

Chapter-3

Energy and Farm Management: The Relevant Research Across the World

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In any scientific investigation and research a comprehensive review of literature is very essential. Its main function apart from determining the work done before concerning the problem area i.e. area of investigation, it provides an insight into the methods and procedures and create a basis for interpretation of findings. As direct references of all the items are not in abundance, certain specific references along with some indirect references have been incorporated in this chapter for the purpose of meaningful use. In the present study, reviews of literature have been summarized among following heads.

- a. Energy and Farm Management
- b. Energy Metabolism in Farming
- c. Energy Economics and Energy Management
- d. Farm Metabolism and Energy Equivalence
- e. Social Ecology and Farming
- f. Energy and Development
- g. Energy Policy and Planning
8. Energy Use in Agriculture

ENERGY AND FARM MANAGEMENT: THE RELEVANT RESEARCH ACROSS THE WORLD

Source	Year	Author		Key Points
Energy savings in agricultural machinery and mechanization, Elsevier Publishing Co. New York, USA	1988	Pellizzi, G, Cavalchini, AG, Lazzari, M.		In this paper, a framework to assess the operational energy inputs of various production systems and the relative performance of a grower within an adopted system is developed. This paper shows the usage of energy of cotton production into

					program,	obtaining	a
					program	description	and
					evaluation		program
					impact and success formal		
					or non formal		
Comparative		2007	Saunders, C.	This report compared the			
Energy	and		Barber, A.	energy	used	and	CO2
Greenhouse	Gas			emissions	between		NZ
Emissions	of New			and UK Dairy production.			
Zealand's	and the			It	has described	that	the
UK's	Dairy			UK	uses	twice	as much
Industry				energy per tonne of milk			
				solids produced than NZ,			
				,	even	including	the
				energy	associated		with
				transport from NZ to the			
				UK.			
Farm Power	and	2008	Hunt, D.	This	book presents		the
Machinery				optimization	of		the
Management-	10th			equipments	phases		of
edition				agricultural	production		
				which concerned with the			
				efficient		selection,	
				operation,	repair		and
				maintenance,			and
				replacement			of
				machinery.	The		main
				aims of this books was to			
				analyse	the	factors	that

					comprise		machinery
					management,	to	explain
					the	function	of various
				24			

					machines and mechanism		
					as	they	affect economic
					operation.		
Optimality		2010	Gandhia, A.	In	this	paper	focused on
Analysis	of		Guptaa, V.	the	popular	metric	of
Energy-			Baltera, M.H.	energy	response	time	
Performance			Kozuch, M.A.	product	to	capture	the
Trade-o				energy	performance		
for Server				tradeoff	and	present	the
Farm Management-				first theoretical result			on
Elsevier				the	optimality	of	server
				farm	management		
				policies. It also discussed			
				a	pattern of	stationary	
				demand and have proved			
				that there exists a very			
				small,	natural	class	of
				policies	that		always
				contains the optimal for a			
				single server as well as a			
				near optimal	policy	for	
				multi server system.			

Energy use pattern	2011	Ibrahim, H. Y.	The aim of this paper was
in vegetable			to examine the energy

production	under			use pattern,	energy	use
Fadama	in	north		efficiency and	energy	
central	Nigeria			productivity	for	Onion,
				Tomato, Sweet	and	Hot
				Pepper	production	under
				Fadama		

Energy Metabolism in Farming

Source	Year	Author	Key Points
Integration of Metabolism	1980	Ingvartsen, K. L. and Andersen, J. B.	The objective of this review is to identify and discuss important metabolic factors involved in the regulation of Predicting Voluntary Dry Matter Intake(VDMI) and their integration with metabolism.
Intake Regulation: A Review Focusing on Per parturient Animals,			

Energy cost of absorption and Metabolism	1990	McBride, B.W., Kelly, J.M.	This paper introduced contributions of various biochemical processes to overall energy expenditure in the Gastrointestinal tract (GIT) and assessed of liver.
of ruminant gastrointestinal tract and live; Journal of Animal Science			

Journal	of	2001	Bava, L. Rapetti, L.	This paper shows a
Dairy			Crovetto, GM	experiment that was to
Science			Tamburini, A.	compare betwten a
				silage-based control
				diet (C) and a
				nonforage diet (NF) in
				dairy goats throughout
				lactation in terms of
				animal performance
				and energy utilization

Effect of dietary	2005	TAMMINGA, S	This is the compares
energy source on		KEMP, B	studies which
energy balance,			manipulated
production,			dietary energy source
metabolic disorders			and shows that dietary
and reproduction			energy source can
in lactating dairy			affect the balance of
cattle			the C2/C3 ratio, as
		27	

			indicated by plasma
			NEFA, β -
			hydroxybutyrate
			(BHBA) and glucose
			level. It is shown that
			glycogenic nutrients
			increase glucose and
			insulin concentrations
			and decrease NEFA

Model is used to model an average, pasture-based New Zealand farm over different climate years.

Energy Economics and Energy Management

Source	Year	Author	Key points			
	2001		This	study	analysed	the
Inzynieria- Rolnicza		Niedzioka,-I	labour and energy inputs, and the cost of maize grain production of a family farm in Poland. Labour inputs average 35.4manhour/ha, Electricand mechanical energy inputs were 172.7kwh/t, and the input of cumulative energy was -5.7 Gj/t. Direct production cost of maize of maize grain amounted to 390pln/t			
Bulletin- OILB/SROP	2006	Bianchi,-F-J-J- A; Werf,-W-van- der; Honek,-A	This paper indicate that a major reduction in fertilizer input after the transition to a market economy, resulted in lower aphid population density in cereal crops and negatively affected energy sequestration survivals and reproduction of ladybeetles,			
		29				

			resulting	in	the	observed
			population		decline	in the
			species.			
	2008	Waheed,-M-A;	Energy and exergy studies			
Energy-		Jekayinfa,-S-O;	were	conducted in an orange		
Oxford		Ojediran,-J-O;	juice manufacturing industry			
		Imeokparia,-O-E	in Nigeria to determine the			
			energy consumption	pattern		
			and	methods	of	energy
			optimization in the company			
Journal-of-		Channabasavanna,				
Farming-	2010	-A-S; Biradar,-D-	To	study	the	production
Systems-		P;	efficiency,	energy	input	
Research-and-		Mahabhaleshwar-	management	and	its	
Development		Hegde;	efficiencies as influenced by			
		Prabhudev,-K-N	rice-fish-poultry integrated			
			farming			
			System models (IFS)			
Proceedings-of-		Asakereh,-A;	The aim of this study were to			
the-10th-		Keyhani,-A;	determine direct input energy			
International-	2009	Safaienejad,-H-A-	and indirect energy in dry			
Agricultural-		M; Garavand,-A-T	farming chickpea production,			
Engineering-			to investigate	the	efficiency	
Conference,-			of energy consumption and to			
Bangkok,-			make an	economic analysis		
Thailand			of dry farming chickpea in			

			koohdasht county of iran.				
		30					

	2012	Gwavuya,-S-G;	In this study, we assess the				
Renewable		Abele,-S; Barfuss,-	costs	of	energy generation		
-Energy		I; Zeller,-M;	from	major	energy	sources	
		Muller,-J	(firewood and dung) in rural				
			Ethiopia, as well as the				
			economic potential of biogas				
			as	an	alternative	in	
			addressing both energy				and
			food security challenges				
Biomass-and-	2012	Krasuska,-E;	This	work addresses			current
Bioenergy		Rosenvqvist,-H	and	future	economics	of	
			willow,	Miscanthus			and
			triticale	(a	whole	crop)	
			production for energy use in				
			Poland.	The	economics of		
			energy crops is set next to				
			that	of	common	cereal	
			production for gain				
Continental-	2012	Nnaji,-C-E;	This	paper	described	the	
Journal-of-		Uzoma,-C-C;	Rural	household			energy
Environmental-		Chukwu,-J-O	consumption		survey	data	

Sciences				collected between September				
				2009 and January 2010 was				
				utilised	to	investigate	the	
				socio-economic			factors	
				determining fuelwood use for				
				cooking by rural households				
				in Nsukka area of Enugu				
				State, Nigeria.				
Farm Metabolism and Energy Equivalence:								
			31					

Source	Year	Author	Key points
Indian Journal of Agronomy 54(1): 80-90 (March 2009)	1985	Mittal et al	This paper present different Energy Sources, Classification of energy, Energy input from various sources, Calculation of energy requirements for a field Operation and energy equivalence measure
Social Ecology and Farming:			

Source	Year	Author	Key points
Barriers and bridges to the renewal of ecosystems and institutions.	1995	Gunderson, LH Holling, CS Light, SS	This paper explores the ways for active adoption and learning in dealing with uncertainty in the management of complex regional ecosystem. It also shows 12 organized chapter including 4 sections, these are introductory, some case studies, new
		32	
			Brunswick (Canada) forest policy and management and water management of the everglades wetlands in Florida.
A social ecology approach and applications of urban ecosystem and landscape	1997	GROVE, JM WILLIAM R. BURCH. JR.	This paper addressed the heterogeneity of different ecosystem. It also illustrates the

analyses:	a	case			human	ecosystem
study of	Baltimore,				and	landscape
Maryland					approach	and how
					the concept of social	
					differentiation	can
					be	applied spatially
					at	different scales
					with a	case study
					from the research in	
					Baltimore.	
					Maryland.	Further.
					This	paper also
					identifies	different
					methods.	Tools.
					And techniques that	
					can be used for an	
					integrated.	Urban
					ecosystem approach	

Energy and Development:

Source	Year	Author	Key points
			This paper summarizes
Energy-	2007	Vera,-I;	the outcome of an
Oxford		Langlois,-L	international
			partnership initiative
			on indicators for
			sustainable energy
			development that aims
			to provide an

				analytical	tool	for
				assessing		current
				energy production and		
				use	patterns	at a
				national level.		
Renewable-energy-	2007		Rathore,-N-S;	This book contains the		
sources-for-			Panwar,-N-L	following chapters: (1)		
sustainable-				Introduction;		(2)
development				Integrated		energy
				planning;	(3)	Survey
				methodology		for
				energy	demand	and
				supply		Energy
				;	(4)	
				integration;		(5)
				Approaches		for
				integrated rural energy		
				systems;	(6)	Energy
				forecasting;		(7)
				Modelling	for rural	
				energy	planning;	(8)
				Utilisation	of	solar
				energy	for	thermal
		34				
				application;	(9)	Solar
				photovoltaic		
				technology;		(10)
				Energy from biomass;		
				(11)	Biodiesel-energy	

			options;	(12)	Biogas
			technology;		(13)
			Harnessing	the	power
			from	wind;	(14)
			Improved	cookstoves;	
			(15)	Fuel	cell
			technology;	and	(16)
			Techno-economic		
			analysis	of	energy
			options.		
Agricultural-	2011	Wu-ShanShan;	This	study	was to
Science-and-		Yao-ZhiJun;	provide		theoretical
Technology-Hunan		Shen-Lei	basis	for	getting
			sustainable		
			development	of	rural
			energy	in	Tibet
			reality.		into

Energy Policy and Planning

Source	Year	Author	Key points
	2008	Foo,-D-C-Y;	This work presents
Energy-		Tan,-R-R;	algebraic targeting
Oxford		Ng,-	techniques for energy
		D-K-S	sector planningwith
			carbon(CO2) emission
		35	

			and	land		availability
			constraints			
Journal-of-Applied- Science-and- Technology	2008	Njoku,-P-C	The	problem	of	waste
			flow	in	energy	system
			planning	was	investigate	
			by	adopting	integrated	
			system		engineering	
			approach			
Renewable- Energy.	2009	Zhang-LiXiao; Yang-ZhiFeng; Chen-Bin; Chen-	An overview	of	energy	
			consumption	pattern	by	
			available	data	and	the
			analysis			
Renewable- Energy	2009	Gitrakos,-G-P; Tsoutsos,-T-D; Mouchtaropoulo s,-P-G; Naxakis,- G-D; Stavrakakis,-G	This	study	presents	the
			sustainable	planning	of	
			some	relevant	aspects	of
			energy	policy	in	rural
			China	are	presented	in
			paper	a	renewable-based	
			energy	system,	which	
			aims	to	fulfil	the
			needs	of	the	island
			by	replacing	the	existing
			diesel	generators	with	new
			wind	farms,	photovoltaic	
			installations	and	hydrogen	
			production	systems.		

	2009		The study provides an
Climate-Policy		Suwa,-A	insight into the
			effectiveness of the
			methodology, and
		36	

			implications of the
			proposed visions and
			policy packages. A series
			of innovations are made,
			including the 'policy road
			map' as an effective tool
			that links the back casting
			framework and strategic
			policy discussions.

	2009	Borges-Neto,-M-	This paper introduces the
Engenharia-		R; Carvalho,-P-	development of a
Agricola		C-M-	computational tool to help
			the energy planning in
			rural electrification areas
			by using the main
			software available on the
			world market or cited in
			scientific literature, as in
			the reference.

	2010	de Keirstead,-J;	This paper considers the
Energy-		Schulz,-N-B	field of urban energy
Policy			policy, a neglected yet
			important topic

Energy Policy	2010	Hiremath,RB;	Present work uses goal-
		Bimlesh-Kumar;	programming method in
		Balachandra,-P;	order to analyze the DEP
		Ravindranath,-N-	through bottom-up
		H	approach

	2010	Hoesen,-J-van;	This paper describes a
Renewable		Letendre,-S	possible model for
-Energy			supporting rural
			community energy
			projects using a
			Geographic Information
			System (GIS), which was
			used to develop an
			inventory of energy
			resource potential in a
			rural Vermont town for
			biomass, wind, and solar
			technologies.

Journal-of-	2010	Mirzaesmaeli,-	The objective of the case
Environmental-		H; Elkamel,-A;	studies is to examine the
Management		Douglas,-P-L;	economical, structural,
		Croiset,-E;	and environmental
		Gupta,-M	Effects that would result if
			the electricity sector was
			required to reduce its CO2
			emissions to a specified
			limit.

Transactions-of-the-	2011	Zhang-LiXiao;	Based on available data of
Chinese-Society-of-		Hu-QiuHong;	rural energy consumption,
Agricultural-		Wang-ChangBo	the spatial and temporal
Engineering			characteristics of rural
			energy consumption as
			well as the evolvement of
			rural energy policy were
			analyzed
	2011	Park-KyungTae;	This paper studies the cost
Energy	-	Shin-DonGil;	of energy (COE) for
Oxford		Yoon-EnSup	several emerging, fossil
		38	

			fuel power plants such as
			an integrated gasification
			combined cycle (IGCC)
			power plant, a natural gas
			combined cycle (NGCC)
			power plant, and a
			pulverized coal (PC)
			power plant under three
			different scenarios defined
			by the International
			Energy Agency (IEA)
Songklanakarinn-	2011	Pattanapongchai,	The objective of this study
Journal-of-Science-		-A;	is to investigate upgrading
and-Technology		Limmeechokchai	biogas with a selected
		,-B	water scrubbing technique
			featuring least-cost energy

			planning						
	2011	Domac,-J;	This	paper discusses					the
Biomass-and-		Segon,-V;	methodological						approach
Bioenergy		Przulj,-I; Rajic,-	to local energy						planning
		K	proposed	by	the				authors
			and	identifies	the				most
			important	drivers	for				its
			application at the regional						
			level.						
Energy-water-	2011	Escobar,-M;	This report focuses on the						
climate-planning-		Lopez,-F-F;	third	option:					finding
for-development-		Clark,-V	energy sources		that				emit
without-carbon-in-			little or no carbon, called						
LatinAmerica-and			'development						without
the-Caribbean.			carbon'. This report looks						
			specifically		at				the
			prospects	for	low-carbon				
		39							

				energy	development	in			
				Latin	America	and			the
				Caribbean (LAC), focusing					
				on hydroelectric power					
	2011	Clancy,-J	This	paper		looks			at
ENERGIA-News			ENERGIA's			development			

				of	gender	tools	and
				training	workshops		that
				have	enabled	network	
				members and government			
				officials to conduct gender			
				audits of energy policies			
		2011	Bassi,-AM	This	paper,	through	five
Regional-				integrated			studies,
Environmental-				investigates			whether
Change				contextualizing		energy	
				issues is (are) relevant to			
				support	energy	policy	
				formulation			and
				evaluation		and	provides
				insights	into	how	to
				operationalize			the
				contextualization			
Energy	water	2011	Escobar,-M;	This report focuses on the			
climate-planning-			Lopez,-	third	option:	finding	
for-development-			FF; Clark,-V	energy	sources	that	emit
without-carbon-in-				little or no carbon, called			
Latin-America-and-				'development		without	
the-				carbon'. This report looks			
Caribbean.				specifically		at	the
			40				

			prospects for low-carbon				
			energy	development			in

			Latin	America	and	the
			Caribbean		(LAC),	
			focusing	on hydroelectric		
			power			
Energy	2012		The	present	paper	
Oxford		Brandoni,-C;	discusses	the	role	of
		Polonara,-F	municipal planning in the			
			context	of	the	regional
			energy-planning		process	
			based on the	of results		
			derived from 12 municipal			
			energy	plans developed		
			for urban areas located in			
			Marche	Region,	in	the
			centre	of	Italy,	whose
			inhabitants		represent	
			approximately 40% of the			
			whole region			
Energies	2012		The aim of the	present		
		Szlavik,-J;	paper is to give an			
		Csete,-M	overview	about	the	
			climate and energy policy			
			in Hungary with a special			
			focus on the new energy			
			strategy.			
Energies	2012	Lehmann,-P;	This paper examines how			
		Creutzig,-F;	an EU	framework	for	
		Ehlers,-M-H;	RES-E support policies			
		Friedrichsen,-N;	should	be	designed	to

		Heuson,-C;	facilitate a carbon lock-				
		Hirth,-L;	out.				
		41					

		Pietzcker,-R						
Energy policy	2012	Kgathi,-D-L;	This	paper	assesses	the		
		Mfundisi,-K-B;	potential of the impacts of					
		Mmopelwa,-G;	biofuel	development	on			
		Mosepele,K	food security in Botswana.					
Energy policy	2012		This	article	investigates			
		Li-Jun; Wang-	the	major	energy	and		
		Xin	climate targets and actions					
			specified in the 12th FYP					
			to gain insights into the					
			nature	and	magnitude of			
			challenges and difficulties					
			with regard to the medium					
			and	long	run economic			
			and		environmental			
			policies					
Energy oxford	2012	Kim SeungHyok;	To	handle	uncertainties,			
		Koo-JaMin;	the concept of the learning					
		Lee-	rate was adopted in this					
		ChangJun;	study so as to compute the					
		Yoon-EnSup	costs of energy systems in					
			the	future	and	Monte		
			Carlo	simulation		was		

			performed.				
Energy Used in Agriculture:							
Source	Year	Author	Key points				
	2006	Sanjay-Khar;	This	study	was		
Environment-and-Ecology		Dhar,-L-N;	conducted to examine				
		Thusoo,-R-K;	the		energy		
		Sanjay-Dhar	consumption		pattern		
			of small farms with a				
			view of	suggesting a			
		42					

			Proper	Technological			
			mix	to	replace	the	
			traditional practices				
	2006		A	study	was		
Agricultural-Engineering-International		Jekayinfa,-S-O	conducted		to		
			determine and analyse				
			the pattern of		energy		
			utilization		in	all	
			sections	of	some		
			selected	mechanized			
			farms	in	South-		
			western	part	of		
			Nigeria				
	2007		This	paper	explores		
Energy-Oxford		Couvreur,-J-P	some		possible		
			approaches		to		

			optimize				farm
			mechanization				
	2007		The basic purpose of				
Energy-		Singh,-H; Singh,-	the present study is to				
Oxford		K; Kushwaha,-H	optimize	energy	use		
		Amit-Singh	patterns	of	different		
			wheat		growing		
			regions		(Western		
			Rajasthan,		Punjab,		
			Uttar	Pradesh	(UP)		
			and Madhya	Pradesh			
			(MP)) of the Country				
			in order to maximize				
			yield				
Agricultural-and-	2008		This	study	is		
biosystems-			presented to		evaluate		
engineering-for-a-			the		energy		
	43						

sustainable-world-		Bakhoda,-H;	productivity			and
International-		Abdollahi,-A;	recognize			energy
Conference-on-		Almassi,-M;	consumption		patterns	
Agricultural-		Nasirian,-N	used	in	common	
Engineering,-			methods	of	wheat	
Hersonissos,-			widely	grown	in	the
Crete,-						
Greece			north of Ahwaz one			
			of the most important			
			agricultural centers in			
			Iran			

	2010	Asakereh,-A;	The aims of this study							
Asian-Journal-of-		Shiekhdavoodi,-M-	were	to	evaluate		the			
Agricultural-		J; Safaieenejad,-M	energy use in organic							
Sciences			and		conventional					
			farming		of	lentil	in			
			Kuhdasht		county	of				
			Iran to investigate the							
			efficiency		of	energy				
			consumption							
	2011	Kiani,-S;	This study was carried							
World-Applied-		Houshyar,-E	out	to	assess		the			
Sciences-Journal			energy		consumption					
			of	canola	production					
			in two regions of Fars							
			province, Iran							
AMA,-Agricultural-	2012		The	results		revealed				
Mechanization-in-		Indra-Mani; Patel,	that	the	consumption					
Asia,-Africa-		K	of	energy	in	paddy				
andLatin-America			cultivation		by	small,				
			medium		and	large				
			category farmers were							
			32,417.7,			36,471.61,				
			and 36,742.85 MJ/ha,							
		44								

					Respectively		The		
					consumption of direct				
			sources		and	indirect			
			sources of energy was						

				60%		and		40%,
				respectively while in				
				terms		of	renewable	
				and		non	renewable	
				sources of energy, the				
				observed consumption				
				was	8	and	92%,	
				respectively.				
	2013	Nunez,-M; Pfister,-		Our results show that,				
Journal-of-		S; Anton,-A;		if	the	aim	is	to
Industrial-		Munoz,-P;		minimize				the
Ecology		Hellweg,-S;		environmental				
		Koehler,-A;		impacts		of	water	
		Rieradevall,-J		consumption,				the
				energy	crop rotations			
				assessed in this study				
				were most suitable in				
				basins in the northeast				
				of	Spain. In contrast,			
				the		energy	crops	
				grown in basins in the				
				southeast		of	Spain	
				were	associated			with
				the			greatest	
				environmental				
				impacts.				

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			and	Land		Availability
			constraints			
Journal-of-Applied-Science-and-Technology	2008	Njoku,-P-C	The	problem	of	waste
			flow	in	energy	system
			planning	was	investigate	
			by	adopting	integrated	
			system		engineering	
			approach			
Renewable-Energy.	2009	Zhang-LiXiao; Yang-ZhiFeng; Chen-Bin; Chen-	An overview		of	energy
			consumption		pattern	by
			available	data	and	the
			analysis			
Renewable-Energy	2009	Gitrakos,-G-P; Tsoutsos,-T-D; Mouchtaropoulo s,-P-G; Naxakis,- G-D; Stavrakakis,-G	This	study	presents	the
			sustainable		planning	of
			some	relevant	aspects	of
			energy	policy	in	rural
			China are presented in this			
			paper a renewable-based			
			energy	system,	which	
			aims to fulfil the electric			
			needs of the island by			
			replacing	the	existing	
			diesel generators with new			
			wind	farms,	photovoltaic	
			installations and hydrogen			
			production systems.			
	2009		The	study	provides	an

Climate-Policy		Suwa,-A	insight		into		the
			effectiveness		of		the
			methodology,				and
		36					

			implications		of		the
			proposed		visions		and
			policy packages. A series				
			of innovations		are		made,
			including the 'policy road				
			map' as an effective tool				
			that links the back casting				
			framework		and		strategic
			policy discussions.				
	2009	Borges-Neto,-M-	This paper introduces the				
Engenharia-		R; Carvalho,-P-	development		of		a
Agricola		C-M-	computational tool to help				
			the		energy		planning
			in				
			rural		electrification		areas
			by		using		the
							main
			software		available		on
							the
			world market or cited in				
			scientific		literature,		as
							in
			the reference.				
	2010	de Keirstead,-J;	This		paper		considers
Energy-		Schulz,-N-B	field		of		urban
Policy							energy
			policy,		a		neglected
							yet
			important topic				

Energy Policy	2010	Hiremath,RB;	Present work uses goal-
		Bimlesh-Kumar;	programming method in
		Balachandra,-P;	order to analyze the DEP
		Ravindranath,-N-	through bottom-up
		H	approach

37	2010	Hoesen,-J-van;	This paper describes a
Renewable		Letendre,-S	possible model for
-Energy			supporting rural
			community energy
			projects using a
			Geographic Information
			System (GIS), which was
			used to develop an
			inventory of energy
			resource potential in a
			rural Vermont town for
			biomass, wind, and solar
			technologies.
Journal-of-	2010	Mirzaesmaeeli,-	The objective of the case
Environmental-		H; Elkamel,-A;	studies is to examine the
Management		Douglas,-P-L;	economical, structural,
		Croiset,-E;	and environmental
		Gupta,-M	Effects that would result if
			the electricity sector was
			required to reduce its CO2
			emissions to a specified
			limit.

Transactions-of-the- Chinese-Society-of- Agricultural- Engineering	2011	Zhang-LiXiao; Hu-QiuHong; Wang-ChangBo	Based on available data of rural energy consumption, the spatial and temporal characteristics of rural energy consumption as well as the evolvement of rural energy policy were analyzed
Energy Oxford	2011	Park-KyungTae; Shin-DonGil; Yoon-EnSup	This paper studies the cost of energy (COE) for several emerging, fossil
		38	

			Fuel Power Plants Such as
			an integrated gasification combined cycle (IGCC) power plant, a natural gas combined cycle (NGCC) power plant, and a pulverized coal (PC) power plant under three different scenarios defined by the International Energy Agency (IEA)
Songklanakarinn- Journal-of-Science- and-Technology	2011	Pattanapongchai, -A; Limmeechokchai ,-B	The objective of this study is to investigate upgrading biogas with a selected water scrubbing technique

			featuring least-cost energy
			planning
	2011	Domac,-J;	This paper discusses the
Biomass-and-		Segon,-V;	methodological approach
Bioenergy		Przulj,-I; Rajic,-	to local energy planning
		K	proposed by the authors
			and identifies the most
			important drivers for its
			application at the regional
			level.
Energy-water-	2011	Escobar,-M;	This report focuses on the
climate-planning-		Lopez,-F-F;	third option: finding
for-development-		Clark,-V	energy sources that emit
without-carbon-in-			little or no carbon, called
LatinAmerica-and			'development without
the-Caribbean.			carbon'. This report looks
			specifically at the
			prospects for low-carbon
		39	

			energy	development	in
			Latin	America	and the
			Caribbean (LAC), focusing		
			on hydroelectric power		
		2011	Clancy,-J	This paper	looks at

ENERGIA-News				ENERGIA's	development		
				of	gender	tools	and
				training	workshops		that
				have	enabled	network	
				members and government			
				officials to conduct gender			
				audits of energy policies			
		2011	Bassi,-AM	This	paper,	through	five
Regional-				integrated			studies,
Environmental-				investigates			whether
Change				contextualizing			energy
				issues is (are) relevant to			
				support	energy policy		
				formulation			and
				evaluation		and	provides
				insights	into	how	to
				operationalize			the
				contextualization			
Energy	water	2011	Escobar,-M;	This report focuses on the			
climate-planning-			Lopez,-	third	option:	finding	
for-development-			FF; Clark,-	energy	sources	that	emit
without-carbon-in-			V	little or no carbon, called			
Latin-America-and-				'development		without	
the-				carbon'. This report looks			
Caribbean.				specifically		at	the
			40				

			prospects for low-carbon
			energy development in
			Latin America and the
			Caribbean (LAC),
			focusing on hydroelectric
			power
Energy	2012		The present paper
Oxford		Brandoni,-C;	discusses the role of
		Polonara,-F	municipal planning in the
			context of the regional
			energy-planning process
			based on the of results
			derived from 12 municipal
			energy plans developed
			for urban areas located in
			Marche Region, in the
			centre of Italy, whose
			inhabitants represent
			approximately 40% of the
			whole region
Energies	2012		The aim of the present
		Szlavik,-J;	paper is to give an
		Csete,-M	overview about the
			climate and energy policy
			in Hungary with a special
			focus on the new energy
			strategy.
Energies	2012	Lehmann,-P;	This paper examines how
		Creutzig,-F;	an EU framework for

		Ehlers,-M-H;	RES-E support policies				
		Friedrichsen,-N;	should	be	designed	to	
		Heuson,-C;	facilitate a carbon lock-				
		Hirth,-L;	out.				
		41					

		Pietzcker,-R						
Energy policy	2012	Kgathi,-D-L;	This	paper	assesses	the		
		Mfundisi,-K-B;	potential of the impacts of					
		Mmopelwa,-G;	biofuel	development	on			
		Mosepele,K	food security in Botswana.					
Energy policy	2012		This	article	investigates			
		Li-Jun; Wang-	the	major	energy	and		
		Xin	climate targets and actions					
			specified in the 12th FYP					
			to gain insights into the					
			nature	and	magnitude of			
			challenges and difficulties					
			with regard to the medium					
			and	long	run economic			
			and		environmental			
			policies					
Energy oxford	2012	Kim SeungHyok;	To	handle	uncertainties,			
		Koo-JaMin;	the concept of the learning					
		Lee-	rate was adopted in this					
		ChangJun;	study so as to compute the					
		Yoon-EnSup	costs of energy systems in					

			the	future	and	Monte	
			Carlo	simulation		was	
			performed.				
Energy Used in Agriculture:							
Source	Year	Author		Key points			
	2006	Sanjay-Khar;		This study	was		
Environment-and-Ecology		Dhar,-L-N;		conducted to examine			
		Thusoo,-R-K;		the	energy		
		Sanjay-Dhar		consumption	pattern		
				of small farms with a			
				view of	suggesting a		
		42					

			proper	technological			
			mix	to	replace	the	
			traditional	practices			
	2006		A	study		was	
Agricultural-Engineering-International		Jekayinfa,-S-O	conducted			to	
			determine and analyse				
			the pattern of	energy			
			utilization	in	all		
			sections	of	some		
			selected	mechanized			
			farms	in	South-		
			western	part	of		
			Nigeria				
	2007		This	paper	explores		

Energy-		Couvreur,-J-P	some			possible
Oxford			approaches			to
			optimize			farm
			mechanization			
	2007		The basic purpose of			
Energy-		Singh,-H; Singh,-	the present study is to			
Oxford		K; Kushwaha,-H	optimize	energy		use
		Amit-Singh	patterns	of		different
			wheat			growing
			regions			(Western
			Rajasthan,			Punjab,
			Uttar	Pradesh		(UP)
			and Madhya			Pradesh
			(MP)) of the Country			
			in order to maximize			
			yield			
Agricultural-and-	2008		This		study	is
biosystems-			presented to			evaluate
engineering-for-a-			the			energy
	43					

sustainable-world-		Bakhoda,-H;	productivity			and
International-		Abdollahi,-A;	recognize			energy
Conference-on-		Almassi,-M;	consumption			patterns
Agricultural-		Nasirian,-N	used		in	common
Engineering,-			methods		of	wheat
Hersonissos,-Crete,-			widely	grown	in	the
Greece			north of Ahwaz	one		
			of the most important			

			agricultural centers in			
			Iran			
	2010	Asakereh,-A;	The aims of this study			
Asian-Journal-of-		Shiekhdavoodi,-M-	were	to	evaluate	the
Agricultural-		J; Safaieenejad,-M	energy use in organic			
Sciences			and		conventional	
			farming	of	lentil	in
			Kuhdasht	county	of	
			Iran to investigate the			
			efficiency	of	energy	
			consumption			
	2011	Kiani,-S;	This study was carried			
World-Applied-		Houshyar,-E	out	to	assess	the
Sciences-Journal			energy	consumption		
			of	canola	production	
			in two regions of Fars			
			province, Iran			
AMA,-Agricultural-	2012		The	results	revealed	
Mechanization-in-		Indra-Mani; Patel,	that	the	consumption	
Asia,-Africa-		K	of	energy	in	paddy
andLatin-America			cultivation		by	small,
			medium		and	large
			category farmers were			
			32,417.7,		36,471.61,	
			and 36,742.85 MJ/ha,			
		44				

				respectively.		The
				consumption of direct		

				sources	and	indirect	
				sources of energy was			
				60%	and	40%,	
				respectively while in			
				terms	of	renewable	
				and	non	renewable	
				sources of energy, the			
				observed consumption			
				was	8	and	92%,
				respectively.			
	2013	Nunez,-M; Pfister,-		Our results show that,			
Journal-of-		S; Anton,-A;		if	the	aim	is to
Industrial-		Munoz,-P;		minimize			the
Ecology		Hellweg,-S;		environmental			
		Koehler,-A;		impacts	of	water	
		Rieradevall,-J		consumption,			the
				energy	crop rotations		
				assessed in this study			
				were most suitable in			
				basins in the northeast			
				of	Spain. In contrast,		
				the	energy	crops	
				grown in basins in the			
				southeast	of	Spain	
				were	associated	with	
				the		greatest	
				environmental			
				impacts.			