaZl ebel ia) da unda moxdes misi saj arod ganxil va.

saoperacio zRvari da mSenebl obis zRvari warmoiqmneba im monacemebidan, romel Ta mopovebac moxda Semdegi organi zaciidan:

- saqarTvel os energetikis saministrodan (sufTa ganviTarebis sabWo) miRebul iqna 2004, 2005 da 2006 wl ebis saqarTvel os el eqtro sistemis monacemebis.<sup>2</sup> monacemebi aseve Seicavda el eqtro sadgurebis dasaxel ebebs, roml ebic awdidnen el eqtro energias qsel s, maT mier wel iwadSi miwodebul raodenobas (mil ionobiT kil ovati) da el eqtro energiis importis informacias.

<sup>2</sup> monacemebi amJamad proeqtis saxiTaa. unda moxdes maTi oficial uri damtkiceba saqarTvel os sufTa ganviTarebis meqanizms sabWos mier.

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

*etapi 1. saoperacio zRvaris (OM) emisiaTa faqtoris (ebis) gamoangariSeba (EF<sub>OM,y</sub>)*

ACM0002 meTodol ogiis Tanaxmad, saoperacio zRvaris kal kul acia unda emyarebodes erT-erT meTods qvemoT CamoTvl il Tagan:

- (a) martivi OM,
- (b) martivi adaptirebul i OM
- (c) mowodebul monacemTa anl izi OM
- (d) saSual o OM.

*martivi OM, martivi regul irebadi OM, da saSual o OM emisiaTa faqtori Sesazl oa gamoangariSdes wl ebis mixedviT romel ime erT-erT monacemTa saSual ebiT:*

- *varianti 1: mTl iani gamomuSavebiT - uaxl oesi sami wl is saSual o Sewonil i gamomuSavebiT, roml is monacemebic arsebobs proeqtis dokumentaciis wardgenis droisaTvis*
- *varianti 2: is wel i, romel Sic fiqsirdeba proeqtis generacia, Tu emisiaTa faqtori ganaxl ebul ia yofil monitoring dayrdnobiT.*

saoperacio zRvaris gamosaangariSebl ad arsebul i oTxi meTodi dan, arCeul iqna martivi adaptirebul i meTodi OM (method (b)).

- mowodebul i monacemebis anal izi OM (meTodi (c)) ver SeirCa, radganac saqarTvel os el eqtro sistemisaTvis ar arsebobs detal uri monacemebi.
- martivi OM (meTodi (a)) ar SeiZl eba gamoviyenoT saqarTvel oSi, radganac bol o 5 wl is ganmavl obaSi saerTo generaciaSi hidro generacis wil i aWarbebs 50 %-s. monacemTa wyaroebi, roml ebic am cxril Sia gamoyenebul i, Semdegia:
  - 2002–2003 wl ebisaTvis: monacemebi qveyndeba saqarTvel os energetikis saministros veb-gverdze: saqarTvel os energo seqtoris “energo bal ansi”, nawil i 1. anal izi da winadadebebi. angariSi Seiswavl is saqarTvel os energo seqtoris energo bal anss 1960 dan 2006 wl amde.
  - 2004–2006 wl ebisaTvis, monacemebi mogvawoda saqarTvel os energetikis saministrom (sufTa ganviTarebis meqani zmis sabWo).

wel i	2002	2003	2004	2005	2006
dabal xarj iani resursebis procentul oba mTl ian generaciaSi	92.71%	91.13%	73.71%	71.52%	64.76%
xuTi wl is saSual o	78.77%				

*sadgurebis SerCeva saoperacio zRvaris gamoTvl isaTvis*

winamdebare cxrili warmogvidgens yvel a sadguris saoperacio zRvaris dasaangariSebl ad 2004, 2005 da 2006 wl ebSi. Tu hidro, geoTermul i, qaris, iafi biomasa, birTvl i da mzis energia gamoiricxeba, darCeba mxol od oTxi Tbo-el eqtro sadguri saoperacio zRvarSi: Tbo-el eqtro sadgurebi Tbil sresi, mtkvari, Tbil Teci 2005 da 2004 wl ebisaTvis. am arsebul Tbo-sagdurebTan

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

erTad, CCGT Energy-Invest Sesul ia saoperacio zRvarSi 2006 wl isaTvis, im momentidan, rogorc ki daiwo funcionireba 2006 wel s.

unda aRiniSnos, rom Tbil Tecs ar umuSavia 2002 wl is Semdeg, importi ruseTidan, TurqeTidan da somxeTidan aseve Sesul ia saoperacio zRvaris kal kul aciaSi. unda aRiniSnos, rom radganac importirebul i el eqtro energia sxva qveynebi dan Semodis, emisiaTa faqtori yvel a importisa ivaraudeboda CO2- s0 tona MWh-Si (rogorc es mocemul ia ACM0002 -Si).

cxril Si qvemoT mocemul ia saoperacio zRvaris gaangariSebi sas energogeneraciis obieqtebis nusxxa da informacia.

el eqtro sadgurebi	eqspl uataci aSi Sesvl is TariRI	pirveli adi energoresursi	SomZl av re	wl iuri generacia (2004)	generacia (2005)	generacia (2006)
			MW	GWh	GWh	GWh
Tbil sresi	1965	bunebrivi gazi (mSral i)	150.0	21.47	292.10	663.91
AES mtkvari	1990	bunebrivi gazi (mSral i)	300.0	791.73	666.32	1,149.45
CCGT enerji- invest	2005	bunebrivi gazi (mSral i)	110.0	-	-	290.44
Tbil tetsi	1911	bunebrivi gazi (mSral i)	18.0	-	-	-
zahesi	1927	hidro	36.8	167.67	147.86	158.98
abhesi	1928	hidro	1.8	3.19	2.82	1.79
rionhesi	1933	hidro	48.0	288.80	296.41	290.47
daSbaSi	1936	hidro	1.3	7.33	6.88	5.95
aci hesi	1937	hidro	16.0	53.61	61.04	70.95
kexvi hesi	1941	hidro	1.0	-	-	0.40
al azanhesi	1942	hidro	4.8	12.17	15.31	5.33
xrami -1	1947	hidro	113.0	238.77	196.97	334.69
Wi Taxevhesi	1949	hidro	21.0	100.43	109.52	106.83
xer Tvisi hesi	1950	hidro	0.3	1.08	0.76	0.61
maSaver ahesi	1951	hidro	0.6	0.23	-	0.30
Tiri fonhesi	1951	hidro	3.0	-	-	3.00
yazbegi hesi	1951	hidro	0.3	-	-	0.45
kabal i hesi	1953	hidro	1.5	3.17	1.36	0.84
mar tyofi hesi	1953	hidro	3.9	3.36	4.65	5.99
or TaWal hesi	1954	hidro	18.0	81.84	87.40	88.57
Saor hesi	1955	hidro	38.0	97.14	109.42	67.03
TeTri xevhesi	1956	hidro	14.0	20.04	29.02	28.35
sacxeni si hesi	1956	hidro	14.0	32.67	42.34	44.89
gumathesi	1956	hidro	44.0	210.00	203.07	220.23
Zevrul hesi	1956	hidro	80.0	111.69	127.94	84.33
maWaxel ahesi	1956	hidro	1.4	-	3.98	6.44

PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

el eqtro sadgurebi	eqspl uataci aSi Sesvl is TariRI	pirvel adi energoresursi	SomZl av re	wl iuri generacia (2004)	generacia (2005)	generacia (2006)
			MW	GWh	GWh	GWh
squrhesi	1958	hidro	1.0	1.92	1.72	1.46
bJujahesi	1958	hidro	12.0	52.42	61.74	46.83
I aj anurhesi	1960	hidro	112.0	86.30	125.33	274.70
mi saqcsiel i-ento	1961	hidro	2.7	2.33	4.20	4.74
xrami-2	1963	hidro	110.0	3.01	126.61	118.20
sionhesi	1964	hidro	9.1	39.47	41.63	28.21
riweul ahesi	1967	hidro	6.1	24.22	24.31	24.11
Cxorhesi	1967	hidro	5.4	6.36	6.52	6.07
vardnil hesi	1971	hidro	220.0	384.22	424.95	344.48
varci xehesi	1976	hidro	184.0	680.25	674.07	721.06
engurhesi	1978	hidro	1,300.0	2,728.12	2,535.24	1,652.11
Jinval hesi	1985	hidro	130.0	437.93	401.66	390.36
incobahesi	1993	hidro	1.7	1.42	2.67	2.27
Sps“qinZmaraul i”	2001	hidro	1.5	3.45	2.34	2.56
Munleik-Georgia	2002	hidro	20.0	6.93	4.69	22.17
xadorhesi	2004	hidro	24.0	3.15	36.89	127.20
wminda importi ruseTidan, TurqeTidan da somxeTidan				1,288.20	1,398.64	777.00
sul			<b>3,182.9</b>	<b>7,994.51</b>	<b>8,277.38</b>	<b>8,173.74</b>

martivi adaptirebul i saoperacio zRvaris detal uri angariSi mocemul ia nawil Si B.6.3 (yofil i presakal kul acio emisiaTa Semicireba) im formul ebis mixedviT, roml ebic mocemul ia nawil Si B.6.1 (meTodol ogiuri arCevnebis axsnaganmar teba).

angariSi aCvenebs, rom martivi adaptirebul i saoperacio zRvari ( $EF_{OM, simple\_adjusted, y}$ ) tol ia 0.1929 kg CO<sub>2</sub>/kWh 2004 wl isTvis; 0.2178 kg CO<sub>2</sub>/kWh 2005 wl isTvis, xol o 0.4138 kg CO<sub>2</sub>/kWh 2006 wl isTvis.

*etapi 2. mSenebl obis zRvaris emisiis faqtoris gamoangariSeba ( $EF_{BM,y}$ )*

ACM0002 meTodol ogiis mixedviT, mSenebl obis zRvaris gamoangariSeba unda iyos generaciis mixedviT Sewonil i saSual o emisiis faqtori (t CO<sub>2</sub>/MWh) el eqtro sadgurebis magal iTis m:

*sacdel i jgufi m Sedgeba an xuTi ukanaskenl ad agebul i sadgurebisgan, an bol o periodSi agebul i im sadgurebisgan, romel Ta generaciis wil idan mTl ian generaciaSi 20 %-s allarbebs. proeqtis monawil eebma unda gamoiyenon am ori variantidan is jgufi, romel ic wl iurad yvel aze ufro met generacias uzrunvel yofs. Is sadgurebi roml ebizedac mzaddeba/xorciel deba sufta ganviTarebis meqanizms proeqtebi unda gamoiricxos sacdel i m jgufidan.. Tu 20% modis sadguris nawil obriv mocul obaze, maSin es sadguri Sesul ia kal kul aciaSi.*

*mSenebl obis zRvaris emisiis faqtoris gamoangariSeba Sesazl ebel ia qvemoT moyvanil i erT-erTi meTodis monacemebidan:*

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

*varianti 1: gamoviangariSoT mSebebl obis konstruqciis zRvaris emisiis faqtori EF<sub>BM,y</sub> ex-ante yvel aze uaxl es informaciaze dayrdoniT im sadgurebis monacemebis mixedviT, romel Ta aSeneba ukve moxda sacdel i jgufisaTvis m proeqtis dokumentaciis wardgenisas.*

*varianti 2: pirvel sakredito periodSi, mSenebl obis zRvaris emisiis faqtori EF<sub>BM,y</sub> unda ganaxl des yovel wl iurad im wl isaTvis, romel Sic faqtiuri proeqtis generacias da Sesabamis emisიაTa Sencirebas aqvs adgil i. rac Seexeba momdevno sakredito periodebs, EF<sub>BM,y</sub> unda gamoangariSdes Semdgom, rogorc es aRweril ia pirvel variantSi zemoT.*

mSenebl obis zRvaris gamosaangariSebl ad, SeirCa varianti 1, imis gaTval iswinebiT, rom arsebobs monacemebi proeqtis dokumentaciis wardgenis dros ukve aSenebul i sadgurebis Sesaxeb. saqarTvel os mTavrobis ukanasknel i ganviTarebis gegmis mixedviT, Tbo-el eqtro sadgurebma da hidro sadgurebma ukve unda daiwyon funcioniReba. Tumca, mosal odnel ia, rom es procesi gaxangrZl ivdeba wl ebiT. amdenad, proeqtis dokumentaciaSi mocemul ia sabazo emisiEBis gaangariSeba im sadgurebze dayrdnobiT, roml ebiC funcioniRebdnen 2006 wl is dekembrisaTvis.

aseve, ACM0002 meTodol ogiis mixedviT:

*mSebnebl obis zRvaris emisiis faqtoris gansasazRvrad, rogorc es qvemoTaa aRweril i, sivrciTi raodenoba SezRudul ia proeqtis el eqtro sistemidan gamoqdinare, garda im SemTxvevebisa, sadac amaswindel i an mosal odnel i momaval i damatebebi gadacemis mocul obaSi saSual ebas gvaZl evs adgil i hqondes mniSvnel ovan nazrds importirebul i el eqtroenergiisa. aseT SemTxvevebSi, gadacemis simZl avre Sesazl oa moiazrebodes, rogorc mSenebl obis zRvaris wyaro da gansaszRvrul i iyos emisიაTa zRvari, rogorc es moxda OM importisaTvis qvemoT.*

mSenebl obis zRvaris kal kul aciisaTvis, importi ruseTidan, somxeTidan da TurqeTidan gamoricxul ia im faqtis gaTval iswinebiT, rom ar arsebobs araniri gegmebi saqarTvel oSi uaxl oes periodSi gadamcemi xazebis simZl avris gasazrdel ad.

*sadgurebis Serceva mSenebl obis zRvaris kal kul aciisaTvis*

ACM0002-is mixedviT, mSenebl obis zRvari gamoangariSda ori arsebul i meTodol ogiis mixedviT:

- 1) el eqtro sadguris simZl avris nazrdi el eqtro sistemisTvis, rodesac igi sistemis generaciis 20%(MWh-Si) aRwevs da isini, roml ebiC bol o periodSi Seemata sistemas. es moicavs: or Tbo-sadguris (mtkvari da gazoturbina CCGT enerji-i-investi) da oTx hidro el eqtro sadgurs (inwobahesi, Wal ahesi, muni eik jorjia da xadorhesi). am sadgurebis el eqtro generaciis jami udris 1,594 milion kvtsT-s da igi saqarTvel os mTliani el eqtro generaciis 21.55 % Seadgens.

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

- 2) xუტი el eqtro sadguri, რომl ebic bol os aSenda, arian Tbo-sadguri CCGT ენერჯი-ინვესტი და oTxi ჰიდრო sadguri ინვობაჰესი, Wal აჰესი, მუნლ ეიკ jორჯია და xადორჰესი. ამ sadგუბის მერ გამომუSavebul i el eqtro ენერჯიის jამი უდრის 444.643 მილიონ კვტ.სტ-ს და იგი საყარTველ os მTლიანი el eqtro გენერაციის 6.01 %- Seadგენს.
- 3) ვინადან Tbo sadგური – მტკვარი და ჰიდრო sadგური ინვობაჰესი 10 ველ ივადზე მეტია არსებობენ, მSენებლობის zRვარის გამოTვლისას მაTი მონაცემები არ იყნება გაTვლის ვინებულ i

Therefore, the choice of plants for the build margin includes: one thermal plant (CCGT Energy-Invest) and three hydro power plants (Chalabesi, Munleik-Georgia and Khadorhesi). The sum of these plants electricity generation 442.37 million kWh and it contributes 6% of total Georgian electricity production. The plants for build margin calculation are highlighted in the table below.

- 4) ამდენად, SegვიZლია დავასკვნათ, რომ მSენებლობის zRვარის პირველი სიდიდე (1) ეყრდნობა 2006 წლის მონაცემებს. მSენებლობის zRვარის კალკულაციისათვის sadგუბის არცვანი მოცემულია ვემოT და იგი მოიცავს Tbo-sadგურის CCGT ენერჯი-ინვესტი და sadგუბებს. Wal აჰესი, მუნლ ეიკ jორჯია და xადორჰესი. ამ sadგუბის მერ გამომუSavebul i el eqtro ენერჯიის jამი უდრის 442.37 მილიონ კვტ.სტ-ს და იგი საყარTველ os მTლიანი el eqtro გენერაციის 6.0 %- Seadგენს.

cxრილ Si.

ელ eqtro sadგუბები	ეგსპლუატაციის დასაწყისის თარიღი	ენერგორესურსი	სიმზლავრე	გენერაცია (2006)	% საერთო გენერაციას	ჯამური % საერთო გენერაციას
			MW	Million kWh	%	%
TბილTეცი	1911	ბუნებრივი გავი (მSრალი)	18.0	-	0%	100%
zაჰესი	1927	ჰიდრო	36.0	158.98	2%	100%
აბჰესი	1928	ჰიდრო	1.8	1.79	0%	98%
რიონჰესი	1933	ჰიდრო	48.0	290.47	4%	98%
დასბასჰესი	1936	ჰიდრო	1.3	5.95	0%	94%
აუიჰესი	1937	ჰიდრო	16.0	70.95	1%	94%
კეხვიჰესი	1941	ჰიდრო	1.0	0.40	0%	93%
ალაზანჰესი	1942	ჰიდრო	4.8	5.33	0%	93%
ხრამი-1	1947	ჰიდრო	113.0	334.69	5%	93%
ვიტაქეჰესი	1949	ჰიდრო	21.0	106.83	1%	88%
ხერTვისიჰესი	1950	ჰიდრო	0.3	0.61	0%	87%
მასავერაჰესი	1951	ჰიდრო	0.6	0.30	0%	87%
ტირიფონჰესი	1951	ჰიდრო	3.0	3.00	0%	87%

PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

ელ ეტრო სადგურები	ეკსპლუატაციის დასაწყის თარიღი	ენერჯის რესურსი	სიმზლავრე	გენერაცია (2006)	% საერთო გენერაციას	ჯამური % საერთო გენერაციას
			MW	Million kWh	%	%
ყაზბეგის	1951	ჰიდრო	0.3	0.45	0%	87%
კაბალიის	1953	ჰიდრო	13.6	28.35	0%	87%
მარტოვის	1953	ჰიდრო	14.0	44.89	1%	87%
ორთაღის	1954	ჰიდრო	1.5	0.84	0%	86%
საორის	1955	ჰიდრო	3.9	5.99	0%	86%
ტეტრის	1956	ჰიდრო	18.0	88.57	1%	86%
საქენის	1956	ჰიდრო	38.4	67.03	1%	84%
გუმის	1956	ჰიდრო	67.0	220.23	3%	84%
ჯვრის	1956	ჰიდრო	60.0	84.33	1%	81%
მაღალის	1956	ჰიდრო	1.4	6.44	0%	80%
სურის	1958	ჰიდრო	12.0	46.83	1%	80%
ბუჯის	1958	ჰიდრო	1.0	1.46	0%	80%
ლაგის	1960	ჰიდრო	112.0	274.70	4%	79%
მისაქცილის	1961	ჰიდრო	2.7	4.74	0%	75%
ხრამის-2	1963	ჰიდრო	110.0	118.20	2%	75%
სიონის	1964	ჰიდრო	9.1	28.21	0%	74%
თბილისის	1965	ბუნებრივი გაზი (მსრალი)	150.0	663.91	9%	73%
რიულის	1967	ჰიდრო	6.1	24.11	0%	64%
ცხორის	1967	ჰიდრო	5.4	6.07	0%	64%
ვარძლის	1971	ჰიდრო	220.0	344.48	5%	63%
ვარციხის	1976	ჰიდრო	184.0	721.06	10%	59%
ენგურის	1978	ჰიდრო	1,300.0	1,652.11	22%	49%
ჯინალის	1985	ჰიდრო	130.0	390.36	5%	27%
<b>AES თვრის</b>	<b>1990</b>	<b>ბუნებრივი გაზი (მსრალი)</b>	<b>300.0</b>	<b>1,149.45</b>	<b>16%</b>	<b>21.97%</b>
<b>ინობის</b>	<b>1993</b>	<b>ჰიდრო</b>	<b>1.7</b>	<b>2.27</b>	<b>0%</b>	<b>6.01%</b>
სს "კინზმარული"	2001	ჰიდრო	1.5	2.56	0%	6%
მუნიციპალიტეტის	2002	ჰიდრო	20.0	22.17	0%	6%
ხადორის	2004	ჰიდრო	24.0	127.20	2%	6%
CCGT Energy-Invest	2005	ბუნებრივი გაზი (მსრალი)	110.0	290.44	4%	4%
ჯამი (ეკსპორტის გამოკლებით)			<b>3,182.9</b>	<b>7,396.74</b>		

უნდა აღინიშნოს, რომ როგორც თბილისის ჰიდრო ელ ეტრო სადგურები რამდენიმე აგრეგატისგან შემდგება, რომლებიც მასობრივად დაიწყეს მშენებლობა. რადგანაც UNFCCC ინსტრუქციები მსახიობის ზრდის გამოაგარიშებს ასევე მთლიანად სადგურებს, მთლიანად სადგურის, და არა რომელიმე აგრეგატის ეკსპლუატაციას



## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

Sesvl is TariRi iqna gamoyenebul i Cvens mier sadguris eqspl uataciaSi Sesvl is dRed.

mSenebl obis zRvari detal urad gaangariSebul ia nawil Si B.6.3, B.6.1 nawil Si mocemul i formul is mixedviT. mSenebl obis zRvari ( $EF_{BM, y}$ ) naangariSebia da Seadgens 0.3916 kg CO<sub>2</sub>/kvt.sT-s.

saoperacio zRvarisa ( $EF_{OM, simple\_adjusted, y}$ ) da mSenebl obis zRvaris ( $EF_{BM, y}$ ) emisiis faqtorebi angariSdeba winaswar da fiqsireba moxdeba pirvel i sakredito periodisTvis.

*etapi 3: sabazo emisiaTa faqtoris gamoangariSeba  $EF_y$*

sabazo emisiaTa faqtori  $EF_y$  gamoangariSdeba rogorc saSual o Sewonil i martivi adaptirebul i saoperacio zRvaris emisiaTa faqtoris ( $EF_{OM, simple\_adjusted, y}$ ) da mSenebl obis zRvaris emisiaTa faqtoris ( $EF_{BM, y}$ )

xvedri wona, romel ic saoperacio da mSenebl obis zRvars aqvs gansazRvrul i aris 0.5. rogorc amas iTxovs ACM0002 meTodol ogia hidro sadgurebisaTvis. sabazo emisiaTa faqtori Semdegnairad gamoangariSdeba:

sabazo emisiis faqtori =  $0.5 [(2004 \text{ martivi adaptirebul i saoperacio zRvari } \times 2004 \text{ wl is generaciaze} + 2005 \text{ martivi adaptirebul i saoperacio zRvari } \times 2005 \text{ wl is generaciaze} + 2006 \text{ martivi adaptirebul i saoperacio zRvari } \times 2006 \text{ wl is generaciaze}) / (2004 \text{ wl is generacia} + 2005 \text{ wl is generacia} + 2006 \text{ wl is generacia})] + 0.5 [2006 \text{ mSenebl obis zRvari}]$

anu sabazo emisiaTa faqtori =  $[0.5 * [(0.1939 * 7994.51 + 0.2189 * 8277.38 + 0.4159 * 8173.74) / (7994.51 + 8277.38 + 8173.74)]] + [0.5 * 0.3916]$   
**= 0.3341**

sabol ood sabazo emisiis faqtori daangariSebiT udris 0.3979 kg CO<sub>2</sub>e/kvt.sT.

*etapi 4: sabazo emisiiebi*

sabaziso emisiiebi ( $BE_y$ ) aseTi proeqtisTvis angariSdeba Semdegnairad:

*sufTa ganviTarebis meqanizmis proeqtis gareSe, arsebul i sadgurebi kvl av gaagrZel ebs el eqtro energiit qsel is momaragebas ( $EG_{sabaziso}$ , MWh/ww) saSual o istoriul gamomuSavebis doniT ( $EG_{istoriul}$ , MWh/ww), manam, sanam generaciis danadgari an ar Seicvl eba, an ar moxdeba misi modernizacia sufTa ganviTarebis meqanizmis saqmianobis gareSe (DATEBaselineRetrofit). aqedan gamomdinare, sabazo suraTi Seesabameba proeqtis saqmianoba, anu sabazo el eqtro energiis generacia*

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

*(EG<sub>baseline</sub>)* udridis proeqtis el eqtro generacias (EGy, MWh/wel iwadSi. da aranairi emisiis Semcireba ar aris mosal odhenl i.

*EG<sub>historical</sub>* warmoadgens saSual o maCvenebel s, arsebul i sadguridan qsel sTvis miwodebul i el eqtro energiis Sesaxeb xel misawwdomi srul yofil i informaciis ukanasknel i wl idan, am sadguris aSenebis, modernizebis an Secvl is, istoriul periodSi wl iuri gamomuSavebisa.

miuxedavad imisa, rom proeqtiT gaTval iswinebul i saqmianoba moicavs mcire hidro sadgurebis rehabilitacias, ar aris saWiro aranairi Semdgomi cvl il ebebis Setana kaxareTis, nergeTis (xani-2), okamis, l opotasa da fSavel is sabazo emi siebSi

1. kaxareTi da nergeTi (xani - 2) aSenda 50-ian wl ebSi da amJamad aRar funqcionireben. gasul i 5 wl is ganmavl obaSi arc erT sadgurs ar qonda gamomuSaveba. isini srul iad umoqmedoa. amdenad, maT mier gamomuSavebul i energiis monacemebi ar unda Sevides sabazo kvl evaSi.
2. okamis da l opotas mSenebl oba daiwyo 2003 wel s, magram maT ar eRirsat damTavreba. maT arasdros gamoumuSavebiaT el eqtro energia. maTi mSenebl oba Sewyvites. sgm proeqtiT gaTval iswinebul i saqmianobis gareSe maT ver eRirsebodaT dasrul eba. amdenad maT mier gamomuSavebul i energiis monacemebi aseve ar unda Sevides sabazo kvl evaSi.
3. fSavel i axal i sadguria, romelic aSendeba arsebul sairigacio sistemaze.
4. amdenad, *EG<sub>historical</sub>* kaxareTis, nergeTis (xani - 2), okamis, l opotasa da fSavel isa nul is tolia.

mxedvel obaSi unda miviRoT kabal is sabaziso emisiebi iqidan gamomdinare, rom kabal i funqcionirebda gasul i xuTi wl is ganmavl obaSi.

5. kabal i aSenda 1953 wel s da man wl iurad 2000-2006 wl ebSi saSual od gamoimuSava 2.58 mil ion kWhel eqtro energia.
6. amdenad, *EG<sub>historical</sub>* kabal isaTvis aris 2.58 mil ion kvtsT.

rogorc naCvenebia nawil Si B.6.3 (emisiis Semcirebis kal kul acia) (etapi 4) sabazo proeqtiT, proeqtis saqmianoba uzrunvel yofda saSual od 45.3 mil ion kil ovat saat el eqtroenergiis wel iwadSi. istoriul ad, wl iuri saSual o gamomuSaveba udrida 2.58 mil ion kWh (i.e. *EG<sub>historical</sub>* = 2.58 mil ion kWh wl iurad).

imisaTvis, rom Sefasdes konkretul i dro, (*DATE<sub>BaselineRetrofit</sub>*) roca arsebul i danadgarebi unda gamoicval os proeqtis saqmianobis ar arsebobis SemTxvevaSi, unda iqnas gamoyenebul i erT-erTi Semdegi midgomaTagani:

*(a) erTi tipis danadgaris saSual o saeqspl uatacio teqniki dro Sesazl oa dadgindes da dokumenturad aRiricxos, gavrcel ebul i gamocdil ebis mxedvel obaSi miRebiT am seqtorSi da qveyanaSi, magal iTad, industriul kvl evebze, statistikaze, teqniki literaturaze da aS dayrdnobiT.*

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

*(b) Sesabamisi kompaniis miRebul i praqtika Secvl is ganrigTan dakavSirebiT Sesazl oa Sefasdes da dokumenturad warmodgindes, mag. msgavsi danadgarisaTvis istoriul ad Secvl is statistikaze dayrdnobi T*

varianti (b) iqna SerCeul i. ar aris dagegmil i sami mcire hesis reabil itacia da, amitomac, samive el eqtro sadguri gaagrZel ebs muSaobas mimdinare datvirTviT. reabil itacia am sadgurebis standartul i SekeTebis gegmaSi ar aris. TiToeul i maTgani an 40 wel iwadze meti xnisaa anda axl adaa aSenebul i.

Cveul ebriv, hidro sadgurebis saeqspl uatacio vadaa 40 wel iwadi regul arul i SekeTebis pirobebSi. 40 wl is Semdeg isini Cveul ebriv saWiroeben mniSvnel ovan kapital ur remonsts imisaTvis, rom gaagrZel on funqcionireba.<sup>3</sup> sufta ganviTarebis meqanizms proeqtis saqmianobis ar arsebobis SemTxvevaSi, mcire hidro sadgurebTan garemonteba dagegmil i ar aris. garda amisa, unda aRiniSnos, rom Sesazl oa es sadgurebi Cveul ebrivi eqpl uataciis pirobebSi arasworad an cudad imarTeboda. amdenad, sufta ganviTarebis meqanizms ar arsebobis pirobebSi, arasdros ar moxdeboda sami mcire hesis reabil itacia.

mosal odnel i wl iuri generacia yovel i am eqvsi sadguridan da Sesabamisi sabazo emisiebi warmodgenil ia cxril Si qvemoT:

mcire hes-i	saSual o wl iuri generacia* (000 kWh) **	mosal odnel i wl iuri generacia (000 kWh)	wl iuri emisiat a Semcireba (CO2 tonobi T)
kabal i	2,588	6,000	1,140
kaxareTi	-	12,000	4,010
l opota	-	13,000	4,342
okami	-	10,000	3,342
nergeTi (xani-2)	-	1,500	502
fSavel i	-	2,800	934
<b>sul</b>	<b>2,588</b>	<b>45,300</b>	<b>14,270</b>

\* 7 wl is saSual o generacia gamoTvl il ia im monacemebisaTvis, roml ebic ekuTvnis 2000-2006 wl ebs

\*\* Sesabamisi sakredito periodi moicavs naxevar wl ian periodebs 2008 wel Si (1 ivl isi – 31 dekemberi) da 2015 (1 ianvari – 30 ivnisi). im naxevarwl ian sakredito periodSi wl iuri saSual o generaciis naxevari gamoyenebul i iqneba, rogorc istoriul i generacia (*EG<sub>historical</sub>*).

sabazo emisiebi gamoTvl il ia detal urad nawil Si B.6.3(emisiat a Semcirebis winaswari gamoTvl a).6.1 nawil Si mocemul i formul is mixedviT (meTodol ogiuri arCevanis axsna-ganmar teba). sabazo emisiebi warmodgenil ia winamdebare dokumentis cxril Si, nawil i A.4.3.

<sup>3</sup> robert muri (hidro el eqtro korporacia, tasmania, avstralia) "hidro infrastruqturis gaagrZel ebul i cxovreba" World Energy Council. ([http://www.worldenergy.org/wec-geis/publications/default/tech\\_papers/17th\\_congress/1\\_2\\_21.asp](http://www.worldenergy.org/wec-geis/publications/default/tech_papers/17th_congress/1_2_21.asp))

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

**B.5.** arwera imisa, Tu saTburis gazebis anTropogenuri emisiebi wyaroebis mixedvit, rogor Semcirdeba imaze metad, vidre igi Semcirdeboda registrirebul i mcire-zomis sufta ganvitarebis proeqtis ar arsebobis SemTxvevaSi:

danarT B-s gamartivebul i modal obebisa da procedurebis damateba A mcire zomis sufta ganvitarebis meqanizmis proeqtis saqmi naobisaTvis saWiroebs, rom proeqtis monawil eebma ganmarton, raTa gviCvenon, rom adgili ar eqneboda proeqtis saqmianobas erT-erTi am barierTaganis SemTxvevaSi:

- (a) sainvesticio barieri
- (b) teqnologiuri barieri
- (c) barieri gavrcel ebul i praqtikis gamo
- (d) sxva barierebi

eqvsi mcire hesi, romlebic dajgufebul ia winamdebare proeqtis dokumentaciaSi, ramdenime barieris winaSe dgas, rac xel s uSli is imas, rom moxdes sadgurebis amuSaveba. naxSirbadis Semosavl ebis arseboba gvexmareba barierebis gadal axvaSi da am proeqtebis ganvitarebas uwyobs xel s.

sainvesticio barieri:

*qveynis zogadi riski da araproporciul i zegavl ena mcire hidro proeqtebze*

qveynis zogadi riski amcirebs saqarTvel oSi investiciebis Semosvl as. 2006 wl is noembris Sefaseba Standard & Poor's (S&P) sovereign long term investment rating mixedvit udrida B+. S&P Sefaseba meryeobs Skal aze CCC- (yvel aze dabal i)-dan AAA-mde, sadac AAA -dan BBB-mde investiciis Sefasebaa da BB-dan C -mde ara-sainvesticio Sefaseba. saqarTvel os ekonomikuri pirobebis gaumj obesebis miuxedavad gasul i ramdenime wl is ganmavl obaSi, qveyana kvl av ara-sainvesticio Sefasebis kategoriaSi rCeba. saqarTvel os dabal i Sefaseba momwobs sust sagareo ekonomikur likvidurobas, maRal infl acias, mniSvnel ovani infrastruqturis saWiroebs, Warb sainstitucio mocul obas, da politukur arastabil urobas regional uri konfliqtebis xarj ze. arasaxarbiel o sainvesticio imiji ucxoel i investorebisatvis saqarTvel oSi probl emas kidev ufro amZimebs, romelic dakavSirebul ia adgil obrivi kapital is simciresTan da wadmoadgens bariers proeqtis ganmavitarebel TaTvis.

miuxedavad imisa, rom qveynis zogadiriski gavl enas axdens qveyanaSi mimidnare yvel a proeqtze, mas aseve gaaCnia ara-proporciul i zegavl ena mcire kompaniebze, isetebze, rogoricaa, am eqvsi mcire hidro-proeqtis ganmavitarebel ebi. eqvsi mcire el -sadguris mfl obel ebi yvel a mcire zomis kompaniebi an organizaciebia. maTgan ori (nergeTi (xani-2) da fSavel i) saTemo organizaciebia, xolo oTxi (kabal i, kaxareTi, l opota da okami) mcire zomis registrirebul i kompaniebia SezRudul i kapital iT. kabal i hess, romelic fl obs kabal is mcire hidro sadgurs, gaaCnda yvel aze didi anazRaurebadi kapital i – 37, 200 aTasi lari (18, 600 aSS dol ari). sarisko garemoSi SezRudul i finansuri resursebiT aseTi mcire zomis organizaciebis an kompaniebisatvis Znel i iqneba Tavianti sainvesticio Sesazl ebl obebi mimzidvel i gaxadon potenciuri investorebisatvis.

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

sainvesticio barrieris naTel i magaliaTia is faqti, rom ori sagduris sareabilitacio investireba, romelic ganxorciel da amerikis saerTaSoriso ganviTarebis saagentos urbanuli energo programis fargl ebSi, grantis meSveobiT moxda. amerikis saerTaSoriso ganviTarebis saagentos granti daaxl oebiT 20 % Seadgenda mTl iani investiciebis a oTxi kerZo<sup>4</sup> sadgurisaTvis. xolo ori sazogadoebrivi sadgurisaTvis, xani-2 da fSavel i, granti gaeros ganviTarebis programidan Seadgenda 92 da 91 procentis Sesabamisad. es grantebi saWiro iyo sawyisi biznes gegmis SesamSavebl ad, ramac Semdeg sxva bankebidan dafinansebis wyaroebi moapovebina. sawyisi grantis ar arsebobisas aRniSnuli sadgurebi ver SeZl ebden sainvesticio barrieris gadal axvas, romlis winaSec idgnen.

*arasakmarisi finansuri resursebi*

eqvsve hidro sadguri ver moaiziebda sakmaris dafinansebas naxSirbadis kreditebidan Semosuli Semosavlebis ar arsebobis SemTxevvasi. naxSirbadis kreditebidan Semosuli Semosavlebi warmoadgenda winapirobas am sadgurebis dafinansebis evropis ganviTarebis da rekonstruqciis bankis winapirobas.

oTxma kerZo sadgurma (kabal i, kaxareTi, l opota da okami) aseve vali aiRo evropis ganviTarebis da rekonstruqciis bankis sakreditoxaziT saqarTvel os bankidan da Tibisi bankidan. TiToeuli am sadgurisaTvis, sesxis komponenti warmoadgens mTl iani investiciebis daaxl oebiT 40 procentis. evro bankis mier sesxis pirveli nawilis gacemis erT-erTi mTavari winapiroba iyo is, rom sadgurebma xeli moaweres emisiatasemcirebis Sesyidvis xel Sekrul ebas.

sxva barierebi:

*barierebi, romlebic dakavSirebul ia menejerul da teqnukur sakiTxebTan*

eqvsive hidro el eqtro sadguris reabilitacia, romlebic dajgufebul ia winamdebare saproeqto dokumentSi, ganxorciel da urbanuli energo programis mier (romelic daafinansa amerikis saerTaSoriso ganviTarebis saagentom da ganxorciel a Winrock International / PA Consulting -ma). "proeqtis mTel i msvl el obis ganmavl obasi, teqnukuri daxmareba da finansuri mxardaWera uzrunvel yofili iqneba urbanuli energo programis mier, rac iTval iswinebs: 1) teqnukuri proeqtis SemuSaveba da saoperacio da teqnukuri momsaxurebis gegmebi; 2) samSeneblo samuSaoebis zedamxedvel oba da mSeneblobis marTvisa da monitoringis momsaxurebis uzrunvel yofa; 3) saqarTvel os kanonebTan da wesebTan SesabamisobaSi moyvana; 4) el eqtro energiis Sesyidvis SeTanxmebebis (PPA's) Taobaze mopal arakebebis gamarTva; da 5) finansuri, adamiური da materialuri resursebis mobilizeba. "sasofl o energetikul i ganviTarebis" proeqtis TanamSromlebis CarTva proeqtis warmatebis erT-erTi mniSvnel ovani etapia."<sup>5</sup> <sup>6</sup> rogorc biznes gegmebidan naTl ad Cans, proeqtebis ganxorciel eba

<sup>4</sup> amerikis saerTasiriso ganviTarebis saagentos sagranto komponentebi yoveli sadgurisaTvis: kabal i 20%, kaxareTi - 24%, l opota - 22 %, okami - 24 %.

<sup>6</sup> mChidr.pr.is mFl obel Ta mier momzadebul i biznes gegmebi TiToeuli sadgurisaTvis. ix. nawili 3.1 – proeqtis ganxorciel eblebi

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

---

ver moxerxdeboda sasofl o energo ganviTarebis programis teqnikuri da finansuri daxmarebis gareSe. es gviCvenebs, rom sadgurebi awydebodnen Seferxebebs, roml ebic gamomdinareobda teqnikuri codnisa da menejmentis gamocdiilebis nakl ebobidan.

institucionaluri barierebi:

*partiorebis riskiT gamowveuli barierebi*

eqvsve hidro el eqtro sadgurs aseve aqvt partiorebis riskiT gamowveulo sakredito riskebi, radgan im sadistribucio kompaniebs, roml ebic maTgan yidul oben energias, Tanxis amoRebis dabal maCvnebeli gaaCniaT. kabal is, lopotasa da fSavelis hidro el eqtro sadgurebi miyidiant maT mier gamomuSavebul el eqtroenergias kaxeTis el eqtro distribucii kompanias (KEDC). msgavsad, kaxareTi, nergeti (xani-2) da okami gamomuSavebul energias miyidiant gaertianebul el eqtroenergiis sadistribucio kompanias (UEDC). miuxedavad imisa, rom sadgurebs Seswevt unari pirdapir gaaformon xel Sekrulleba el eqtro energiis saboloo momxmarebl ebTan (mag. kabal i kontraqts aformebs pirdapir saqarTvelos rkinigzastan), sadistribucio kompaniebi yvelaze didi momxmarebl ebi arian da warmoadgenen Semosavl udi des wyaros am sadgurebisatvis. amdenad, hidro sadgurebi sapirispiromxaris sadistribucio kompaniis didi sakredito riskis qves dganan, rac warmoadgens udi des bariers. naxSirbadis Semosavl ebi dagvexmareba am riskebis SemcirebaSi.

KEDC-sa da UEDC amoRebis progresi kvlav dabal ia, rac miRebuli el eqtroenergiis daaxloebiT 50 %-ia. 2005 wl is KEDC-sa da UEDC amoRebis progresi mocemulia qvemoT.<sup>7,8</sup>

dabal maCvnebeli gamomdinareobs sistemis didi danakargebidan, qurdobidan da qviriti gawerili Tanxebis gadauxdel obidan. igi xel sul is sadistribucio kompaniebs gadauxadon mwarmoebl ebs. es ara-sagadasaxado riski SesaZl oasqarTvelos energo sistemasac daudges. igi aseve araproporciul ad axdens zegavl enas mcire zomis hidro sadgurebze, rogor ebi caa, winamdebare proeqtis dokumentaciaSi daj gufebul i eqvsi sadguri, SedarebiT did el eqtro sadgurebTan, radganac Tundac mcire raodenobis gadauxdel obac ki did zegavl enas axdens naRdi fulis nakadze da zRudavs val is momsaxurebisa da saoperacio xarjebis dafarvis SesaZl ebl obas. mcire sadgurebs gaaCniaT

---

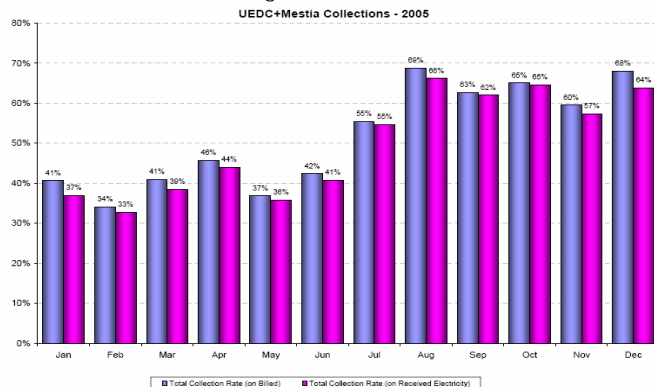
<sup>7</sup> “yovel Tviuri energo statistikis angariSi” momzadebuli aSS saerTasiriso ganviTarebis saagentos mier saqarTvelos energetikis samimistrosatvis, 2005 wl is dekemberi.

<sup>8</sup> “yovel Tviuri energo statistikis angariSi” momzadebuli aSS saerTasiriso ganviTarebis saagentos mier saqarTvelos energetikis samistrosatvis, 2005 wl is dekemberi. gv. 3

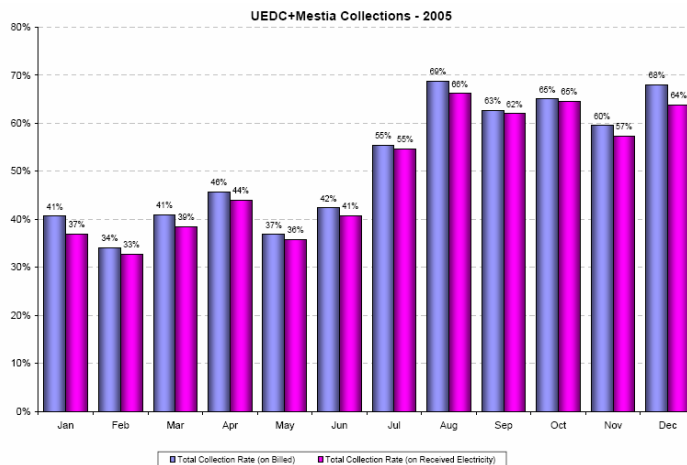
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

Sez Rudul i Sesazl ebl oba mokl e-vadiani kreditis gadametasTan dakavSirebiT, rasac SeuZl ia gadaxdasTan dakavSirebul i xarvezebis amovseba.



NOTE: As GWEM attributes Mestia's consumption to UEDC, it was added for collection rate calculation.



NOTE: As GWEM attributes Mestia's consumption to UEDC, it was added for collection rate calculation.

*I eqtroenergiis miwodebis riskidan gamomdinare barierebi*

eqvsive hidro sadguri aseve awydeba barierebs, roml ebic gamomdinareobs el eqtroenergiis miwodebis riskidan. hesebi dakavSirebul ia saqarTvel os el eqtro sistemasTan erTi gadamcemi xaziT. sadistribucio kompaniebis saSual ebiT ki el eqtroenergia miwodeba sabol oo momxmarebl ebs. am sadgurebis mier gamomuSavebul i el eqtroenergiis sabol oo momxmarebl ebi imyofebian sofl ad, sadac ar arsebobs aranairi damatebiTi qse:li im SemTxvevaSi, Tu adgil i eqneba gadamcemi sistemis mwyobridan gamosvl a.

saqarTvel os el eqtro gadamcemi sistema advil ad gamodis mwyobridan da, amdenad, nakl ebad sandoa. amerikis saerTaSoriso ganviTarebis saagentos mier saqarTvel os energetikis saministrosaTvis momzadebuli angariSis “saqarTvel os energo sistemis energo bal ansi: nawil i 2. bal ansi 1960-dan 2006 wl amde”, romel ze muSaoba dasrul da 2006 wl is agvistoSi, Tanaxmad:

*“el eqtroenergiis gadamcemi xazebi, marTvis da dacvis aparaturis umetesoba fizikurad da moral urad gacveTil ia da moZvel ebul i. amdenad, aucil ebel ia maTi ganaxl eba da daxvewa. gasul i wl ebis ganmavl obaSi Catarda garkveul i xasiaTis sareabilitacio samuSaoebi. Tumca, amas arsebiTi gavl ena ar mouxdenia energo sistemis sailmedoobis faqtoris gaumj obesebaze.*

*el eqtroenergiis gadamcemi qsel is teqnikiuri gamarTul obis done da gadacemis zedamxedvel obis avtomaturi aparaturis sailmedooba ver akmayofil ebs moTxovnebs, Tundac minimal ur doneze.”*

gadamcemi xazebis gaumarTaoba zegavl enas moaxdens imaze, rom sadgurebi veRar gayidian el eqtro energias, romel ic maT gamoimuSaves. gamommuSavebl ebi Taviz Tavze iReben mitanis srul risks. sami sadguris biznes gegmaSi mocemul i energiis Sesyidvis xel Sekrul ebidan TiToeul i naTI ad gviCvenebs, rom “gamyidvel i (gamommuSavebel i) pasuxismgebel ia el eqtro energiis gamommuSavebaze, marTvaze da miwodebaze miwodebis bol o wer til amde”<sup>9</sup>.

**CER** Semosavl ebis zegavl ena:

sufTa ganviTarebis meqanizmis registracia proeqts moutans did sargebel s da moxdeba Semdegi barierebis daZl eva:

- kapitalis riski: CER Semosavl ebis meSveobiT moxda EBRD-dan Tanadafinansebis miReba, radgan naxSirbadis kreditebi warmoadgenda mcire hidro proeqtebisatvis sesxis xel Sekrul ebis winapirbas;
- tarifebis riski: sufTa ganviTarebis meqanizmis iniciativa nawil obriv mainc SeaCerebs energiis tarifebis zrdas, roml ebic daawesa saqarTvel os energetikis erovnul ma maregul irebel ma komisiam, radgan mcire hesebi miReben Semosavl is damatebiT wyaros CER-ebis saxiT;
- amorebis riski: sufTa ganviTarebis meqanizmis iniciativa nawil obriv mainc SeaCerebs mcire hidro saadgurebi amorebis dabal macvenebel s, radgan mcire hidro proeqtebi miReben Semosavl is damatebis xazs CER-is saxiT;

amasTanave, es RonisZieba iqneba stimuli qarTveli da saerTaSoriso monawil eebisaTvis, rom sufTa ganviTarebis meqanizmi ganxorciel ebadia saqarTvel oSi, rasac Sedegad mohyveba qveyanaSi saTburis gazebis emisiaTa

<sup>9</sup> TiToeul i sadguris mier momzadebul i biznes gegma. ix. el eqtro energiis Sesyidvisa da gayidvis Sesaxeb SeTanxmebis proeqtis Tavi 3.2.



**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

Semcireba didi raodenobiT. proeqtiT gaTval iswinebul i zomebi aseve xel s uwyobs ganaxl ebadi energiis efeqtian gamoyenebas qveynis hidro potencial is gaTval iswinebiT, raTa Sesrul des kiotos protokol iT gaTval iswinebul i miznebi saTburis gazTa emisiebis Semcirebis Tval sazrisiT.

**B.6. emisiaTa Semcireba:**

**B.6.1. meTodol ogiuri arCevanis axsna:**

>>

nawil i B.4 (sabazo scenari s arwera da misi ganviTareba) detal urad arwers meTodol ogiur arCevnebs da saoperacio, samSeneblo da kombini rebul i zRvrebis tendenciebs.

wina mdebare nawil i warmoadgens im formul ebs, roml ebi c gamoiyeneba emisiaTa faqtoris sawarmo ebl ad e.w. "saoperacio zRvarisa" da "mSeneblo bis zRvaris" gamosaTvl el ad. 1-dan me-3 etapis CaTvl iT sxvadasxva formul ebia gamoyenebul i. aseve miTiTebul ia sxvadasxva maCvenebl ebi da maTi wyaroebi.

*etapi I: martivi adaptirebul i saoperacio zRvaris gamoangariSeba*

- a. bunebrivi gazis udabl esi Tbounarianobis Sefaseba (TJ / 1000m<sup>3</sup>) TiTo wli saTvis 2004-dan 2006-mde

$$\frac{\text{udabl esi Tbounarianoba}}{(\text{TJ} / 1000 \text{ m}^3)} = \frac{\text{udabl esi Tbounarianoba}_{\text{cal}}}{(\text{kcal} / \text{m}^3)} \times \frac{\text{X} (4.1688) \text{X} (1/10^6)}{(1000 \text{ KJ} / \text{kcal}) (\text{TJ} / \text{KJ})}$$

*monacemTa wyaro: dabal i Tbounarianoba – energetikis saministro, saqarTvel o (sgm-is sabWo)*

- b. emisiis faqtori CO<sub>2</sub>equ bunebrivi gazisaTvis (tona (t) CO<sub>2</sub> / TJ):

$$\text{CO}_2 \text{ emisiis done } (\text{t CO}_2 / \text{TJ}) = \text{naxSirbadis emisiaTa faqtori } (\text{t C} / \text{TJ}) \times (44/12) (\text{t CO}_2 / \text{t C})$$

*monacemTa wyaro: naxSirbadis emisiaTa faqtori bunebrivi gazisaTvis - IPCC*

- c. bunebrivi gazidan CO<sub>2</sub> emisiaTa koeficienti (t CO<sub>2</sub> / 1000 m<sup>3</sup>) yovel i wli saTvis 2004-dan 2006 wli amde

$$\text{bunebrivi gazis CO}_2 \text{ emisiis } (\text{t CO}_2 / \text{TJ}) = \text{bunebrivi gazis udabl esi Tbounarianoba } (\text{m}^3 / \text{TJ}) \times \text{CO}_2 \text{ equival enti } (\text{t CO}_2 / \text{m}^3) \times \text{OXID wel Si y}$$

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

koef. wel Si y m <sup>3</sup> )	wel Si y (TJ / 1000 m <sup>3</sup> )	faqtori (t CO <sub>2</sub> / 1000 (t CO <sub>2</sub> / TJ)
------------------------------------	---	---

d. emisiebi TiToeul i bunebrivi gazis sadguridan 2004-2006 wl ebisaTvis (t CO<sub>2</sub>):

emisiebi TiToeul i = moxmarebul i sawavi X CO<sub>2</sub> bun.gazis  
 wel iwadSi y (t CO<sub>2</sub>) (1000 m<sup>3</sup>) emisii koef.wel iwadSi y (t CO<sub>2</sub> / 1000 m<sup>3</sup>)

e. martivi saoperacio zRvaris gamoangariSeba 2004, 2005, 2006 wl ebSi:

martivi saoperacio zRvari = gamomuSaveba-saSual o Sewonili CO<sub>2</sub> emisiebis jami yvel a sadguridan/ qsel isaTvis misawodebel i aucil ebel i energiis mocul oba (importis gaTval iswinebi T) (kg CO<sub>2</sub>/kWh) (kg Co<sub>2</sub>/ kWh yvel a sadgurisa dabal xarjiani/ qsel isaTvis misawodebel i aucil ebel i energiis mocul oba)

*monacemTa wyaro: saqarTvel os energetikis saministro, saqarTvel o (sufta ganvi Tarebis meqanizms sabWo)*

f. λ-s gamoangariSeba 2004, 2005, 2006 wl ebisaTvis

faqtori λ aris im saaTebis raodenoba wel iwadSi, roml istvisac dabal xarjiani/ qsel isaTvis misawodebel i aucil ebel i energiis tipis resursebi zRvarzea 8760 saaTis manZil ze (wel iwadis sruli xangrZl ivoba). misi gamoangariSeba xdeba Semdegi etapebis dacviT:

etapi i) *datvirTvis xangrZl ivobis mrudis daxatva. datvirTvis qronol ogiuri monacemebis Segroveba (Cveul ebriv MW-obiT). wl is yovel i saaTisaTvis da monacemebis daxisxeba (MW) donis umaRl esidan umdabl esamde.*

etapi ii) *monacemTa kl asificireba generaciis wyaroebis mixedviT. monacemTa Segroveba da mTl iani wl iuri generaciis gamoangariSeba (MWh-Si) dabal xarjiani/qsel Tan mierTebul i resursebidan (e.i.  $\sum_k GEN_{k,y}$ ).*

etapi iii) *datvirTvis xangrZl ivobis mrudis Sevseba. gaavl eT horizontal uri xazi datvirTvis xangrZl ivobis mrudis gaswrviv ise, rom adgil i mrudis qveS (MW gamravl ebul i saaTebze) udrides mTl ian generacias (MWh-Si) dabal xarjiani/ qsel Si momuSave tipis resursebidan (e.i.  $\sum_k GEN_{k,y}$ ).*

etapi iv) *gansazRvreT "wel iwadSi saaTebis raodenoba romel Ta drosac dabal xarjiani/ qsel Si momuSave tipis resursebi zRvarzea". Tavdapirvel ad, moZebneT me-3 etapSi daxazul i horizontal uri xazebis gadakveTis adgil i da 1 etapSi*

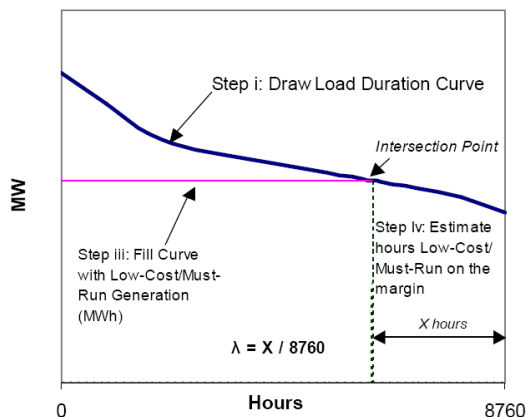
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

moce mul i datvirTvis xangrZl ivobis mrudi. saaTebis raodenoba (8760-dan sul ) gadakveTis adgil is marj vniv aris

saaTebis raodenoba, romel TaTvisac dabal xarjiani/ qsel Si momuSave tipis sadgurebi zRvarzea. Tu xazebi ar gadakveTs erTmaneTs, SesaZl oa davaskvnaT, rom dabal xarjiani/qsel Si momuSave wyaroebi ar aris zRvarze da  $\lambda$  udris nul s. I ambda( $\lambda$ ) saangariSo saaTebis raodenobaa gayofil i 8760-ze.

saqarTvel osaTvis, dabal xarjiani/qsel Si momuSave wyaroebi arian hidro el eqtro sadgurebi, roml ebic gamoimuSaveben el eqtro energias saqarTvel os qsel Si. 2004, 2005 da 2006 wl ebisaTvis monacemebi mogvawoda saqarTvel os energetikis saministrom (sgm sabWo).



monacemTa wyaro: saqarTvel os energetikis saministro (sgm sabWo)

g. gamoiyenebul ia  $(1-\lambda)$  2004, 2005, 2006 wl ebis saoperacio zRvarisaTvis

$$\text{martivi adaptirebul i saoperacio zRvari (kg Co2 equ. / MWh)} = (1-\lambda) \times \text{saoperacio zRvari (kg CO2 equ. / MWh)}$$

etapi 2: TiToeul i sadguris emisiis faqtoris gamoangariSeba da mSenebl obis zRvaris SemuSaveba 2006 wl isaTvis

$$\text{kostruqciis zRvari (kg CO2 equ. / kWh)} = \text{generaciis j ami-Sewonil i CO2 emisiebi TiToeul i sadgurisa yovel kWh-ze qsel isTvis miwodebul i 8 sadguris mier, rac saqarTvel os el eqtro energiis warmoebis 20 %-ia 2006 wl isaTvis (kg CO2 equ. / kWh)}$$

monacemTa wyaro: saqarTvel os energetikis saministro (sgm sabWo)

etapi 3: gamoiangariSeT qsel is sabaziso emisiata faqtori

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

$$\text{qsel is emisiaTa faqtori} = \frac{1}{2} (\text{mSenebl obis zRvari} + \text{martivi adaptirebul i saoperacio zRvaris gamomuSaveba-Sewonil i saSual o 2004, 2005 da 2006 wl ebisaTvis})$$
  
 (kg CO2 equ. / kWh)                      (kg CO2 equ. / kWh)                      (kg CO2 equ. / kWh)

Seni Svna. al ternatiul i wonebi ar gamoyeneba hidro sadgurebisTvis

**B.6.2.** monacemebi da parametrebi, roml ebic xel misawvdomia val idaciisas:

monacemebi da parametrebi:	naxSirbadis emisiaTa faqtori qsel Si
monacemTa erTeul i:	CO <sub>2</sub> / MWh ( <i>EF<sub>grid,CM,y</sub></i> )
aRweril oba:	martivi adaptirebul i saoperacio zRvaris generacia-saSual o Sewonil i zRvari 2004, 2005 da 2006 wl ebisaTvis da mSenebl obis zRvari "el eqtro sistemisTvis emisiis faqtoris daangariSebis instrumentis" mi xedvi T
gamoyenebeul i monacemebis wyaro:	• saqarTvel os energetikis saministro (sgm sabWo)
gamoyenebul i Rirebul eba:	0.3341
monacemTa arCevis gamarTI eba an real urad gamoyenebul i gazomvis meTodebi sa da procedurebis aRwera:	martivi saoperacio zRvaris gamoyenebis gamarTI eba da meTodologiis arCeva, romelic safuZvl ad udevs saoperacio da mSenebl obis zRvaris gamoangariSebas, detal uradaa mocemul i nawil Si B.4. gamoangariSebebi detal uradaa mocemul i nawil Si B.6.3.
Seni Svnebi:	-

monacemebi da parametrebi:	CO <sub>2</sub> saoperacio zRvaris emisiaTa faqtori qsel isaTvis 2004, 2005 da 2006 wl ebisaTvis ( <i>EF<sub>grid,OM-adj,y</sub></i> )
monacemTa erTeul i:	kt CO <sub>2</sub> / MWh
aRweril oba:	SerCeul ia martivi adaptirebul i saoperacio zRvari "el eqtro sistemisTvis emisiis faqtoris daangariSebis instrumentis" mi xedvi T.
gamoyenebeul i monacemebis wyaro:	• saqarTvel os energetikis saministro (sgm sabWo)
gamoyenebul i si di deebi:	2004: 0.1939 2005: 0.2189 2006: 0.4159
monacemTa arCevis	am martivi saoperacio zRvaris naxSirbadis emisiaTa

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

gamarTI eba an real urad gamoyenebul i gazomvis meTodebi sa da procedurebis aRwera:	faqtoris sidide gamoiTvl eba saoperacio zRvarze dayrdnobiT proeqtis dokumentaciis wardgenis dros. martivi adaptirebuli saoperacio zRvaris gamoyenebis gamarTI eba detal uradaa aRweril i nawil Si B.4. xol o gamoTvl ebi mocemul ia - nawil Si B.6.3..
Seni Svnebi	-

monacemebi da parametrebi:	<b>CO2</b> saoperacio zRvaris emisiaTa faqtori qsel isaTvis
monacemTa erTeul i:	kg CO2 / MWh
aRweril oba:	mSenebl obis zRvari SerCeul ia "el eqtro sistemisTvis emisiis faqtoris daangariSebis instrumentis" mi xedvi T
gamoyenebul i monacemebis wyaro:	<ul style="list-style-type: none"> <li>saqarTvel os energetikis samini stro (sgm sabWo)</li> </ul>
gamoyenebul i Rirebul eba:	0.3916
monacemTa arCevis gamarTI eba an real urad gamoyenebul i gazomvis meTodebi sa da procedurebis aRwera:	mSenebl obis zRvaris naxSirbadis emisiis faqtoris Rirebul eba emyareba proeqtis dokumentaciis damtkicebisas saukeTeso xel misawvdom monacemebis im sadgurebis Sesaxeb, roml ebic daemata sistemas bol o periodSi. mSenebl obis zRvaris dadgenis axsna mocemul ia nawil Si B.4, xol o gamoTvl ebi - nawil Si B.6.3..
Seni Svnebi	-

monacemebi da parametrebi:	wiaRiseul i sawvavis raodenoba, romel sac iyenebs energiis TiToeul i wyaro./sadguri
monacemTa erTeul i:	1000 m <sup>3</sup>
aRweril oba:	bunebrivi gazis moxmareba arsebul i mtkvaris, Tbil sresisa da CCGT enerj i-investis Tbo-el eqtro sadgurebis mier
gamoyenebul i monacemebis wyaro:	<ul style="list-style-type: none"> <li>saqarTvel os energetikis samini stro (sgm sabWo)</li> </ul>
gamoyenebul i Rirebul eba:	ix. nawil i B.6.3.
monacemTa arCevis gamarTI eba an real urad gamoyenebul i gazomvebis meTodebi sa da	saqarTvel os energetikis samini stroSi, proeqtis dokumentaciis momzadebis momentisTvis arsebul i monacemebi el eqtro sadgurebis mier moxmarebul i bunebrivi gazis Sesaxeb

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

procedurebis arwera:	
komentaribi	

monacemebi da parametrebi:	<b>CO<sub>2</sub></b> emisiis koeficienti sawavis TiToeul i tipisaTvis
monacemTa erTeul i:	t CO <sub>2</sub> / TJ
arweriloba:	tona naxSirbadi erT terajoul ze. CO <sub>2</sub> emisiis koeficienti sawavis TiToeul i tipisaTvis aris yovel i sawavis tipis naxSirbadis Semcvel oba, romelic regulirdeba wwis efekturobis faqtoriT (an Jangvis faqtoriT) da udris 1.0
gamoyenebuli monacemebis wyaro:	2006 wl is IPCC instruqciebi erovnul i saTburis gazis inventarisaTvis. tomi 2, Tavi 2. cxrili 2.2, gv. 2.16 ( <a href="http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf">http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf</a> )
gamoyenebuli Rirebul eba:	bunibrivi gazi (mSrali), 56100 (kg CO <sub>2</sub> / TJ) an 56.1 (t CO <sub>2</sub> / TJ) hidro: 0
monacemTa arCebis gamarTibe an real urad gamoyenebuli gazomvis meTodebisa da procedurebis arwera:	IPCC –s mier mowodebuli informacia am sferoSi miicneva avtoritetul ad
Seni Svnebi	-

monacemebi da parametrebi:	TiToeul i energiis wyaros/sadguris el eqtro generacia
monacemTa erTeul i:	GWh
arweriloba:	monacemTa es sidide migvitiTebis konkretul i el eqtro sadguris mier gamomusavebul el etroenergiaze, romelic miwodeba erovnul el eqtro qsel s
gamoyenebuli monacemebis wyaro:	saqarTvel os energetikis saminstro (sgm sabWo)
gamoyenebuli Rirebul eba:	ix. nawili B.4etapi 1 da nawili B.6.3.
monacemTa arCebis gamarTibe an real urad gamoyenebuli	es gaxl daT 2004 da 2006 wl ebisaTvis arsebul i qsel Tan miertebul i el eqtro sadgurebis generaciis yvel aze zusti monacemebi. moxda monacemebis mogroveba da maTi Setana adaptirebul i saoperacio zRvaris kal kul aciis grafaSi.

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

gazomvis meTodebisa da procedurebis arwera:	
Seni Svnebi	-

monacemebi da parametrebi:	saoperacio zRvaris gamosaTvl el ad energiis wyaros/sadguris identifikacia
monacemTa erTeuli:	sadguris dasaxel eba
arweriloba:	ACM0002 meTodol ogiis fargl ebSi SesaZl ebel ia saoperacio zRvaris gamoangariSeba oTxi meTodol ogiis mixedvit. SerCeul iqna martivi adaptirebuli saoperaco zRvari winamdebare sgm proeqtisaTvis.
gamoyenebuli monacemebis wyaro:	saqarTvel os energetikis saministro (sgm sabWo)
gamoyenebuli Rirebul eba:	CCGT enerji-investi, Tbil sresi, mtkvari da tbil tetsi
monacemTa arCavis gamarTl eba an real urad gamoyenebuli gazomvis meTodebisa da procedurebis arwera:	adaptirebuli saoperaco zRvaris kalkulacia moicavs generaciis wyarobis dayofas dabal xarjiani/qsel Tan miertebuli tipis resursebad (hidro, geoTermuli, qari, dabal fasiანი biomasa, birTvuli da mzis generacia) da sxva resursebi. Tu gamovricxavT dabal xarjiani/qsel Tan miertebuli tipis resursebs, maSin mxol od oTxi Termuli sadguri SeiZl eba Seviyvanot daregul irebuli saoperacio zRvaris gamoangariSebisas
Seni Svnebi	-

monacemebi da parametrebi:	energiis wyaros sadguris identifikacia mSenebl obis zRvarisaTvis
monacemTa erTeuli:	sadguris dasaxel eba
arweriloba:	mSenebl obis zRvari moicavs an axlad aSenebul xuT sadguris an iseTebis, roml ebic maTze adre aSenda da konkretuli wels saqarTvel os el eqtro generaciis 20 %-ze mets gamoi musavebda.
gamoyenebuli monacemebis wyaro:	saqarTvel os energetikis saministro (sgm sabWo)
gamoyenebuli Rirebul eba:	ix. nawili B.4 etapi 2 da nawili B.6.3
monacemTa arCavis gamarTl eba an real urad gamoyenebuli gazomvis	sadgurebis saxel ebi, roml ebic Sedis mSenebl obis zRvarSi emyareba ufro axlad aSenebul sadgurebs, roml ebic gamomuSavebuli el eqtroenergiis 20 % awdian qsel s

PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

meTodebi sa da procedurebis aRwera:	
Seni Svnebi	

monacemebi da parametrebi:	drois is wili, roml is drosac dabal -xarjiani/qsel Tan mierTebuli tipis wyaroebi zRvarzea
monacemTa erTeuli:	saaTebi
aRweriloba:	saaTebis raodenoba im wl isaTvis, roca dabal -xarjiani/qsel Tan mierTebuli tipis resursebi zRvarzea.
gamoyenebuli monacemebis wyaro:	saqarTvel os energetikis saministro (sgm sabWo)
gamoyenebuli Rirebul eba:	2004: 1465 2005: 1179 2006: 521
monacemTa arCavis gamarTleba an real urad gamoyenebuli gazomvis meTodebi sa da procedurebis aRwera:	monacemTa es sidide gamoangarisda rogorc datvirTvis xangrZlivobis mrudisa da dabal i-xarjiani/qsel Tan mierTebuli tipis resursebis mrudis gadakveTis adgili, rogorc es mocemulia nawil Si B.6.3.
Seni Svnebi	-

monacemebi da parametrebi:	el eqtro energiis importi el eqtro sistemaSi <b>2004, 2005, 2006</b> wl ebSi
monacemTa erTeuli:	GWh
aRweriloba:	amJamad ruseTidan, Turqetidan da sasomxetidan saqarTvel oSi importirebuli el eqtroenergia
gamoyenebuli monacemebis wyaro:	saqarTvel os energetikis saministro (sgm sabWo)
gamoyenebuli Rirebul eba:	2004: 1288.20 2005: 1398.64 2006: 777.00
monacemTa arCavis gamarTleba an real urad gamoyenebuli gazomvis meTodebi sa da procedurebis aRwera:	xel Tarsebuli yvel aze zusti monacemebi



**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

Seni Svnebi	es gaxl daT saqarTvel os el eqtro sistemaSi 2006 wel s importirebul i el etroenergiis yvel aze zusti monacemebi. ganxorciel da monacemTa Segroveba da Semdeg maTi Setana adaptirebul i saoperacio zRvaris saangariSo cxril Si.
-------------	--

monacemebi da parametrebi:	<b>CO2</b> emisiis koeficienti im sawvavisa, romel ic gamoiyeneba qsel Tan mierTebul el eqtro sistemaSi (Tu adgil i eqneba imports)
monacemTa erTeuli:	kg CO2e/kWh
aRweriloba:	sasomxeTis qsel Si importirebul i el eqtroenergiis naxSirbadis Semcveloba
gamoyenebul i monacemebis wyaro:	"el eqtro sistemisTvis emisiis faqtoris daangariSebis instrumenti"
gamoyenebul i Rirebul eba:	0
monacemTa arCevis gamarTl eba an real urad gamoyenebul i gazomvis meTodebi sa da procedurebis aRwera:	radganac importirebul i el eqtroenergia sxva qveynebidan modis, yvel a importis emisiaTa faqtori CO2 is 0 tonaa erT MWh –ze (rogorc es mocemulia "el eqtro sistemisTvis emisiis faqtoris daangariSebis instrumentSi"
Seni Svnebi	-

monacemebi da parametrebi:	ganaxl ebamde qsel isaTvis miwodebul i saSualo wl iuri generacia
monacemTa erTeuli:	kWh
aRweriloba:	kabalismcire hisis mier saqarTvel os qsel isaTvis miwodebul i el eqtroenergiis saSualo done 2000-2006 wlebsi
gamoyenebul i monacemebis wyaro:	saqarTvel os el eqtro energiis sabiTumo bazari / esko
gamoyenebul i Rirebul eba:	ix. nawili B.4 (sabazo xazis aRweriloba da misi ganvitareba) etapi 4.
monacemTa arCevis gamarTl eba an real urad gamoyenebul i gazomvis meTodebi sa da procedurebis aRwera:	am proeqtis sabazo scenaris gansazRvrad, roml ebi cvli an modernizebas ukeTeben arsebul danadgarebs, rogorc amas AMS I.D meTodol ogia moiTxovs, minimum gasuli 5 wel is monacemebia (roml is monacemebic arsebobs) saWiro imisaTvis, rom gamoangariSdes am sadgurebis mier mowdebul i el eqtro energiis moculoba. aseve saWiroa, rom am wlebis ganmavlobaSi ar ganxociel ebul a danadgaris Secvl a-modificireba ise, rom amas sargznobi zegavl ena

PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

	moexdina generaciis mocul obaze. xel msi sawvdomia mcire hesebis Sesaxe 7 wl is monacemebi (2000-2006).
Seni Svnebi	-

**B.6.3** emisიაTa Semcirebis savarauდო kal kul acia:

>>

etapi 1. martivi daregul irebuli saoperacio zRvaris emisიაTa faqtoris gamoangariSeba ( $EF_{grid,OM-adj,y}$ )

saoperacio zRvaris emisii faqtori ( $EF_{OM,y}$ ) gamoangariSda 3 wl is monacemebis gamoyenebiT. cxril Si mocemulia TiToeuli qsel Tanaa mierTebuli Tbo-sadguris, kal kul acia da martivi saoperacio zRvari 2004, 2005 da 2006 wl ebisatvis.

parameteri	erTeuli	2004	2005	2006
NCV <sub>cal</sub>	Kcal / m <sup>3</sup>	8,039.00	8,041.44	8,044.73
EF <sub>c</sub>	tona naxSirbadi / TJ	15.30	15.30	15.30
Tbounarianobis konversia	Kcal / KJ	4.1868	4.1868	4.1868
NCV	TJ / 1000 m <sup>3</sup>	0.03366	0.03367	0.03368
emisii faqtori	tonobit CO <sub>2</sub> / TJ	56.10	56.10	56.10
emisii koeficienti	tonobit CO <sub>2</sub> / 1000 m <sup>3</sup>	1.8882	1.8888	1.8895
TiToeuli sadguris mier moxmarebuli sawvavi: :	1000 m <sup>3</sup>			
Tbil sresi		9,755.00	108,909.00	232,662.00
ei-i-es mtkvari		248,873.00	206,712.00	349,820.00
CCGT enerji-i-vest		-	-	91,676.00
TiToeuli Tbo-sadguris emisია:	tona CO <sub>2</sub>			
Tbil sresi		18,419.35	205,704.08	439,624.47
ei-i-es mtkvari		469,921.04	390,431.48	660,999.36
CCGT enerji-i-vest		-	-	173,225.59
emisiebi sul	tona CO <sub>2</sub>	<b>488,340.39</b>	<b>596,135.57</b>	<b>1,273,849.42</b>
qsel Si sxva wyaroebi dan generacia	GWh	2,101.405	2,357.054	2,880.803
saoperacio zRvari ( $EF_{OM,y}$ )	kg CO <sub>2</sub> equ. / kWh	0.2324	0.2529	0.4422

qveმოT mocemul cxril Si mocemulia l amბდა faqtoris kal kul acia martivi saoperacio zRvaris dasadgenad 2004, 2005 da 2006 wl ebisatvis

weli	erTeuli	arweriloba	Rirebul eb a
------	---------	------------	--------------

PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

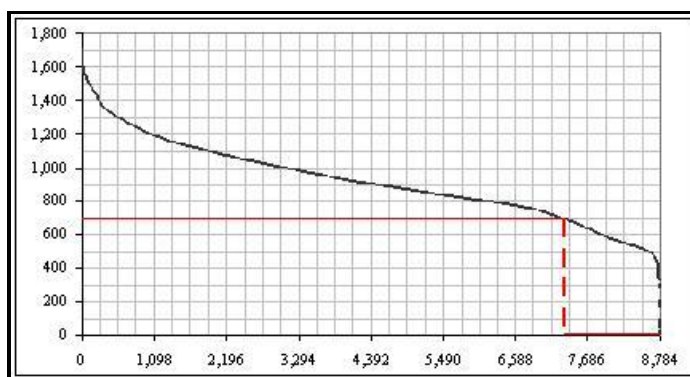
CDM – Executive Board

wel i	erTebul i	aRweri i oba	Ri r ebul eb a
2004	X	dabal -xarj iani/qsel Tan mierTebul i tipis resurse-bis saaTebis zRvarzea	1456
	$\lambda$	$\lambda = X/8760$	0.166
	$1-\lambda$		0.834
2005	X	dabal -xarj iani/qsel Tan mierTebul i tipis resurse-bis saaTebis zRvarzea	1179
	$\lambda$	$\lambda = X/8760$	0.135
	$1-\lambda$		0.865
2006	X	qsel Tan mierTebul i tipis resurse-bis saaTebis zRvarzea	521
	$\lambda$	$\lambda = X/8760$	0.059
	$1-\lambda$		0.941

cxril Si qvemoT moyvanil ia datvirTvis xangrZl ivobis mrudi da dabal -xarj iani/qsel Tan mierTebul i tipis resursebis mrudi maTi gadakveTis adgil is dasadgenad. gadakveTis adgil i miuTitebs saaTebis raodenobas im wel iwadSi, roca dabal -xarj iani/qsel Tan mierTebul i tipis resursebi saqarTvel os el -qsel Si zRvarzea 2004, 2005 da 2006 wl ebSi.

$$EF_{OM, simple\_adjusted, y} = (1-\lambda) \times EF_{OM, y}$$

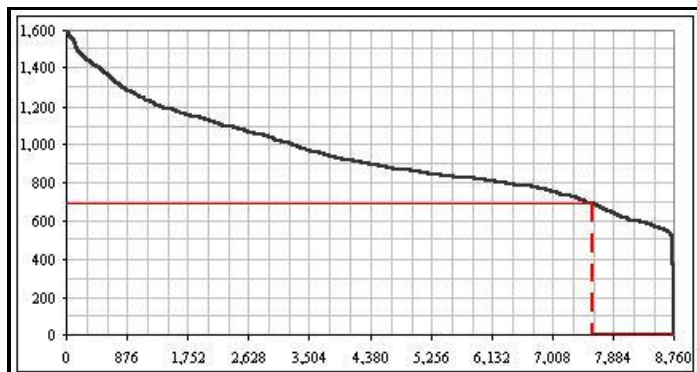
Year	$\lambda$	$EF_{OM, y}$	$EF_{OM, simple\_adjusted, y}$
2004	0.166	0.2324	0.1939
2005	0.135	0.2529	0.2189
2006	0.059	0.4422	0.4159



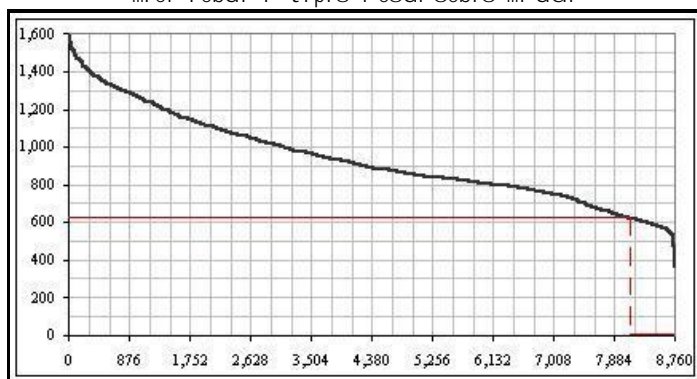
cxril i 2. 2004 wl is datvirTvis xangrZl ivobis mrudi da dabal -xarj iani/qsel Tan mierTebul i tipis resursebis mrudi

PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board



cxrili 3. datvirTvis xangrZl ivobis mrudi da dabal -xarj iani/qsel Tan mierTebul i tipis resursebis mrudi



cxrili 4. tvirtvis xangrZl ivobis mrudi da dabal -xarj iani/qsel Tan mierTebul i tipis resursebis mrudi

etapi 2: mSenebl obis zRvaris emisiaTa faqtoris gamoangariSeba ( $EF_{BM,y}$ )

cxrili Si qvemoT mocemul ia TiToeul i sadguris emisiaTa faqtoris kal kul acia, romel sac Seicavs mSenebl obis zRvari.

axali sadgurebi, romlebic generacias 20 %-siZl eva	simZl avre	generacia	CO2 emisia
	MW	milioni kWh	tona CO2
ss "qinZmarauli"	1.50	2.56	
munleik - saqarTvelo	20.00	22.17	
xadorhesi	24.00	127.20	
CCGT energji invest	110.00	290.44	172,359.47
sul	155.5	442.37	172,359.47

PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

axali sadgurebi, romlebic generacias 20 %-siZl eva	simZl avre	generacia	CO2 emisia
	MW	milioni kWh	tona CO2
mSenebl obis zRvari ( $EF_{BM,y}$ ) (kg CO2 equ. / MWh)			0.3916

etapi 3: sabazo emisiaTa faqtoris ( $EF_y$ )gamoangariSeba

sabazo emisiaTa faqtori ( $EF_y$ ) gamoiTvl eba rogorc saoperacio zRvaris emisiaTa faqtoris ( $EF_{OM,y}$ ) da mSenebl obs zRvaris faqtoris ( $EF_{BM,y}$ ) saSualo aritmetikuli. qvemoT moyvanil cxril Si mocemulia emisiaTa faqtoris gamoangariSeba.

weli	energo wyaroebis saoperacio zRvari garda dabal - xarjiani/qsel TanmierTebuli tipis resursebisa ( $EF_{OM,y}$ ) (kg CO2 / kWh)	energo wyaroebis saoperacio zRvari garda dabal - xarjiani/TanmierTebuli tipis resursebisa, rac Seesabameba ( $1-\lambda$ ) ( $EF_{OM, simple adjusted,y}$ ) (kg CO2 / kWh)	sistemis generacia ( $GEN_y$ ) ('000 kWh)	mSenebl obis zRvari ( $EF_{BM,y}$ ) (kg CO2 / kWh)	emisiaTa koeficienti qsel isaTvis ( $EF_y$ ) (kg CO2 / kWh)
2004	0.2312	0.1939	7,994,51		
2005	0.2517	0.2189	8,277.38		
2006	0.4400	0.4159	8,173.74	0.3916	
generacia - 3 wl is saSualo Sewonili			0.2766		
saoperacio da konstruqciis zRvaris saSualo ( $EF_y$ )					0.3341

etapi 4: sabazo emisiis kal kulacia ( $BE_y$ )

qsel is el eqtro energiis arsebuli sabazo emisia erTi sakredito periodis manZilze tolia me-3 etapSi daangariSebuli sabazo emisiis faqtori ( $EF_y$ ), gamravlebuli proeqtTan dakavSirebuli saqmianobiT el eqtro qsel isaTvis miwodebul el eqtroenergias ( $EG_y$ ) gamoklebuli el eqtro qsel isaTvis miwodebuli sabazo el eqtro energia ( $EG_{historical}$ ), .

$$BE_y = (EG_y - EG_{historical}) \times EF_y$$

mc.hidro.pr. dasaxel eba	saSualo wliuri generacia * ('000 kWh)
kabal is mc.hidro.pr.	2,588

\* 7 wl is saSualo wliuri generacia damoTvil i 2000-2006 wl ebis monacemebisaTvis

monacemTa wyaro: saqarTvel os el eqtro energiis sabiTumo bazari

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

mcire hisis istoriul i generaciis detal uri monacemebi 2000-2006 wl ebSi da saSual os aritmetikul is gamoTvl a mocemul ia danarTsi 3 (sabaziso informacia)

*etapi 5: emisiaTa Semcirebis kal kul acia (ER<sub>y</sub>)*

proeqtTan dakavSirebul i saqmianobidan gamomdinare emisiaTa Semcireba mocemul i y wl is ganmavl obaSi aris sabazo emisiebs (BE<sub>y</sub>), proeqtis emisiebsa (PE<sub>y</sub>) da gaJonvis (L<sub>y</sub>) gamo arsebul i emisiebs Soris sxvaoba

$$ER_y = BE_y - PE_y - L_y$$

- proeqtis emisia saTburis gazebis wyarobis mixedvit proeqtTan dakavSirebul i saqmianobidan gamomdinare proeqtis fargl ebSi aris nul i, radganac hidro energia aris saTburis gazis emisiisagan Tavisufal i energiis wyaro
- gaJonvebs adgili ar aqvs, radganac gamoyenebul i ganaxl ebadi energiis teqnol ogia ar warmoadgens raime sxva saqmianobidan gadmocemul danadgars. amdenad, SSC proeqtis saqmianobisaTvis TiToeul gamartivebul proceduraze ar aris saWiro gaJonvis aranairi kal kul acia

proeqtis saqmianobidan gamomdinare mTl iani emisiebi, gaJonvis CaTvl iT, udris nul s proeqtis saqmianobisaTvis. amdenad, anTropogenul emisiaTa wminca Semcireba warmodgenil i proeqtidan udris sabazo emisiebs yovel wl iurad.

**B.6.4 savaraudo emisiaTa Semcirebis Sefasebis Sej ameba:**

>>

winamdebare cxril i gviCvenebs kol eqtiur emisiebis Semcirebas eqvsi daj gufebul i proeqtisaTvis sawyisi 7-wl iani sakredito periodis manZil ze (2008 wl is 1 ivl isi - 2015 wl is 30 ivnisi).

wel i	sabaziso emisiaTa Semcirebis Sefaseba (tonobi T CO2e)	proeqtis saqmianobis emisiaTa Semcirebis Sefaseba (tonobi T CO2e)	gaJonvis Sefaseba (tonobi T CO2e)	emisiaTa Semcirebis Sefaseba (tonobi T CO2e)
2008 wl is ivl isi - dekemberi	7.135	0	0	7,135
2009 wl is ianvari - dekemberi	14.270	0	0	14.270
2010 wl is ianvari - dekemberi	14.270	0	0	14.270
2011 wl is ianvari - dekemberi	14.270	0	0	14.270
2012 wl is ianvari - dekemberi	14.270	0	0	14.270
2013 wl is ianvari - dekemberi	14.270	0	0	14.270
2014 wl is ianvari - dekemberi	14.270	0	0	14.270
2015 wl is ianvari - ivnisi	7.135	0	0	7,135
sul (tonobi T CO2e)	<b>99,890</b>			<b>99,890</b>

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

---

CDM – Executive Board

მცირე ჰიდროსადგურების მუშაობა მოსალოდნელია რომ დაიწყება 2008 წლის 1 ივლისს. ამდენად, 2008 და 2015 წლებში ემისიის შესაფასებელი ნახევარი წლის ემისიათა შემცირება.

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

wina mdebare cxri li gviCvenebs emisiaTa Semcirebas yovel sadgurze detal urad:  
emisiaTa Semcireba kabal is mci re-hesis mier

wel i	sabaziso emisiaTa Semcirebis Sefaseba (tonobi T CO2e)	proeqtas saqmi ani obis emisiaTa Semcirebis Sefaseba (tonobi T CO2e)	gaJonvis Sefaseba (tonobi T CO2e)	emisiaTa Semcirebis Sefaseba (tonobi T CO2e)
2008 wl is ivlisi - dekemberi	570	0	0	570
2009 wl is ianvari - dekemberi	1,140	0	0	1,140
2010 wl is ianvari - dekemberi	1,140	0	0	1,140
2011 wl is ianvari - dekemberi	1,140	0	0	1,140
2012 wl is ianvari - dekemberi	1,140	0	0	1,140
2013 wl is ianvari - dekemberi	1,140	0	0	1,140
2014 wl is ianvari - dekemberi	1,140	0	0	1,140
2015 wl is ianvari - ivnisi	570	0	0	570
<b>sul (tonobi T CO2e)</b>	<b>7,980</b>			<b>7,980</b>

emisiaTa Semcireba kaxareTis mci re-hesis mier

wel i	sabaziso emisiaTa Semcirebis Sefaseba (tonobi T CO2e)	proeqtas saqmi ani obis emisiaTa Semcirebis Sefaseba (tonobi T CO2e)	gaJonvis Sefaseba (tonobi T CO2e)	emisiaTa Semcirebis Sefaseba (tonobi T CO2e)
2008 wl is ivlisi - dekemberi	2,005	0	0	2,005
2009 wl is ianvari - dekemberi	4,010	0	0	4,010
2010 wl is ianvari - dekemberi	4,010	0	0	4,010
2011 wl is ianvari - dekemberi	4,010	0	0	4,010
2012 wl is ianvari - dekemberi	4,010	0	0	4,010
2013 wl is ianvari - dekemberi	4,010	0	0	4,010
2014 wl is ianvari - dekemberi	4,010	0	0	4,010
2015 wl is ianvari - ivnisi	2,005	0	0	2,005
<b>sul (tonobi T CO2e)</b>	<b>28,070</b>			<b>28,070</b>

emisiaTa Semcireba l opotas mci re-hesis mier



**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

wel i	sabaziso emi si aTa Semci rebis Sefaseba (tonobi T CO2e)	proeqtas saqmi ani obi s emi si aTa Semci rebis Sefaseba (tonobi T CO2e)	gaJonvis Sefaseba (tonobi T CO2e)	emi si aTa Semci rebis Sefaseba (tonobi T CO2e)
2008 wli sivi lisi - dekembei	2,171	0	0	2171
2009 wli sianvari - dekembei	4,342	0	0	4342
2010 wli sianvari - dekembei	4,342	0	0	4342
2011 wli sianvari - dekembei	4,342	0	0	4342
2012 wli sianvari - dekembei	4,342	0	0	4342
2013 wli sianvari - dekembei	4,342	0	0	4342
2014 wli sianvari - dekembei	4,342	0	0	4342
2015 wli sianvari - dekembei	2,171	0	0	2171
<b>sul (tonobi T CO2e)</b>	<b>30,394</b>			<b>30,394</b>

emi si aTa Semci reba okamis mci re-hesis mier

wel i	sabaziso emi si aTa Semci rebis Sefaseba (tonobi T CO2e)	proeqtas saqmi ani obi s emi si aTa Semci rebis Sefaseba (tonobi T CO2e)	gaJonvis Sefaseba (tonobi T CO2e)	emi si aTa Semci rebis Sefaseba (tonobi T CO2e)
2008 wli sivi lisi - dekembei	1,671	0	0	1671
2009 wli sianvari - dekembei	3,342	0	0	3342
2010 wli sianvari - dekembei	3,342	0	0	3342
2011 wli sianvari - dekembei	3,342	0	0	3342
2012 wli sianvari - dekembei	3,342	0	0	3342
2013 wli sianvari - dekembei	3,342	0	0	3342
2014 wli sianvari - dekembei	3,342	0	0	3342
2015 wli sianvari - ivnisi	1,671	0	0	1671
<b>sul (tonobi T CO2e)</b>	<b>23,394</b>			<b>23,394</b>

emi si aTa Semci reba nergeTi (xani -2) mci re-hesis mier

wel i	sabaziso emi si aTa Semci rebis Sefaseba (tonobi T CO2e)	proeqtas saqmi ani obi s emi si aTa Semci rebis Sefaseba (tonobi T CO2e)	gaJonvis Sefaseba (tonobi T CO2e)	emi si aTa Semci rebis Sefaseba (tonobi T CO2e)
2008 wli sivi lisi - dekembei	251	0	0	251
2009 wli sianvari - dekembei	502	0	0	502

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

wel i	sabaziso emisi aTa Semci rebis Sefaseba (tonobi T CO2e)	proeqtas saqmi ani obi s emisi aTa Semci rebis Sefaseba (tonobi T CO2e)	gaJonvis Sefaseba (tonobi T CO2e)	emisi aTa Semci rebis Sefaseba (tonobi T CO2e)
2010 wl is ianvari - dekemberi	502	0	0	502
2011 wl is ianvari - dekemberi	502	0	0	502
2012 wl is ianvari - dekemberi	502	0	0	502
2013 wl is ianvari - dekemberi	502	0	0	502
2014 wl is ianvari - dekemberi	502	0	0	502
2015 wl is ianvari - ivnisi	251	0	0	251
<b>sul (tonobi T CO2e)</b>	<b>3,514</b>			<b>3,514</b>

emisi aTa Semci reba fSavel is mcire-hesis mier

wel i	sabaziso emisi aTa Semci rebis Sefaseba (tonobi T CO2e)	proeqtas saqmi ani obi s emisi aTa Semci rebis Sefaseba (tonobi T CO2e)	gaJonvis Sefaseba (tonobi T CO2e)	emisi aTa Semci rebis Sefaseba (tonobi T CO2e)
2008 wl is ivlisi - dekemberi	467	0	0	467
2009 wl is ianvari - dekemberi	934	0	0	934
2010 wl is ianvari - dekemberi	934	0	0	934
2011 wl is ianvari - dekemberi	934	0	0	934
2012 wl is ianvari - dekemberi	934	0	0	934
2013 wl is ianvari - dekemberi	934	0	0	934
2014 wl is ianvari - dekemberi	934	0	0	934
2015 wl is ianvari - icnisi	467	0	0	467
<b>sul (tonobi T CO2e)</b>	<b>6,538</b>			<b>6,538</b>

**B.7** monitoringis meTodol ogiis gamoyeneba da monitoringis gegmis arwera:

**B.7.1** monitoringis daqvendebarebul i monacemebi da parametrebi:

monacemebi da parametrebi:	kabal is mc/hesis mier qsel isaTvis wl iurad miwodebul i el eqtro energia
erTeuli:	kWh
arweril oba:	proeqtis mier qsel isaTvis gadacemul i el eqtro energia
gamoyenebeul i monacemebis wyaro:	kabal is hesis miwodebis wertil Si gadagzavnili el eqtro energia
monacemTa Rirebul eba:	
gamosayenebel i	<ul style="list-style-type: none"> <li>el .energia izomeba sazomi xel sawyoebis meSveobi T</li> </ul>

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

gazomvis meTodebisa da procedurebis aRweril oba:	(sazomi aparatura da meTodebi, roml ebic erTobl ivadaa SeTanxmebul i myidvel ebsa da Sps "kabal ihesi 2006" mier) miwodebis adgil ze <ul style="list-style-type: none"> <li>• monacemebi izomeba saaTobrivad, xol o Canawerebi keTdeba Tveebis mixedvi T</li> <li>• xdeba monacemTa 100% monitoringi</li> </ul>
xarixsis martvisa da uzrunvel yofis procedurebis gamoyeneba:	es monacemebi pirdapir iqneba gamoyenebul i emisiaTa Semicirebis gamosaangariSebl ad. qsel sSi dafiqsirebul i gayidvebi da sxva Canawerebi gamoiyeneba am monacemebis j varedinad Sesamowmebl ad
Seni Svnebi	sazomi xel sawyoebi mowmdeba yovel wl iurad an moTxovnisamebr rogorc myidvel ebis, ise Sps. "kabal ihesi 2006"-s mier

monacemebi da parametrebi:	kaxareTis hehis mier el eqtroqsel isaTvis wliuri miwodebul i el eqtro energia ( <b>EG</b> )
erTeul i:	kWh
aRweril oba:	sadguris mier qsel isaTvis gadacemul i el eqtro energia
gamoyenebul i monacemebis wyaro:	kaxareTis hehis miwodebis wertil Si gadagzavnil i el eqtro energia
monacemTa Rirebul eba:	
gamosayenebel i gazomvis meTodebisa da procedurebis aRweril oba:	<ul style="list-style-type: none"> <li>• el energia izomeba sazomi xel sawyoebis meSveobiT (sazomi aparatura da meTodebi, roml ebic erTobl ivadaa SeTanxmebul i myidvel ebsa da Sps "angl o-mesxeTi"-s mier) miwodebis adgil ze</li> <li>• monacemebi izomeba saaTobrivad, xol o Canawerebi keTdeba Tveebis mixedvi T</li> <li>• xdeba monacemTa 100% monitoringi</li> </ul>
xarixsis martvisa da uzrunvel yofis procedurebis gamoyeneba:	es monacemebi pirdapir iqneba gamoyenebul i emisiaTa Semicirebis gamosaangariSebl ad. qsel sSi dafiqsirebul i gayidvebi da sxva Canawerebi gamoiyeneba am monacemebis j varedinad Sesamowmebl ad
Seni Svnebi	sazomi xel sawyoebi mowmdeba yovel wl iurad an moTxovnisamebr rogorc myidvel ebis, ise Sps. "angl o-mesxeTi"-s mier

monacemebi da parametrebi:	l opotas hehis mier el eqtroqsel isaTvis wliurad miwodebul i el eqtro energia
erTeul i:	kWh
aRweril oba:	sadguris mier qsel isaTvis gadacemul i el eqtro energia
gamoyenebul i monacemebis wyaro:	l opotas hehis miwodebis terminal ze gadagzavnil i el eqtro energia

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

monacemTa Rirebul eba:	
gamosayenebel i gazomvis meTodebisa da procedurebis aRweril oba:	<ul style="list-style-type: none"> <li>• el .energia izomeba sazomi xel sawyoebis meSveobiT (sazomi aparatura da meTodebi, roml ebic erTobl ivadaa SeTanxmebul i myidvel ebsa da Sps “energia” –s mier) miwodebis adgil ze</li> <li>• monacemebi izomeba saaTobrivad, xol o Canawerebi keTdeba Tveebis mi xedvi T</li> <li>• xdeba monacemTa 100% moni toringi</li> </ul>
xarixis marTvisa da uzrunvel yofis procedurebis gamoyeneba:	es monacemebi pirdapir iqneba gamoyenebul i emisiaTa Sencirebis gamosaangariSebl ad. qsel sSi dafiqsirebul i gayidvebi da sxva Canawerebi gamoiyeneba am monacemebis j varedinad Sesamowmebl ad
Seni Svnebi	sazomi xel sawyoebi mowmdeba yovel wl iurad an moTxovni samebr rogorc myidvel ebis, ise Sps. “energia”-s mier

monacemebi da parametrebi:	okamis hesis mier el eqtroqsel isaTvis wl iurad miwodebul i el eqtro energia ( <b>EG<sub>y</sub></b> )
erTeul i:	kWh
aRweril oba:	hesis mier qsel isaTvis gadacemul i el eqtro energia
gamoyenebeul i monacemebis wyaro:	okamis hesis miwodebis terminal ze gadagzavnili el eqtro energia
monacemTa Rirebul eba:	
gamosayenebel i gazomvis meTodebisa da procedurebis aRweril oba:	<ul style="list-style-type: none"> <li>• el .energia izomeba sazomi xel sawyoebis meSveobiT (sazomi aparatura da meTodebi, roml ebic erTobl ivadaa SeTanxmebul i myidvel ebsa da Sps “amas” –s mier) miwodebis adgil ze</li> <li>• monacemebi izomeba saaTobrivad, xol o Canawerebi keTdeba Tveebis mi xedvi T</li> <li>• xdeba monacemTa 100% moni toringi</li> </ul>
xarixis marTvisa da uzrunvel yofis procedurebis gamoyeneba:	es monacemebi pirdapir iqneba gamoyenebul i emisiaTa Sencirebis gamosaangariSebl ad qsel sSi dafiqsirebul i gayidvebi da sxva Canawerebi gamoiyeneba am monacemebis j varedinad Sesamowmebl ad
Seni Svnebi	sazomi xel sawyoebi mowmdeba yovel wl iurad an moTxovni samebr rogorc myidvel ebis, ise Sps. “ama”-s mier

monacemebi da parametrebi:	nergeTi (xani-2) hesis mier el eqtroqsel isaTvis wl iurad miwodebul i el eqtro energia ( <b>EG<sub>y</sub></b> )
monacemTa erTeul i:	kWh
aRweril oba:	hesis mier qsel isaTvis gadacemul i el eqtro energia
gamoyenebeul i	nergeTis hesis miwodebis terminal ze gadagzavnili el eqtro

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

monacemebis wyaro:	energia
monacemTa Rirebul eba:	
gamosayenebel i gazomvis meTodebi sa da procedurebis aRweril oba:	<ul style="list-style-type: none"> <li>• el .energia izomeba sazomi xel sawyoebis meSveobiT (sazomi aparatura da meTodebi, roml ebic erTobl ivadaa SeTanxmebul i myidvel ebsa da kavSiri "ubani -2004" –s mier) miwodebis adgil ze</li> <li>• monacemebi izomeba saaTobrivad, xol o Canawerebi keTdeba Tveebis mixedviT</li> <li>• xdeba monacemTa 100% monitoringi</li> </ul>
xarixis martVisa da uzrunvel yofis procedurebis gamoyeneba:	es monacemebi pirdapir iqneba gamoyenebul i emisiaTa Sencirebis gamosaangariSebl ad qsel Si dafiqsirebul i gayidvebi da sxva Canawerebi gamoiyeneba am monacemebis j varedinad Sesamowmebl ad
Seni Svnebi	sazomi xel sawyoebi mowmdeba yovel wl iurad an moTxovnisamebr rogorc myidvel ebis, ise Sps. "ubani-2004"-s mier

monacemebi da parametrebi:	fSavel is mcirehesis mier el eqtroqsel isaTvis wl iurad miwodebul i el eqtro energia ( <b>EG<sub>y</sub></b> )
erTeul i:	kWh
aRweril oba:	sadguris mier qsel isaTvis gadacemul i el eqtro energia
gamoyenebul i monacemebis wyaro:	fSavel is hesis miwodebis terminal ze gadagzavnili el eqtro energia
monacemTa Rirebul eba:	
gamosayenebel i gazomvis meTodebi sa da procedurebis aRweril oba:	<ul style="list-style-type: none"> <li>• el .energia izomeba sazomi xel sawyoebis meSveobiT (sazomi aparatura da meTodebi, roml ebic erTobl ivadaa SeTanxmebul i myidvel ebsa da Sps "gza" –s mier) miwodebis adgil ze</li> <li>• monacemebi izomeba saaTobrivad, xol o Canawerebi keTdeba Tveebis mixedviT</li> <li>• xdeba monacemTa 100% monitoringi</li> </ul>
xarixis martVisa da uzrunvel yofis procedurebis gamoyeneba:	es monacemebi pirdapir iqneba gamoyenebul i emisiaTa Sencirebis gamosaangariSebl ad qsel sSi dafiqsirebul i gayidvebi da sxva Canawerebi gamoiyeneba am monacemebis j varedinad Sesamowmebl ad
Seni Svnebi	sazomi xel sawyoebi mowmdeba yovel wl iurad an moTxovnisamebr rogorc myidvel ebis, ise CBO. "gza"-s mier

**B.7.2** monitoringis gegmis aRweril oba :

>>

proeqTTan dakavSirebul i saqmianoba moicavs hidroel eqtro generacias. gamoyenebul i teqno logia hidro energias gardaqmnis el eqtro energiad da el eqtro generaciisaTvis ar iyenebs aranair sxva sawvavs. amdenad, ar aris saWiro aranairi gansakuTrebul i saSual ebebisa da meTodebis gamoyeneba proeqtis saqmianobidan raime gaJonvis sakontrol ebl ad. rogorc monitoringis meTodol ogiis ukanasknel i versiiTaa gaTval iswinebul i, gamoiyeneba "ganaxl ebadi teqno logidan el eqtro generaciis" monitoringi.

monitoringis gegmis sivrciTare are iqneba sufta ganvitarebis meqanizmis proeqTTan dakavSirebul i saqmianobis proeqtis fizikuri adgil mdebareoba, rac Seesabameba kabal is, l opotas, kaxareTis, okamis, nergeTisa da fSavel is mcire hidro sadgurebis mdebareobas.

mricxvel ebis damontajeba da eqspl uatacia

mcire hesis mier gamomuSavebul i el eqtro energia gakontrol deba mricxvel is saSual ebiT, romelic aRricxavs qsel isaTvis miyidul i el eqtroenergiis raodenobas. mricxvel is mfl obel ia mcire hesi da damontajeba da movl a maTve akisriaT.

kabal i hesi	Sps. kabal i hesi 2006
kaxareTi hesi:	Sps. angl o-mesxeTi
l opota hesi :	Sps. energia
okami hesi:	Sps. ama.
nergeTis (xani-2) hesi:	CBO " ubani-2004"
fSavel is hesi:	CBO " gza"

TiToeul i mcire hesistvis, mricxvel i montajdeba mcire hesis el eqtroqsel Si miwodebis adgil as samanevro parkSi. damontajebamde, moxdeba mricxvel is kal ibracia saxel mwifo standartizaciis organizaciis mier. gamoyenebel i sazomi mowyobil obebi Seesabameba im sabazro wesebsa da kanonebs, roml ebic aregul ireben saqarTvel oSi qsel isaTvis miyidul el eqtro energias da damontajebul ia am mowyobil obaTa instruqciebis mixedvit. maTi damontajebisaTvis, regul irebisaTvis, moqmedebisa da momsaxurebisaTvis saWiro yvel anair xarj ebs Tavis Tavze iRebs mcire hesi. sazomi xel sawyoebis/mricxvel ebis xarixis uzrunvel yofa xorciel deba saval debul o wl iuri kal ibraciis procesiT, romel sac awarmoebs saxel mwifo strandar tizaciis organizacia. rac, sazomi xel sawyoebis sizustes uzrunvel yofs.

mcire hesebi pasuxismgebel ni arian rogorc material urad, ise iuridiul ad mis usafrTxoebaze, maTze dasmul i l uqebis dacvaze, maTTvis adami anebis mier miyenebul i zianis gamo da sazomi wredebis darRvevaze. sazomi xel sawyos TiToeul komponents daniSnavs Sesabamisi etiketiT mfl obel i im

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

saregistracio monacemebis Sesabamisad, roml ebic xel misawdomia komerciul operatorTan.

monitoringis gegmis ganxorciel eba

moxdeba mcire hesebis mier qsel isaTvis miwodebul i el eqtro energiis mudmivi monitoringi im sazomi xel sawyoebis saSual ebiT, roml ebic damontaJdeba miwodebis adgil as. aseve, moxdeba saaTobrivad mricxvel is monacemebis Cawera miwodebis adgil as arsebul Sesabamis saaRricxvo Jurnal ebSi. mas xel s moawers sadispeCero centris pasuxismgebel i piri (organo, romel ic fl obs da iyenebs maRal i Zabvis qsel s), komerciul i sistemis operator i (sabiTumo sistemis operator i) da is mxareebi, roml ebTanac mcire hidrosadgurebs dadebul i aqvT xel Sekrul ebebi energiis miwodebaze. gayidul i el eqtroenergiis yovel Tviuri angariSfaqtur ebi gamoicema mcire hidrosadgurebis mier mricxvel is monacemebTan Sesabamisad. rac Seexeba mricxvel is monacemebis, monacemTa Segrovebas da angariSfaqtur ebis momzadebas, aregul irebs Sesabamisi sabazro wesebi, roml ebic aregul ireben saqarTvel oSi el eqtroenergiis sabiTumo gayidvebs.

xarixis uzrunvel yofa da marTva

imis uzrunvel sayofad, rom adgil i ar eqneba mricxvel ebi dazianebas, isini dal uqul ia saxel mwifo standartizaciis organizaciis mier da xdeba misi regul arul i Semowmeba sami mxaris: saxel mwifo el eqtro sistema, erovnul i el eqtro qsel is komerciul i operator i da mcire hidroproeqtebis mfl obel is mier. mricxvel ebi dal uqul ia yvel a mxaris mier. maTi gaxsna an manipu l ireba arc erT mxares ar SeuZl ia. yovel wliuri Semowmeba, remonti da xarixis marTva xorciel deba mcire hesebis mfl obel ebi mier mricxvel is mwar moebl is instruqciebis mixedviT.

verifikacia

mosal odnel ia, rom proeqtidan gamomuSavebul i emis iaTa Semcirebis verifikacia moxdeba yovel wliurad.

**B.8** sabaziso da monitoringis meTodol ogiis gamoyenebis damTavrebi s TariRi da Sesabamisi pasuxismgebel i pirebis /sawarmoebis saxel ebi;

sabaziso kvl evis dasrul ebi s TariRi (proeqti 9): 2008 wl is 28 Teberval i

batoni biSal thapa/qal batoni raSika gufTa

ICF interneSenel (winaT ICF konsal ting)

Thapar hauzi, me-2 sarTul i – dasavl eT fl igel i

124j anpati, axal i del i - 110 001

indoeTi

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

tel eFoni: +1.703.934.3802  
el -fosta: [bthapa@icfi.com](mailto:bthapa@icfi.com)  
el -fosta: [rgupta@icfi.com](mailto:rgupta@icfi.com)

sabaziso da monitoringis meTodol ogiis Semdgenel i piri/sawarmo ar aris  
proeqtis monawil e mxare

nawil i **C.** proeqtis saqmianobis aRweril oba/sakredito periodi

C.1 proeqtis saqmianobis xangrZl ivoba:

C.1.1. proeqtis saqmianobis dawyebis TariRi :>>  
2008 wl is 1 ivl isi

C.1.2. proeqtis saqmianobis mosal odnel i/savaraudo vada:

>>  
15 - 25 wel i

C.2 sakredito periodis arCeva da masTan dakavSirebul i informacia:

C.2.1. ganaxl ebadi sakredito periodi

3X7=21 wel i

C.2.1.1. pirvel i sakredito periodis dawyebis TariRi:

2008 wl is 1 ivl isi

C.2.1.2. pirvel i sakredito periodis xangrZl ivoba:

7 wel i

C.2.2. fiqsirebul i sakredito periodi

C.2.2.1. dawyebis TariRi

C.2.2.2. xangrZl ivoba:

nawil i **D.** garemoze zemoqmedebis faqtorebi

D.1. mimRebi mxaris moTxovniT, proeqtis saqmianobis mier garemoze  
zemoqmedebis anal izis dokumentacia:

sagarTvel os kanonmdebl oba imis Sesaxeb, Tu ra nebarTvebia saWiro arsebul i  
mcire hidro sadgurebis reabilitaciisaTvis jer-jerobiT bundovania.



## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

amJamindel i kanonmdebl obiT, ar aris saWiro aranairi nebarTva saxel mwifo organodan saremonto samuSaeobisaTvis, roml ebic saqarTvel os mTavrobis 140-e dadgenil ebis (2005 wl is 11 agvisto) Tanaxmad ar warmoadgens, "sagrZnob cvl il ebebs arsebul i Senobis garegnul i saxis mimarT, fasadisa da saxuravis SekeTebis CaTvl iT, garda im Senobebisa, roml ebic ganl agebul ia kul turul i menkvidreobis zonaSi da im zonebSi, roml ebzec vrceI deba saqarTvel os mTavrobis an adgil obrivi TviTmmarTvel obis kanonmdebl oba". amJamindel i sakanonmdebl o baza ar aris mkafio da cal saxa imis Sesaxeb, Tu ra unda CaiTval os rogorc "Senobis garegnul i saxis mniSvnel ovan cvl il ebad". igi aseve ar akonkretebs unda iyos Tu ara turbinis Secvl a miCneul i "ganzomil ebis Secvl ad".

bol o dros miRebul i garemosTan dakavSirebul i nebarTvebis gamartivebul i procedurebis Tanaxmad, roml ebic gansazRvrul ia saqarTvel os mTavrobis 154-e dadgenil ebiT (2005 wl is 1 seqtemberi; cvl il ebebi Sevida 2006 wl is 3 Teberval s), ar aris saWiro damatebiTi nebarTvebis moZieba mcire zomis hidro sadgurebisTvis 2MW-ze qvemoT. Tumca, igive procedura saWiroebs nebarTvas nebismeri simaRl is kaSxl is reabilitaciiasTvis. Tumca, kvl av bundovania saWiroa Tu ara zemoT naxsenebi nebarTvebi mocemul i struqturabis reabilitaciiasTvis da mxol od mSenebl oba eqvemdebareba Tu ara nebarTvas.

wyal aRebis nebarTva, romel ic gasca garemos dacvisa da bunebrivi resursebis saminstros nebarTvebis departamentma, ar aris saWiro hidro danadgarebisaTvis, roml ebic wyal s iReben arsebul i - da amdenad, ukve licenzirebul i - obieqtebidan, rogoricaa, sarwyavi arxebi. mcire hesis wyl is momaragebis sqemaze daydnobiT, da imis mixedviT wyl is miReba-gaSveba xdeba Tu ara mdinaris an/sarwyavi arxidan, xdeba ganaxxadis darTva proeqtis dokumentTan erTad da igi waredgineba an nebarTvebisa da licenziebis departaments, romel ic gascems bunebrivi wyl is rezervuarebidan wyl is gamoyenebis nebarTvas an geografiul ad Sesabamis saxel mwifo organos, romel ic pasuxismgebel ia melioraciiis sqemis marTvasa da muSaobaze, romel ic kontraqtiT adasturebs wyl is gamoyenebas sarwyavi/sadrenaJo arxebidan.

eqvsidan sami mcire hesi iyo arsebul i nageboba, roml ebic amJamad ufunqcioa. oris mSenebl oba bol omde ar aris miyvanil i. erTi ki - unda amogmeddes, rom man sarwyavi arxidan miRos wyal i. amdenad, TiToeul ma maTganma unda moipovos Sesabamisi samSenebl o nebarTva, rac Tavistavad gul isxmobs garemoe zemoqmedebis nebarTvis miRebasac, Tu mcire hidroproeqti 2 MW an meti. mcire hidroproeqtebs an ukve gaaCniaT an miiReben wyl is arebis nebarTvas licenzirebisa da nebarTvebis departamentidan an dadeben wyl is miRebis SeTanxmebebs Sesabamis organoebTan - melioraciiis kompaniebTan.

kabal is mcire hesi

kabal hesis biznes gegmis mixedviT:

*kabal is mcire hidro sadguri aSenda 50 wl is win. man ver SeZl o Seenaxa mSenebl obis nebarTvebis Tavdapirvel i dokumentebi. amJamad gacemul ia 5-wl ian saijaro periodiT saqarTvel os rkinigzaze. aris nebarTva mSenebl obaze da garemos dacvaze, romel Ta Tanaxmadac Senobas ar emuqreba aranairi safrTxe garemosTan mimarTebaSi da rom wyal aRebis licenziis miRebisTanave,*

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

*SesaZl ebel ia misi kvl av amuSaveba. miRebul ia iqna wyl is miReba/gacemis nebarTva.*

*kaxareTis mcire hesi*

kaxareTis mcire hesi moiTxovs mSenebl obisa da wyl is miReba/gacemis nebarTvebs, rac aseve qmnis garemosdacvis nebarTvis saWiroebasac.

*I opotas mcire hesi*

*I opotas mcire hesi j er ar amuSavebul a. samuSaoebi moicavs kaSaxl is mSenebl obasac. samSenebl o nebarTva gaica ise, rom ar dasWirvebiaT garemos dacvis nebarTva. aseve miRebul iqna wl is miReba/gaSvebis nebarTva.*

okamis mcire hesi

okamis mcire hidro hess arasdros umuSavia. gaica nebarTva mSenebl obaze garemos nebarTvis moTxovnis gareSe. okamis mcire hesi wyl s iRebs sarwyavi sistemidan. amdenad, igi ar eqvemdebareba wyl is gaSveba/miRebis nebarTvas. wyl is miRebasTan dakavSirebul i SeTanxmeba unda daidos mel ioraciis kompaniasTan.

nergeTi (xani-2 mcire hesi)

nergeTis mcire hisis samSenebl o nebarTva gaica garemos nebarTvis moTxovnis gareSe. nergeTis mcire hesi wyl s miiRebs sarwyavi arxidan. amdenad, igi ar eqvemdebareba wyl is gacema/miRebis nebarTvas. xel Sekrul eba wyl is miRebasTan dakavSirebiT unda daidos mel ioraciis kompaniasTan.

fSavel is mcire hesi

fSavel is mcire hisis samSenebl o nebarTva gaica garemos nebarTvis moTxovnis gareSe. fSavel is mcire hesi wyl s miiRebs sarwyavi arxidan. amdenad, igi ar eqvemdebareba wyl is gacema/miRebis nebarTvas. xel Sekrul eba wyl is miRebasTan dakavSirebiT unda daidos mel ioraciis kompaniasTan.

<p><b>D.2.</b> Tu garemoe zemoqmedeba mniSvel ovnad CaiTvl eba proeqtis monawileTa an mimRebi mxaris mier, gTxovT, mogvawodoT daskvnebi da yvel anairi informacia, romelic xel s Seuwyobs garemoe zemoqmedebis Sefasebis process mimRebi mxaris mier dadgenil i wesiT:</p>
--

proeqtis saqmianoba moicavs eqvsi dagj ufebul i mcire hisis reabilitacias: kabal i, kaxareTi, nergeTi (xani - 2), okami, I opota da fSavel i. eseni dabal i zegavl enis hidro proeqtebia da amdenad, reabilitacia moxdeba arsebul adgil ebSi.

Tumca, miuxedvaad imisa, rom mimReb qveyanas ar mouTxovia, Catar da farTo masStabiani programul i garemoe zemoqmedebis Sefaseba sasofl o energo

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

programis fargl ebSi<sup>10</sup> 2006 wl is martSi. garemoze zemoqmedebis programul SefasebaSi (PEA) Sedioda Semdegi: a)garemos Semowmebis kriteriუმebis gansazRvra msgavsi zomis, mocul obisa da zegavl enis sididis proeqtebisatvis da b)zogadi samitigacio zomebis daxasiaTeba TiToeul i proeqtis tipisaTvis arsebul i zegavl enis aRmosafxvrel ad. garemoze zemoqmedebis programul i Sefasebis garda, sasofl o energo programam aseve SeimuSava garemos marTvis gegma (EMP) TiToeul i proeqtisaTvis, raTa proeqtis ganxorciel ebasTan dakavSirebul i yvel a aspekti marTos.

garemoze zemoqmedebis programul i Sefasebis gundma Seiswavl a da gaanal iza yvel a obieqti, sadac sasofl o energo programas unda emuSava. qvemoT moyvanil i saqmiანობა ganxorciel da proeqtis potenciuri zegavl enisa da mniSvnel obis donis dasadgenad, da potenciuri proeqtebis sxvadasva kategoriebis gamosavl enad:

etapi 1: gundma gamoyo is saqmiანობა, romel ic unda ganaxorciel os, rogorc proeqtTa nawil i.

etapi 2: gundma gamoyo am saqmiანობასTan dakavSirebul i zogadi da specifikuri xasiTis sakiTxebi garemosTan mimarTebaSi.

etapi 3: gundma Caatara garemos Semowmebis anal izi, romel ic iTval iswinebda warmodgenil i proeqtis garemoze zemoqmedebis yvel a aspekts .

etapi 4: gundis wevrebi warmoadgendnen sxvadasxva sferoebis. maT moinaxul es yovel i adgil i imisaTvis, rom CaetarebinaT garemos Sefaseba obieqtis Semowmebis anal izis gamoyenebiT, romel ic special urad am miznisaTvis SemuSavda

etapi 5: savel e gasvl ebis safuZvel ze, sxvadxva special istebisagan miRebul Sedegebze dayrdnobiT, aseve sxva xel misawvdomi monacemebis da dokumentaciis meSveobiT, romel ic garemos programul i SefasebisaTvis iqna Sedgenil i, gundma SeZl o garemoze zemoqmedebis faqtorebis gansazRvra (rogorc dadebiTis, ise uaryofiTis) TiToeul i kategoriisaTvis (wyal i, biosfero da a.S.) da maTi SemsuბუqebisaTvis daadgina saerTo rekomendaciebi.

etapi 6:

garemoze zemoqmedebis programul Sefasebaze dayrdnobiT da damatebiTi obieqtisaTvis damaxasiaTebel i samuSaoebis meSveobiT, gundma SeimuSava garemos marTvis cal keul i gegmebi yovel i mcire hesisaTvis, roml ebSic mocemul ia garemos zegavl enis detal uri aRwera da maTi Serbil ebis zomebi, roml ebic individual urad morgებul ia TiToeul i obieqtisaTvis.

garemoze zemoqmedebis programul i Sefaseba Sedgeba mTel i rigi Semamsuბუqebel i, monitoringisa da institucional uri zomebisgan, roml ebic unda miviRoT mxedvel obaSi ganxorciel eba da operireba, raTa SemcirdeS uaryofiTi zegavl ena garemosa da social ur sferoze, moxdes maTi kompensireba an Semcireba misReb doneebamde. garemos marTvis gegma aseve moicavs im

---

<sup>10</sup> “programul i garemo Sefaseba – sasofl o energo programa saqarTvel oSi”; momzadda URS Corp da PA Government Services mier amerikis saerTaSoriso ganviTarebis saagentosaTvis/kavkasia/saqarTvel o, 2006 wl is ivl isi.

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

RonisZiebebs, romel Ta gatareba saWiroa zemoT mocemul i zomebis misaRebad. garemos marTvis gegmis fargl ebSi xdeba efeqtiani da rentabel uri zomebis gamokveTa ramac SesaZl oa misaReb donemde Seamciros potenciurad mniSvnel ovani uku zemoqmedeba. ufro konkretul ad, es gegma moicavs Semdegs:

- a) yvel a mosal odnel da mniSvnel ovan garemoze uku zemoqmedebis daskvnebs (rac aseve moicavs adgil obriv mosaxl eobas da aranebayofl obiT gadsaxl ebas)
- b) yovel i Semamsubuqebel i zomis aRweril obas (teqnikuri detal ebiT) im zegavl enis CaTvl iT, romel sac is ekuTvnis da im pirobebisa, roml ebSi igi saval debul oa (mag. mudmivad an saWiroebis SemTxvevaSi), gegmebTan, aRWurvil obis aRweril obasa da samoqmedo procedurebTan erTad
- g) am zomebiT gamowveul i garemoze nebimismieri potenciuri zemoqmedebis Sefasebas
- d) proeqtisaTvis saWiro nebismier sxva Semamsubuqebel gegmasTan kavSirs (mag. aranebayofl obiTi gadasaxl eba, adgil obrivi mosaxl eoba an kul turul i memkvidreoba).

garemos marTvis gegmis monitoringis nawil i Seicavs Semdeg informacias:

- a) monitoringis zomebis konkretul i aRweril oba da teqnikuri detal ebi, sazomi parametrebis, gamosayenebel i meTodebis, sacdel i adgil mdebareobis, gazomvis sixSiris, aRmoCenis l imitebis (Tu aris amis saSual eba) da zRvaris gansazRvris CaTvl iT, rac dagvanaxebs, Tu ramdenad saWiroa gamosasworebel i zomebis miReba  
da
- b) monitoringisa da angariSval debul ebis procedurebi raTa moxdes im mDgomareobis adreul etapze dadgena, romel sac Wirdeba konkretul i Semamsubuqebel i zomebis miReba.

Catarebul garemo kvl evaze dayrdnobiT rac moicavda kabal is, kaxareTis, l otopas, okamis, nergeTis (xani-2) da fSavel is mcire hidro proeqtebis garemos Tval sazrisiT Semowmebas, gamoiqveTa mniSvnel ovani aspeqtebi. amdenad, xdeba aseTi aspeqtebis Semsubuqeba da maTi prevencia saukeTeso menejmentis, samSeneblo da saoperacio Tval sazrisiT. programul garemos SefasebaSi gamoiqveTa warmodgenil i zogadi garemo faqtorebi, rac mDgomareobs SemdegSi:

geol ogia da niadagi

garemoze zemoqmedeba mSenebl obisa da/an eqspl uataciis dros:

- wyl isa da niadagis dabnZureba gamowveul i daRvril i qimiuri nivTiererebiT, Txevadi betoniT, sxva Txevadi masal ebiT an narCeni masal ebis araswori SenaxviTa da util izaciis
- eko-sistemis an cxovel ebis saxcovrebel is dazianeba axal i el eqtro xazebisa da/an boZebis montajis gamo

Semsubuqebis zomebi:

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

### CDM – Executive Board

- samSenebl o kontraqtori firmebi iyeneben saukeTeso praqtikas; narCenebis dagroveba xdeba special urad mowyobil adgil as; manqana meqanizmebis yovel dRe mowmdeba imis mizniT, rom xom ar aqvs adgil i daRvras; obieqtze akrZal ul ia manqana meqanizmebis recxva da zeTis gamocvl a
- axal i xazebis (SeZl ebisdagavarad) SerCeva cxovel Ta da mcenareTa mgrZnobiare sacxovrebel isaTvis zianis miyenebis Tavidan asacil ebl ad

monitoringis moTxovnebi:

- samSenebl o obieqtis special uri daTval iereba, romelic unda Caatardes sasofl o energo programis mier

#### *wyl is resursebi*

garemoze zemoqmedeba mSenebl obisa da/an eqspl uataciis dros:

- wyl is gazrdil i simRvrive anda erozia mdinaris nakadSi
- gazrdil i wyal didobebi

Semsubuqebis zomebi:

- mSenebl obis dros nakadis dabl okvis Tavidan acil eba, da cementis vidre niadagis formebis gamoyeneba, rogorc nakadis droebiTi Semkavebl ebisa. mdinaris napirebze niadagis daxvavebis Tavidan acil eba; ekosistemis mis Tavdapirvel mdgomareobaSi dabruneba da napiris konturebis aRdgena; saremontო samuSaoebis dagegmva mSral i sezonis gamravl obaSi; nal eqebis damWerebi unda damontaJdes manamade, sanam adgil i eqneba miwis samuSaoebis; eroziis marTvis zomebis gamoyeneba, rogoricaa, gadarecxvebis Tavidan acil eba; mZime teqniki gamoyenebis minimumade dayvana.
- mSral i sezonis dros samuSaoebis dagegmva

monitoringis moTxovnebi:

- special uri inspeqtireba, romelic unda Caataros sasofl o energo programam, regional urma garemos dacvis samsaxurebma.

#### *biol ogiuri resursebi*

garemoze zemoqmedeba mSenebl obisa da/an eqspl uataciis dros:

- Tevzis dazianeba, Tevzis gamravl ebis xelis SeSli is CaTvl iT, mSenebl obisa da eqspl uataciis dros

Semsubuqebis zomebi:

- migranti Tevzebisatvis Sesabamisi gasasvl el is aSeneba; special uri badeebis dayeneba wyal mimiRebSi da ZiriTad nawil Si SeRwevadobis Tavidan asacil ebl ad; mdinareSi minimal uri sanitarul i dinebis uzrunvel yofa;
- sadguris datvirTvis Semcireba mdinareSi minimal uri sanitarul i dinebis uzrunvel sayofad gamravl ebis sezonis dros. special uri badeebis dayeneba arxSi Tevzebis SeRwevadobis Tavidan asacil ebl ad

monitoringis moTxovnebi:

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

- o special uri inspeqtireba, romel ic unda Catardes sasofl o energo programis fargl ebSi

*adamanuri resursebi*

garemoze zemoqmedeba mSenebl obisa da/an eqspl uataciis dros:

- kontraqtorebis, muSa-mosamsaxureTa da sxva adaminebis dazianebs samuSaoebis warmarTvisas da/an narCenebis araswori Senaxvisas
- sacxovrebel i adgil ebis simSvidis darRveva xmauriT, romel ic gamoicema el eqtro sadguris mSenebl obisas

samitigacio/Semsubuqebis zomebi:

- samuSaoze usafrTxoebis procedurebis dacva kontraqtorebis mier; saWiroebis SemTxevvaSi, damcavi mowyobil obis gamoyeneba
- yvel a narCeni masala unda iqnas Senaxuli usafrTxo, Sesabamisad gankuTvnil adgil as manamde, sanam moxdeba maTi Semdgom Sesabamis adgil ze gadatana
- damontaJeba daigegmos Cveul ebrivi samuSao saatebis dros kviris dReebSi

monitoringis moTxovnebi:

- o special uri miznobrivi inspeqtireba, romel ic unda Caataros sasofl o energo programam da regional urma garemos dacvis samsaxurebma

eqsive mcire hesisTvis, mosal odnel i zegavl enis, Semsubuqebis da monitoringis detal ebi mocemulia garemoze zemoqmedebis programul i SefasebaSi (PEA), mcire hidro-sadgurebis garemos marTvis gegmebsa da sxva garemos marTvis gegmebSi. garemoze zemoqmedebis programul i Sefaseba, garemos marTvis gegma da yvel a nebarTva aqvT proeqtis mfl obel ebs.

nawil i **E.** dainteresebul maxareTa komentarebi

>>

**E.1.** mokle arweriloba imisa, Tu rogor iqna gaTvaliswinebul i adgil obrivi dainteresebul i mxareebis komentarebi da maTi Sejereba:

>>

rogorc D.2 nawil Sia mocemul i, sasofl o energo programis garemos dacvis gundma daasrul a programul i garemoc Sefaseba sasofl o energo programisatvis 2006 wl is martSi.

garemos programul i Sefaseba moTavsda veb-gverdze 2007 wl is Teberval Si. misaRebia yvel anairi komentari. informacia proeqtebisa da garemos programul i Sefasebis Sesaxeb aseve gavrcel da kavkasiis arasamTavrobo

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

---

CDM – Executive Board

organizaciaTa qsel is (CENN) yovel kvireul i daijestis meSveobiT<sup>11</sup>. CENN gaxl avT ara-samTavrobo da ara-mongebiani organizacia, romel ic 1998 wel s daarsda. amasTan erTad, igi moxal iseTa proeqtia, romel ic xel s uwyobs regional ur TanamSroml obas gaumj obesebul i komunikaciis meSveobiT garemos dacvis organizaciebs Soris sasomxeTSi, azerbaijansa da saqarTvel oSi (nawil obriv ruseTsa da TurqeTSi).

**E.2.** miRebul i komentarebis mokl e Sej ameba:

dRemde ar miRebul a aranairi SeniSvnebi arc veb-gverdze, arc gazeTSi da arc CENN daijestSi ganTavsebul i informaciis Semdeg.

**E.3.** angariSi imis Sesaxeb, Tu rogor iqna mxedvel obaSi miRebul i SeniSvnebi:

ar arsebobs

---

<sup>11</sup> CENN vebgverdi : <http://www.cenn.org/>

**PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03**

CDM – Executive Board

დანიშნულება 1

პროექტის მონაწილეთა საკონტაქტო ინფორმაცია

ორგანიზაცია:	ენერგოეფექტურობის ცენტრი საგარეო
მისამართი, ნომერი:	გამრელიძის ქ. 19
კორპუსი	
მუნიციპალიტეტი	თბილისი
სტატი/რეგიონი:	
ინდექსი:	0160
მისამართი:	საგარეო
ტელეფონი:	+995-32-242540, 242541
ფაქსი:	+995-32-242542
ელ-ფოსტა:	<a href="mailto:g_abul@ecgeo.org">g_abul@ecgeo.org</a>
ვებ-გვერდი:	<a href="http://www.ecgeo.org">http://www.ecgeo.org</a>
პროექტის მენეჯერი:	გიორგი აბულაშვილი
სახელი:	დირექტორი
მისამართი:	ბატონი
გვარი:	აბულაშვილი
სახელი:	
სახელი:	გიორგი
განყოფილება:	
მობილური:	
პირდაპირი ფაქსი:	
პირდაპირი ტელეფონი:	
პირდაპირი ელ-ფოსტის მისამართი:	

ორგანიზაცია:	მსოფლიო ბანკის ნახსიზების დაფინანსების განყოფილება
მისამართი, ნომერი:	1818 H მისამართი, ნიუ-იორკი
კორპუსი	MC
მუნიციპალიტეტი	ვაშინგტონი
სტატი/რეგიონი:	DC
ინდექსი:	20433
მისამართი:	აშშ
ტელეფონი:	1-202-473-9189
ფაქსი:	1-202-522-7432
ელ-ფოსტა:	<a href="mailto:IBRD-carbonfinance@worldbank.org">IBRD-carbonfinance@worldbank.org</a>
ვებ-გვერდი:	<a href="http://www.carbonfinance.org">www.carbonfinance.org</a>
პროექტის მენეჯერი:	ჯოელ კასარდის
სახელი:	მენეჯერი, ნახსიზების დაფინანსება
მისამართი:	მუნიციპალიტეტი
გვარი:	კასარდი



PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

Sua saxel i:	
saxel i:	j oel i
ganyofil eba:	ENVCF
mobil uri:	
pirdapiri faqsi:	
pirdapiri tel efohi:	
piradi el - fostis misamarTi:	

დანართი 2

ინფორმაცია სახელმწიფო დაფინანსების შესახებ

ეკსპრესიული საერთაშორისო განვითარების სააგენტოს მიერ დაფინანსებული სასოფლო-სამეურნეო პროგრამის ფარგლებში მომზადდა. ამასთანავე, კაბალის, კახეთის, იმერეთის, ოკაის მცირე-ჰიდრო პროექტები მიიღეს გრანტის საერთაშორისო განვითარების სააგენტოდან საწარმოო ინვესტიციებისათვის. მსგავსად, დაფინანსებლიან გრანტით სარგებლობენ (ხანი - 2) დაწესებულების მცირე ჰიდრო პროექტები გაეროს განვითარების პროგრამის ფარგლებში.

სასოფლო-სამეურნეო პროგრამის გატარების მიზანობის მიზანია საკარტელის სასოფლო-სამეურნეო კრიზისის დაგეგმვის გამოსწორება. მთავარი მიზნები მოიცავს არსებულ სენობების რეაბილიტაციას, მცირე მასშტაბის სასოფლო-სამეურნეო ენერჯის ეფექტურობის პროექტების შექმნას, და ინტეგრირებული რესურსების მართვის გეგმების შემუშავებას. ისინი მოიცავს ისეთ რისკებს, როგორცაა:

- დაეხმაროს სოფლებს ენერჯის გენერაციის მოწყობის მიზნების რეაბილიტაციაში და შექმნას;
- ადგილობრივი ინსტიტუტების და მუშაკების დახმარებაში და აღდგინოს ენერჯის სექტორის მდგრადი და ალტერნატიული ენერჯის წარმოების მოსაზიდავე;
- ადგილობრივი სიმღერის განვითარება;
- ადგილობრივი ინფრასტრუქტურის განვითარება მდგრადი ენერჯის სისტემის საკარტელის ოსსამსახურის დაარსებით, რომელიც ხელსაწყო ენერჯის პროექტის მხარდასაჭერად (RE Project Support Offices (REPSOs) და
- სოფლებზე ორიენტირებული ბუნებრივი რესურსების მართვის გეგმების შემუშავება ადგილობრივი ენერჯის რესურსების ბაზის უკეთესი გამოყენების დაცვისათვის.

სასოფლო-სამეურნეო პროგრამის ამოქმედების მიზანობის მიზანია განმარტების არანაირ ნაქსირების კრედიტის. ამასთანავე, სადგურები უზრუნველყოფენ სესხებისა და აკციების უსაფრთხოებას პროექტის კაპიტალის ხარჯებისათვის. მსოფლიო ბანკის<sup>12</sup> გზავნილი პროექტის აქტივების შესახებ მოცემულია შემდეგნაირად:

*“მსოფლიო ბანკი, როგორც რამდენიმე ნაქსირების ფონდის მეშვეობით მიზნად ისახავს სესხების საბურთის გაცემის ემისიის შემსრულებელს, რომელიც გამოიწვევს მდინარის დინების მომსახურების მცირე ჰიდრო-ელექტრო სადგურების გაშენების გენერაციის ელექტრო ენერჯის გამოყენების გაშენების მოსაზიდავეს არსებულ ჰიდროელექტრო სადგურების რეაბილიტაციაში და ახალი სენების გამოყენებაში.*

*მცირე ჰიდრო რეაბილიტაციის პროექტი ნაქსირების დაფინანსების პროექტია, რომლის მიზანია სესხების ემისიის შემსრულებელს საკარტელის ოსი რეაბილიტირების ჰიდროელექტრო სადგურების დაგეგმვა. ემისიის შემსრულებელი სესხების ემისიის მსოფლიო ბანკის საზოგადოებრივი განვითარების ნაქსირების ფონდის მიერ და ნაქსირების დაგეგმვის შემოსულის შემოსულების ნაწილი გამოიწვევს ჰიდროელექტრო*

<sup>12</sup> World Bank reference to Georgia Small Hydro Rehabilitation Projects:

<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/GEORGIAEXTN/0,,contentMDK:21216593~menuPK:301751~pagePK:2865066~piPK:2865079~theSitePK:301746,00.html>

## PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

sadgurebTan axl o-maxl o macxovrebel i sazogadoebis sasargebl od. sareabilitacio samuSaeobi dafinansdeba amerikis saerTaSoriso ganviTarebis saagentos, evropis rekonstruqciisa da ganviTarebis bankis, saqarTvel os bankis, gaeros ganviTarebis proeqtis da mfl obel ebis aqciebiT. amerikis saerTaSoriso ganviTarebis saagento daxmarebas gauwevs proeqtis ganviTarebis, teqniki da finansuri daxmarebis gacemis kuTxiT misi sasofl o energo programis fargl ebSi”.

amerikis saerTaSoriso ganviTarebis saagentos<sup>13</sup> gzavnil i gvatyobinebs, rom saagento exmareba kerZo seqtoris inversticiebis Cadebas mcire hidro proeqtebSi saqarTvel oSi:

“imisaTvis, rom daexmaros saqarTvel os miaRwios mis hidro el eqtro energiis gamomuSavebis miznebs, amerikis saerTaSoriso ganviTarebis saagentom 2005 wel s wamoiwyo sasofl o el eqtroenergiis programa, roml is mizania daamyaros kavSirebi mc.hidro sadgurebai ganmxorciel ebl ebsa da komerciul msesxebl ebs, kerZo investorebsa da donor organizaciebs Soris, Semdegi ori ZiriTadi mizni dan gamomdinare: mc.hidr.pr-is ganviTarebisaTvis saWiro dafinansebisa da danadgarebis mfl obel ebisaTvis teqniki mocul obis gasazrdel ad. es programa, romel ic 2003 wel s wamowyebul i sapil ote proeqtis gagrZel ebaa, daiwyo imiT, rom bankis muSakebs amcnobdnen mitigaciis riskebs. Semdgom igi gadavi da saqmianobis dakonkretebaze, mcire hidro proeqtebis sicocxl isunarianobis gansazRvrasa da Sefasebaze, risTvisac Seiqmna biznes teqniki da garemos marTvis gegmebi. da bol os, adgil obriv komerciul da evropis rekonstruqciisa da ganviTarebis bankebTan TanamSroml obiT, Sesazl ebel ia 2 milioni saSual o vadiani sesxebis gacema garkveul i proeqtebisaTvis, roml ebic garemos dacvisa da komerciul i Tval sazrisiT rentabel uria.

gaeros ganviTarebis programis mxardaWera mcire hidro-proeqtebis reabilitaciastan dakavSirebiT, ar moiTxovs aranair emisiaTa Semcirebas, romel ic gamomuSavda proeqtis RonisZiebi dan gamomdinare.

“mizani”

srul masStabiani samomavl od SesamuSavebul i proeqtis mizania xel i Seuwyos mcire hidro el eqtro seqtoris ganviTarebas da uzrunvel yos mdgradi bazari mcire hidro-el eqtro proeqtebisaTvis. .

strategia

Tavdapirvel ad unda dadgindes, Tu ra barierebi arsebobs, roml ebic xel s uSI ian saqarTvel oSi mcire hidro-resursebis ganviTarebas, rasac Semdeg mosdevs strategiisa da mTel i rigi RonisZiebis ganviTareba am barierebis mosaxsnel ad. es yvel aferi xorciel deba yvel a Sesabamis pirtan Tu uwyebasTan konstul taciebiT, samTavrobo pirebis, adgil obrivi da saerTaSoriso safinansos CaTvl iT.

amrigad, gacnobebT im etapebis Sesaxeb, roml ebic unda gaiarOT: :

<sup>13</sup> USAID reference to Georgia Small Hydro Rehabilitation Projects:  
[http://www.usaid.gov/locations/europe\\_eurasia/press/success/2007-03-22.html](http://www.usaid.gov/locations/europe_eurasia/press/success/2007-03-22.html)

PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

---

CDM – Executive Board

1. *saqarTvel oSi mcire el eqtro sadgurebis reabil itaciisaTvis ekonomikuri, finansuri da garemos Tval sazrisiT saukeTeso mdomareobis demonstrireba. es gakeTdeba erTi an ori sapol ote gegmis mixedviR*
2. *daxmarebis miReba mcire hidro proeqtebis ganviTarebisaTvis sakanonmdebl o da institucional uri CarCos Sesaqmnel ad*
3. *mcire hidro proeqtebis resursebis gamoyenebis detal uri mzardi xarjebis anal izi .*
4. *adgil obrivi da saerTaSoriso safinanso institutebis CarTva mcire hidro proeqtebis resursebis ganviTarebis xel SesawyobaT da mcire hidro proeqtebis investiciebis dasafinansebl ad mdgradi finansuri meqanizms ganviTareba da amoqmedeba .*
5. *adgil obrivi damfinansebl ebis gadamzadeba saproeqto winadadebebisa da maTi ganxorciel ebis dasafinansebl ad saWiro ganacxadebis momzadebaSi*
6. *mcire hidro proeqtebis kompaniebis mfl obel ebisa da personal is gadamzadeba, rom maT SeZl on TaviantI sawarmoebis marTva da operireba komerciul ad warmatebul ad..”*

PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD) - Version 03

CDM – Executive Board

danarTi 3

sabaziso informacia

danarTi proeqtis dokumentaciaze:

- "emisიაTa faqtoris gamoangari Seba-saqarTvel o" gwavdis sabazo emisიაTa faqtoris detal ur gamoTvl ebs

qvemoT mocemul ia kabal is mcire hesis mier 2000-2006 wl ebSi gamomuSavebul i energiis monacemebi istoriul ad, roml ebic mogvawoda saqarTvel os sabiTumo el eqtro energiis bazarma. 2000-2006 wl ebi miiCneva Cveul ebriv wl ebad. garda amisa, am wl ebSi sadgurebs ar Catarebia aranairi saremonto an modifikaciis samuSoebi.

generaciis monacemebi ('000kil ovati)	2000	2001	2002	2003	2004	2005	2006	saSual o ('000kil ovati)
kabal i	4,139	3,393	2,724	2,461	3,167	1,363	865	2,588

danarTi 4

monitoringis informacia

A.

danarTi 5

datvirTvis faqtori

mcire hesis datvirTvis faqtori mocemul ia qvemoT:

mcire hesis dasaxel eba	mocul oba (MW)	mosal odnel i wl iuri genracia ('000 kWh)	datvirTvis faqtori
kabal i	1,500	6,000	46%
kaxareti	2,080	12,000	66%
l opota	2,000	13,000	74%
okami	1,600	10000	71%
xani-2	300	1500	57%
fSavel i	500	2,800	64%