Selection Criteria for Island to be supplied with RE Hybrid Systems

RE Hybrid Grid Systems for Thai Islands Project

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1 Introduction

This document provides criteria according to which islands will be selected within the project "Renewable Energy (RE) Hybrid Grid Systems for Thai Islands". Out of a stock of five previously identified possibly suitable islands, GIZ will select three islands for a technical site assessment.

The methodology suggested here is a result of GIZ best practices from projects implemented in Asia and Africa. It also includes the expertise of the consultant who is going to support the technical site assessments.

The selection of the islands will be based on data and information gathered by desk research and personal interaction with different Thai agencies and the communities themselves. Site visits could not be conducted prior to the assessment. Prior to the selection representatives from all islands will gather for a kick-off event during which island community leaders are presenting their cases and data.

To evaluate the islands, scores will be awarded for several criteria outlined below. These criteria will receive different weight according to its importance. Since the project aims to develop community-based systems, social factors such as community strength and commitment are of high importance. For this reason, the criteria parameter "Is the community ready to deliver, able to communicate and cooperative?" will receive KO weight. If a community scores no point, it will automatically be excluded. Other basic requirements for hybridizing the diesel run electricity supply on the islands with RE sources such as land availability to install RE plants, communities' ability to pay monthly electricity tariffs, accessibility to transport equipment to the islands and governmental plans to connect the islands to the main grid via submarine high voltage cables receive a KO weight too.

The final ranking score will be determined by the scores of the criteria multiplied by the individual weighting factor. The higher the calculated number, the better the ranking.

2 Islands

The list of islands below has been prequalified prior to the project start by GIZ. These five islands will be invited to the Kick-Off Event on 17th of January.

Name	Thai Name	Province
Koh Prathong	เกาะพระทอง	Phang Nga, Southern Thailand
Koh Mak Noi	เกาะหมากน้อย	Phang Nga, Southern Thailand
Koh Bulon Don	เกาะบูโหลน ดอน	Satun, Southern Thailand
Koh Bulon Lae	เกาะบูโหลน เล	Satun, Southern Thailand
Koh Lon	เกาะโหลน	Phuket, Southern Thailand

3 Selection Criteria

3.1 Geographical Factors

Criteria	Criteria Parameter	Ranking Score	Weighting Factor
Location	Distribution of the community/buildings *Position of households within the settlement*	0 = spread out 1 = medium 2 = dense	2
	Number of villages/settlements on the island	0 = more than 4 1 = 2-4 2 = 1-2	1
Land Availability	Is there land/roof availability for RE (esp. PV) plants? *Taking the islands' topography and building density into consideration, 1 kW PV needs app. 7 m^2*		KO

3.2 Social Factors

Criteria	Criteria Parameter	Ranking Score	Weighting Factor
Community Commitment	Strength of leader/contact person	0 = weak 1 = medium 2 = strong	3
	Backing of leader within community *Difficult to assess in first Kick-Off meeting, therefore not considered in first island selection round; will have a strong weight after the site assessment*	0 = weak 1 = medium 2 = strong	0 for Kick-Off 3 for site assessment
	Is there experience with RE technologies within the community?	0 = no 1 = yes	1
	Is the community ready to deliver, able to communicate and cooperative?	0 = difficult communication 1 = some communication 2 = easy communication	2
Organizational structures	Existing social organization forms *committees, groups, cooperatives, NGOs*	0 = none 1 = few 2 = some	1
Population Growth	How is the islands' population developing? *including expected growth through tourism*	0 = decreasing 1 = increasing 2 = steady	2

3.3 Technical Factors

Criteria	Criteria Parameter	Ranking Score	Weighting Factor
Energy Demand	Type of consumers	0 = similar (e.g. mostly households) 1 = Diverse (households, public buildings, small enterprises)	1
Electricity Infrastructure	Existing grid? *Meaning grid infrastructure that could be used for the centralized hybrid system*	0 = no 2 = yes	3
	Existing community RE plants *PV panels, biogas plants e.g. to supply several households or schools*	0 = no 1 = yes	1
	Functional Solar Home Systems (SHS)	0 = many 1 = some 2 = few/none	1
	Amount of independently operated generation units (diesel generators)	0 = 3 or more units 1 = 1-2 units 2 = none	1
	Plans for high voltage cable connection (main land)		KO
Logistic and Accessibility	can equipment be transported for construction	0 = difficult 1 = OK 2 = easy	1

3.4 Economic Factors

Criteria	Criteria Parameter	Ranking Score	Weighting Factor
Financial Situation	Does a community fund (or similar financial structure) exist?	0 = no 1 = yes	1
	Is there an overall “Ability to Pay” monthly electricity tariffs? *assessment of the community leader*		KO
Productive Use of Energy	Is there a trend towards productive use of energy after getting reliable electricity supply? (e.g. water pumping and irrigation, enterprises, handcraft, food processing etc.) *assessment of the community leader*	0 = no cases/ideas 1 = some cases/ideas 2 = many cases/ideas	1

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