MYANMAR'S ENERGY FUTURE

TOWARDS "PEOPLE CENTRED ENERGY"

DEVELOPMENT PLANS & LINKED UPDATES

Spectrum
Sustainable Development Knowledge Network

Myanmar World Water Event, 13-14/3/2017

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Electricity access has been a been a big issue…

January 13

THE MYANMAR TIMES

October 3 - 9, 2011 | Myanmar's first international weekly | Volume 30, No. 595 1200 Kyats

An artist's impression of the completed Myitsone Dam project near the confluence of the Maykha and Malikha rivers in Kachin State. President U Thein Sein announced on September 30 that the project would be halted for at least the five years his government will be in office.

President halts dam

Government backs down following widespread public protest over dam project at Myitsone


Salween, Not for Sale!
သံလွင်မြစ်သည် ရောင်းစားရန်မဟုတ်
Salween means food for us!
သံလွင်မြစ်သည် ကျွန်ုပ်တို့အစားအစာရရှိရာနေရာဖြစ်သည်။
Salween means livelihood for us!
သံလွင်မြစ်သည် ကျွန်ုပ်တို့၏အသက်မွေးဝမ်းကြောင်းရာနေရာဖြစ်သည်။
Salween is our lifeblood!
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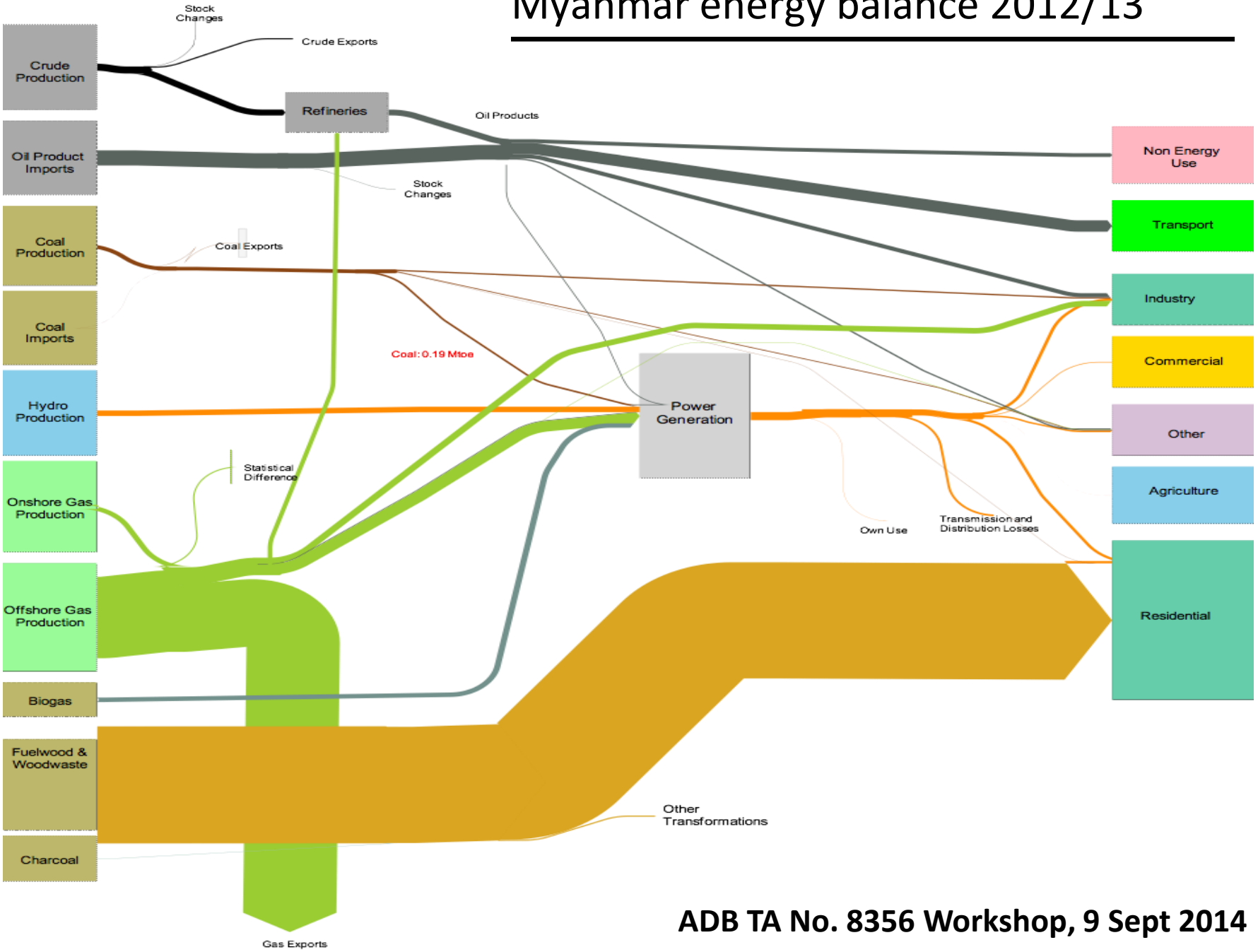
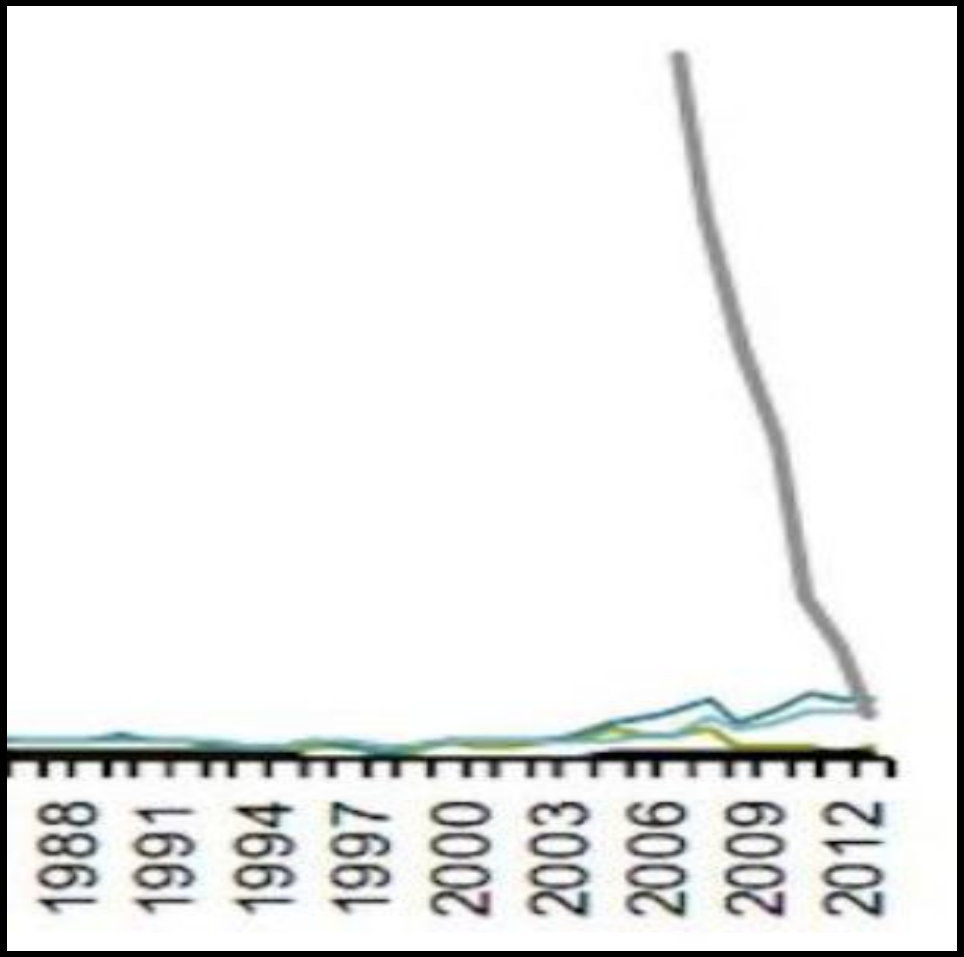
သံလွင်ကိုကယ်တင်ပါ
Let Salween River Flows Free !
NO DAM

Myanmar energy balance 2012/13

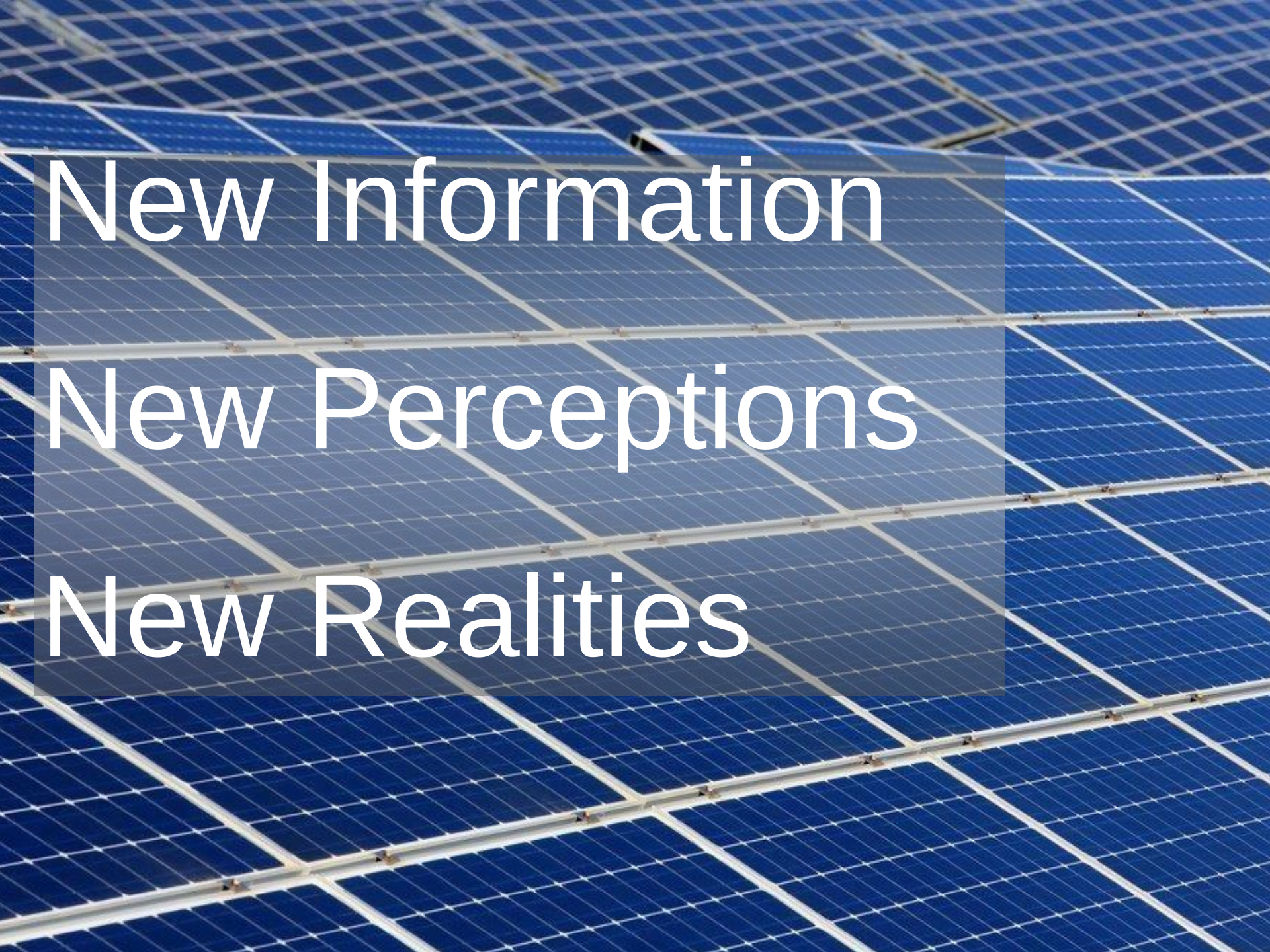


ADB TA No. 8356 Workshop, 9 Sept 2014

Solar energy cost

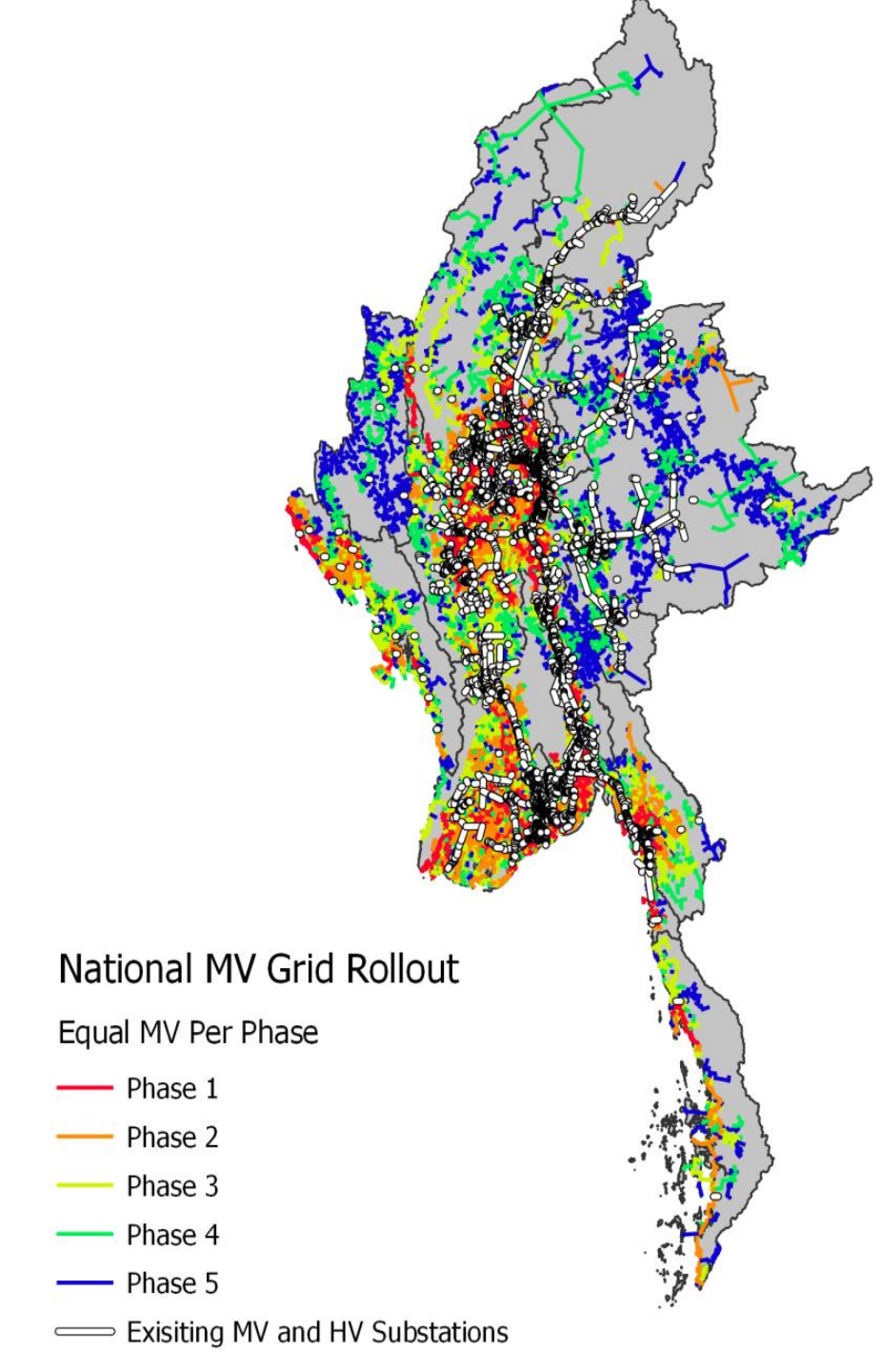


is in free fall…


New Information
New Perceptions
New Realities

What basis is valid for meeting peoples' needs?

Can ethnic access be met last ???



Strategies Needed:

- Rural
- Urban
- Industrial
- Cooking - National

Access to energy

can be increased without waiting for large scale infrastructure

Overview:

- “People Centered Energy”
- “Power Sector Vision”
- People Centered Research
- Amazing MM Energy Facts
- Gender & EIA Research

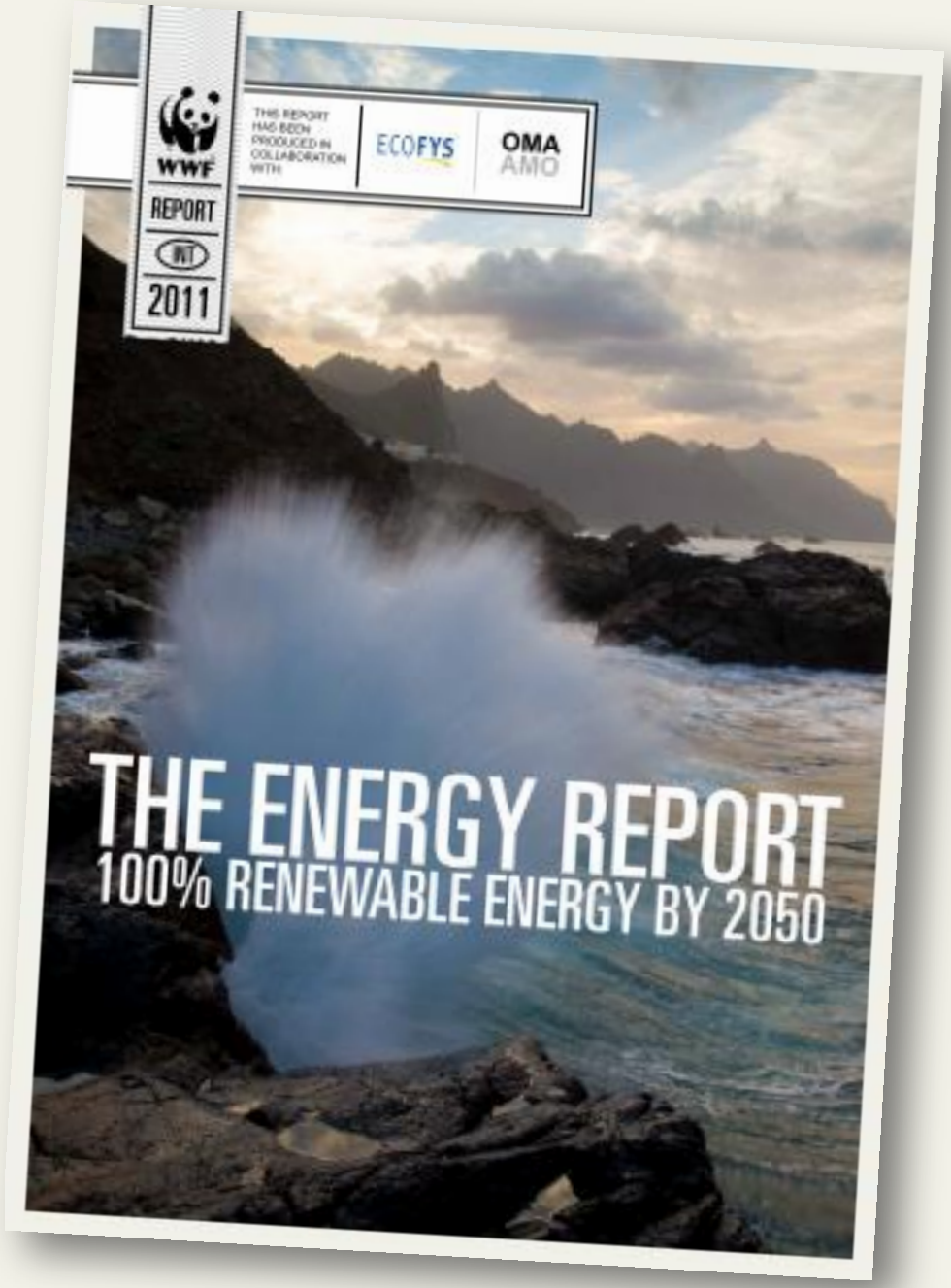
Myanmar's Electricity Vision

Planning for Renewable Electricity by 2050

Quick Wins and Recommendations

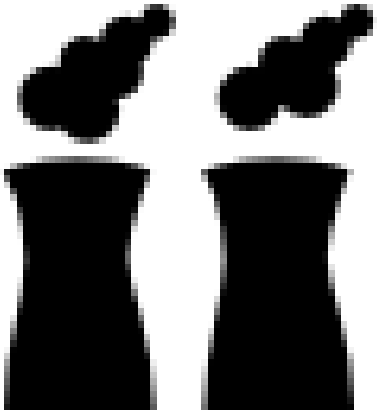
WWF-Myanmar
Intelligent Energy Systems
Renewable Energy Association Myanmar
Spectrum – Sustainable Development Knowledge Network

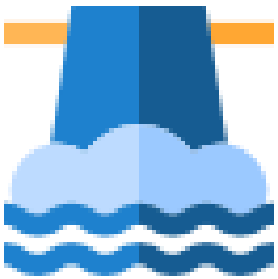
a world powered by 100% renewable energy by 2050

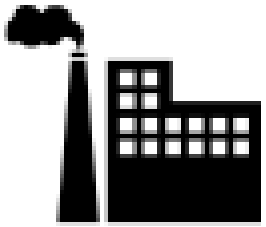


Myanmar Electricity Vision

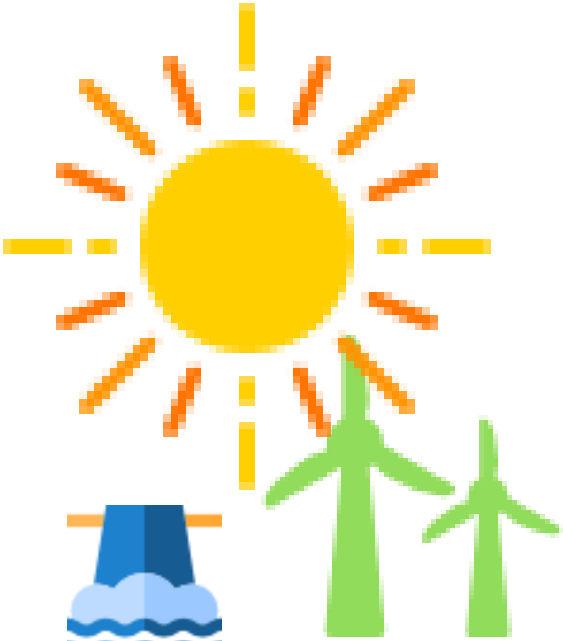
Traditional Future





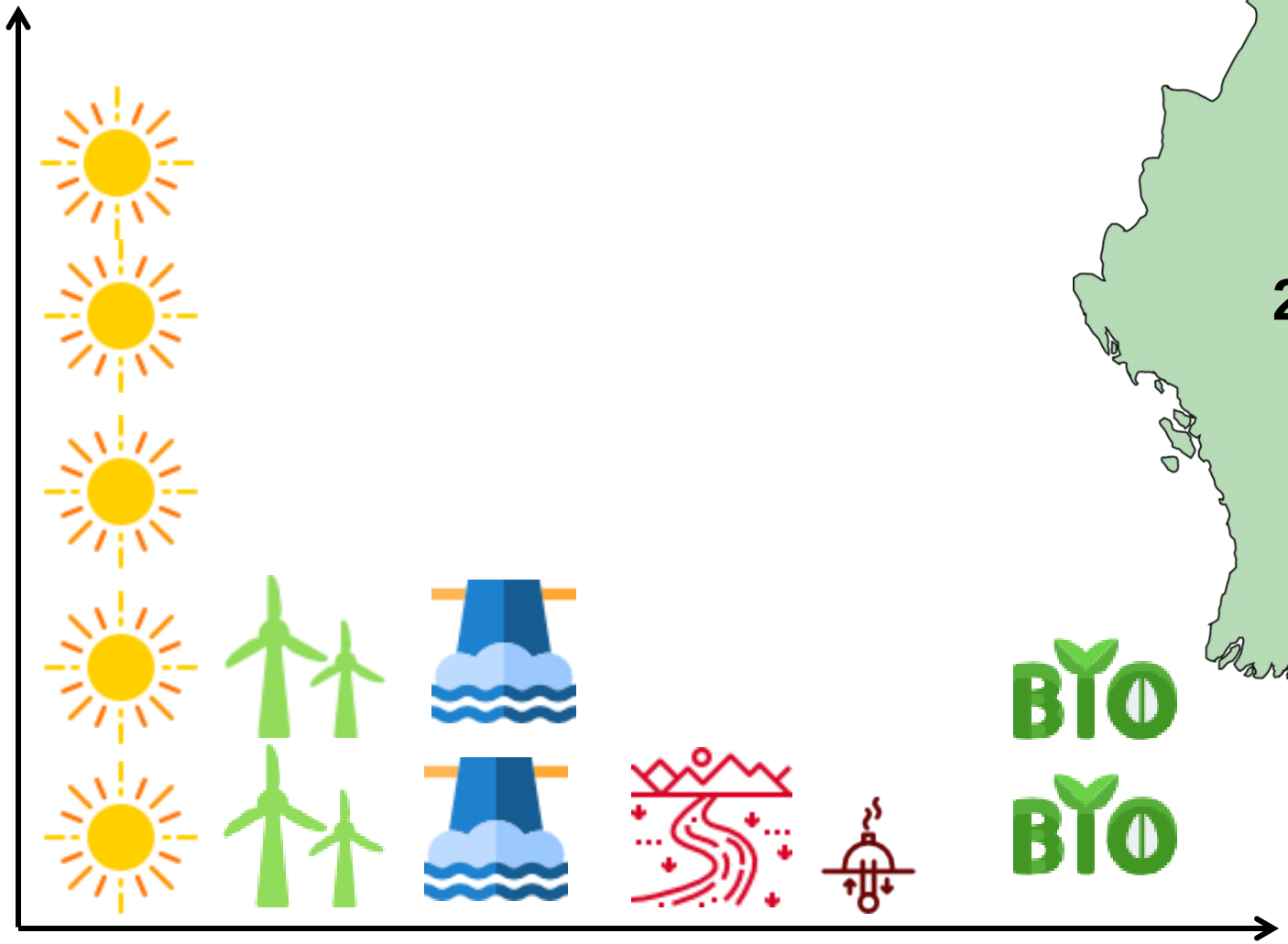


Sustainable Future



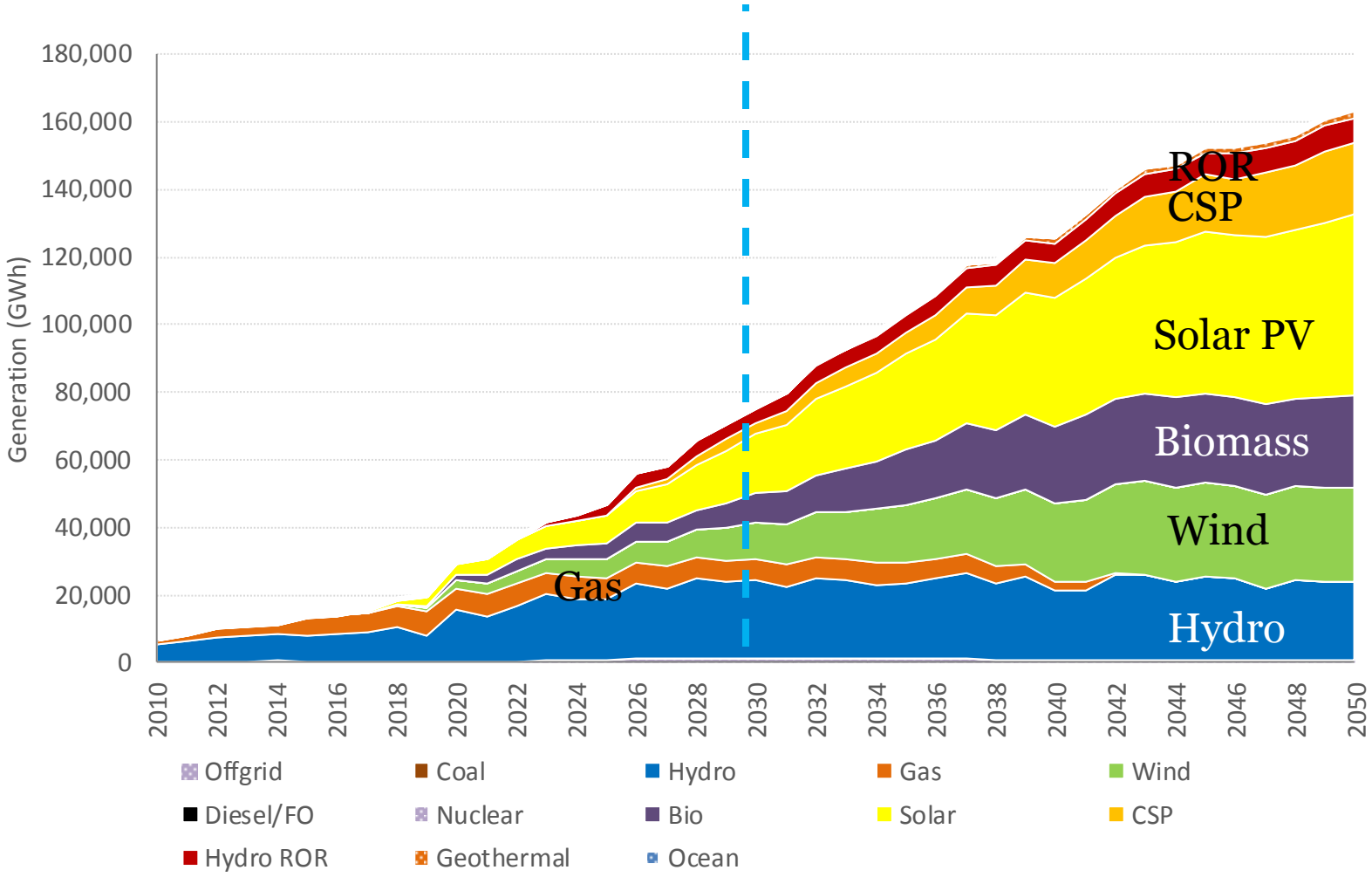
flaticon.com

Sustainable Energy Future

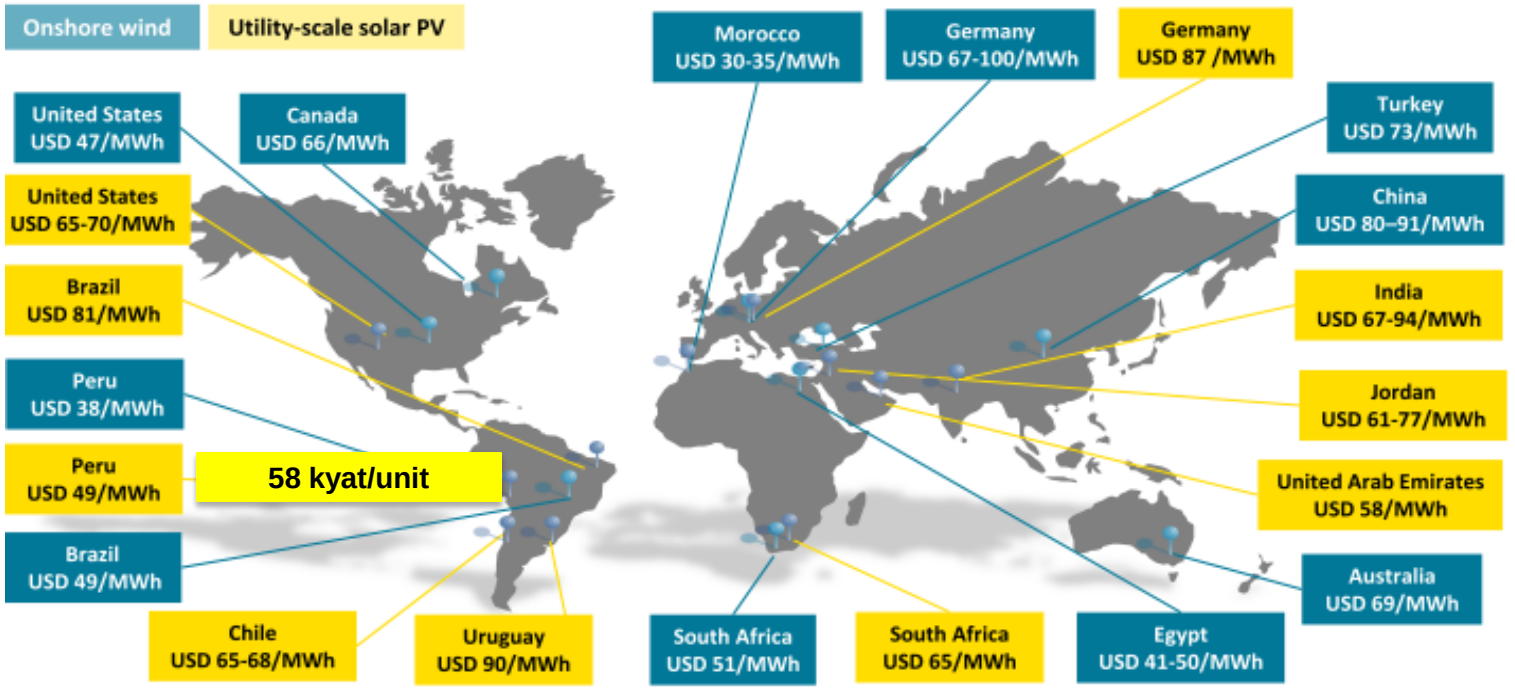


46%	17%	14%	4%	2%	17%
solar	wind	hydro	Run-of-river hydro	Ocean, geothermal	biomass

Myanmar's Electricity Vision



Question. Can Myanmar afford solar and wind?



Rapid drop in solar and wind generation costs give prices comparable to coal if not cheaper.

Ref: International Energy Agency (2015)

Recommendations

- Holistic Grid Planning
- Attracting Investments
- Top level decision maker's awareness
- Promoting Energy Efficiency
- Revising master plans
- Tariff reform
- G2G technical assistance and support
- Rooftop solar for any new buildings in major cities
- Getting illustrative projects underway.

Question: How can we encourage investments ?

- The large investment of solar and wind in other countries are due to:
  - Clear vision and target for renewable energy
  - Competitive process (reverse auctioning)
  - Assistance to land acquisition by the government
  - One-stop service: one office/ department to handle all paper works for renewable energy investment
  - Transparent process to reduce
  - Training for local renewable energy technicians

Myanmar's Electricity Vision

RENEWABLE – ITS DOABLE!

WWF-Myanmar
Intelligent Energy Systems
Renewable Energy Association Myanmar
Spectrum – Sustainable Development Knowledge Network

WWF

REAM

IES Intelligent Energy Systems

Spectrum

Source of Cooking — URBAN

URBAN	Households			Type of cooking fuel								
	Total	Urban	Urban %	Electricity	LPG	Kerosene	BioGas	Firewood	Charcoal	Coal	Straw/Grass	Other
UNION	10,877,832	3,049,433	28.0%	44.0%	1.4%	0.0%	0.7%	25.6%	26.5%	0.6%	0.0%	1.0%
KACHIN	269,365	95,859	35.6%	10.9%	0.1%	0.0%	0.2%	50.7%	36.8%	0.7%	0.0%	0.6%
KAYAH	57,274	14,668	25.6%	55.6%	0.1%	0.0%	0.1%	38.9%	4.9%	0.2%	0.0%	0.1%
KAYIN	308,041	67,167	21.8%	22.2%	2.6%	0.0%	2.7%	26.2%	44.6%	1.1%	0.0%	0.6%
CHIN	91,121	19,770	21.7%	2.3%	0.1%	0.0%	0.8%	75.1%	20.8%	0.6%	0.0%	0.2%
SAGAING	1,096,857	183,772	16.8%	28.8%	0.1%	0.0%	0.2%	40.8%	28.8%	0.6%	0.0%	0.6%
TANINTHARYI	283,099	66,807	23.6%	3.0%	3.6%	0.0%	2.0%	18.9%	70.4%	1.3%	0.0%	0.9%
BAGO	1,142,974	239,014	20.9%	28.9%	0.3%	0.0%	0.3%	39.4%	26.7%	0.8%	0.3%	3.2%
MAGWAY	919,777	131,251	14.3%	39.8%	0.5%	0.0%	0.1%	35.7%	22.9%	0.6%	0.0%	0.4%
MANDALAY	1,323,191	415,634	31.4%	49.4%	0.4%	0.0%	0.4%	14.9%	33.2%	0.7%	0.0%	1.0%
MON	422,612	114,187	27.0%	37.8%	1.3%	0.0%	1.7%	45.9%	12.5%	0.4%	0.0%	0.4%
RAKHINE	459,772	72,624	15.8%	5.6%	0.1%	0.3%	0.1%	58.6%	33.3%	1.5%	0.0%	0.6%
YANGON	1,582,944	1,069,056	67.5%	61.1%	2.9%	0.0%	0.7%	8.8%	24.9%	0.5%	0.0%	0.9%
SHAN	1,169,569	279,918	23.9%	44.8%	0.7%	0.0%	2.1%	33.1%	18.5%	0.5%	0.0%	0.3%
AYEYAWADY	1,488,983	200,962	13.5%	20.9%	0.3%	0.0%	0.3%	56.2%	19.7%	0.5%	0.0%	2.1%
NAY PYI TAW	262,253	78,744	30.0%	73.3%	0.4%	0.1%	0.1%	12.7%	12.7%	0.2%	0.0%	0.6%

20-50		>10	>5					
> 50	>2	>20	>2	>35	>10	>5	>.3	>1

Source of Cooking — RURAL

RURAL	Households			Type of cooking fuel								
	Total	Rural	Rural %	Electricity	LPG	Kerosene	BioGas	Firewood	Charcoal	Coal	Straw/Grass	Other
UNION	10,877,832	7,828,399	72.0%	5.6%	0.1%	0.3%	0.1%	86.2%	6.1%	0.2%	0.1%	1.4%
KACHIN	269,365	173,506	64.4%	2.2%	0.0%	0.0%	0.1%	85.0%	12.1%	0.3%	0.0%	0.3%
KAYAH	57,274	42,606	74.4%	11.1%	0.0%	0.2%	0.0%	85.9%	2.6%	0.1%	0.0%	0.1%
KAYIN	308,041	240,874	78.2%	6.0%	0.1%	0.3%	0.3%	73.0%	19.6%	0.5%	0.0%	0.1%
CHIN	91,121	71,351	78.3%	0.3%	0.0%	0.3%	0.0%	98.9%	0.4%	0.0%	0.0%	0.1%
SAGAING	1,096,857	913,085	83.2%	4.7%	0.0%	0.0%	0.0%	90.0%	4.3%	0.1%	0.1%	0.7%
TANINTHARYI	283,099	216,292	76.4%	0.5%	0.3%	0.4%	0.7%	62.3%	35.1%	0.5%	0.0%	0.2%
BAGO	1,142,974	903,960	79.1%	4.3%	0.0%	0.2%	0.1%	88.1%	4.4%	0.1%	0.1%	2.7%
MAGWAY	919,777	788,526	85.7%	4.2%	0.2%	0.0%	0.0%	93.1%	2.2%	0.1%	0.0%	0.2%
MANDALAY	1,323,191	907,557	68.6%	8.5%	0.0%	0.0%	0.0%	83.6%	7.5%	0.1%	0.0%	0.2%
MON	422,612	308,425	73.0%	11.9%	0.3%	0.2%	0.7%	81.0%	5.3%	0.3%	0.0%	0.3%
RAKHINE	459,772	387,148	84.2%	0.6%	0.0%	1.1%	0.0%	94.5%	2.9%	0.1%	0.1%	0.6%
YANGON	1,582,944	513,888	32.5%	17.8%	0.1%	0.3%	0.2%	62.4%	12.9%	0.3%	0.2%	5.8%
SHAN	1,169,569	889,651	76.1%	5.7%	0.1%	0.2%	0.3%	90.4%	3.1%	0.1%	0.0%	0.1%
AYEYAWADY	1,488,983	1,288,021	86.5%	0.9%	0.1%	0.5%	0.1%	93.4%	1.9%	0.1%	0.0%	3.1%
NAY PYI TAW	262,253	183,509	70.0%	17.2%	0.0%	0.1%	0.0%	71.5%	10.4%	0.2%	0.0%	0.6%

0-1								
> 10	>.3	>1	>.5	>80	>10	>.3	>5	>1

Source of Lighting

RURAL	Total	Rural	% Rural	Electricity	Kerosene	Candle	Battery	Generator (private)	Water mill (private)	Solar system/ energy	Other
UNION	10,877,832	7,828,399	72.0%	14.9%	11.0%	26.0%	21.1%	10.7%	1.9%	11.5%	2.9%
KACHIN	269,365	173,506	64.4%	14.8%	0.4%	38.7%	4.5%	14.7%	3.3%	22.7%	0.9%
KAYAH	57,274	42,606	74.4%	34.3%	7.3%	24.3%	4.6%	1.9%	1.3%	23.0%	3.4%
KAYIN	308,041	240,874	78.2%	14.2%	12.9%	54.1%	1.7%	8.3%	1.2%	7.0%	0.5%
CHIN	91,121	71,351	78.3%	8.3%	7.4%	27.6%	10.9%	1.0%	15.2%	19.0%	10.6%
SAGAING	1,096,857	913,085	83.2%	15.7%	1.0%	17.7%	28.1%	17.1%	0.8%	13.4%	6.3%
TANINTHARYI	283,099	216,292	76.4%	7.3%	22.5%	25.3%	0.9%	39.3%	0.6%	3.2%	0.9%
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NAY PYI TAW	262,253	183,509	70.0%	23.5%	0.9%	41.2%	9.3%	14.7%	0.3%	8.2%	2.0%

0-10	<5							
> 25	>10	>20	>20	>20	>10	>10	>5	

Source of Lighting

URBAN	Total	Urban	%Urban	Electricity	Kerosene	Candle	Battery	Generator (private)	Water mill (private)	Solar system/ energy	Other
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0-50		>10	>5	>10				
> 70	>10	>20	>20	>70	>4	>5	>5	

Amazing MM Energy Facts:

- 26% - Rural use of candles for lighting
- 36% / 30% candles in Urban Chin / Rakhine
– but 36% lighting is solar NOW in Shan,
- Rural total 11.5% solar, & 21% use batteries.

- approx 80% national energy use for cooking
- Rural cooking – 86% firewood, 6% charcoal and LPG use is 0.1%.
- Urban cooking – 26% firewood, 27% charcoa and LPG use is only 1.4%!

Energy Needs Research – Kachin & Kayin States

- What do people want energy for?
- *Lighting* – for children's education, care for children, elderly, sick and for providing safety for women.
- *Communications (phone charging)*
- *Extending working hours*
- These actually need low order electricity.

- Women's needs defined differently to men's. Men – business? Most actually regarded as entertainment (TVs etc).

Gendered thinking on energy

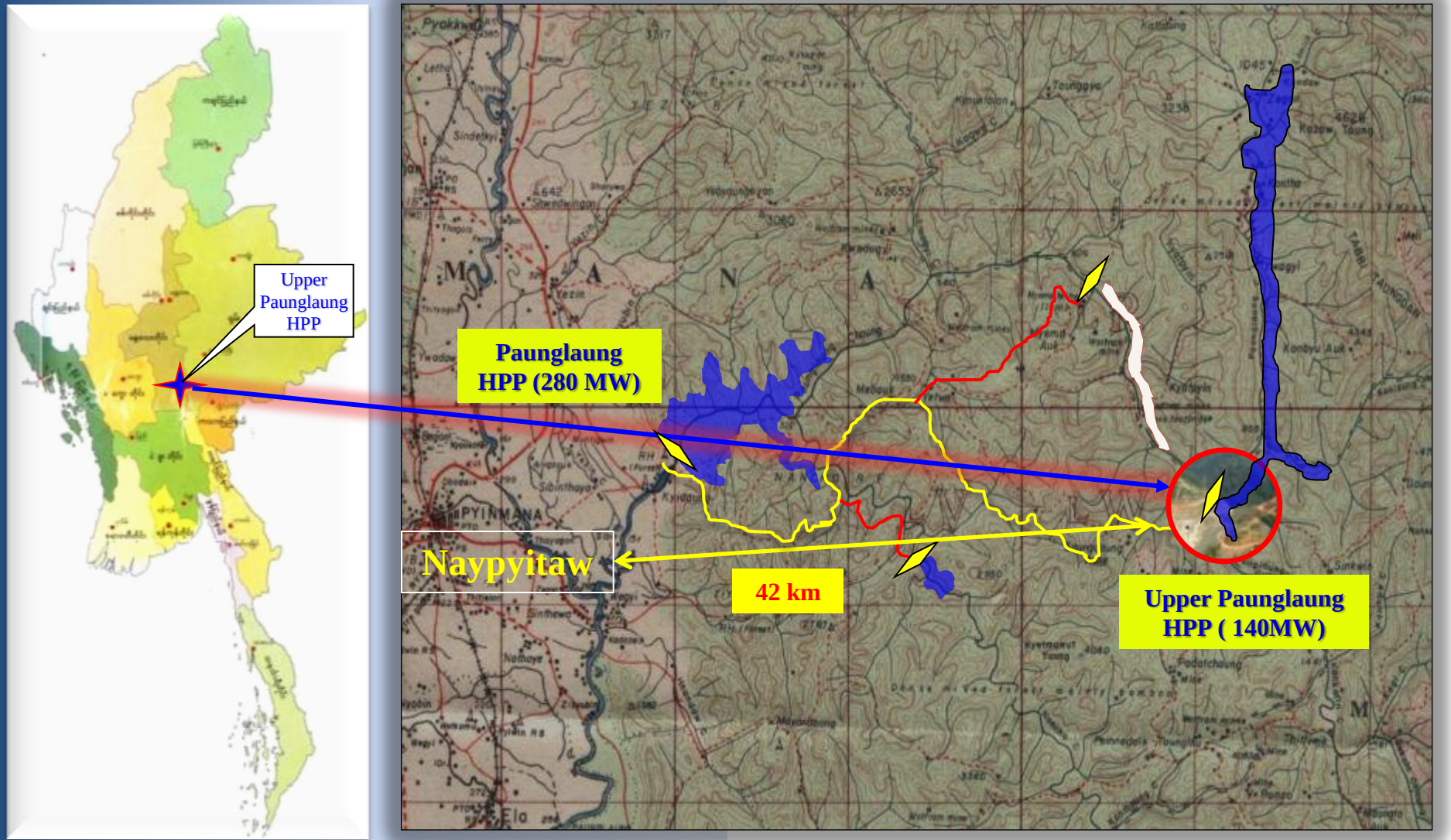
- Men and women have different views on energy needs and different priorities
- Men have much bigger involvement in project prioritisation factors, which leads much more to interest being expressed for centralised grid options, rather than decentralised options
- "Energy" is perceived a male area, and women are considered not to know or be safe to work with electricity
- Energy literacy can be considered a key national gap area. That will hinder any project options and informed choices.

GENDER / ENERGY Recommendations:

- Energy literacy work needed
- Disaggregated needs assessment and usage / roles understanding
- Improve options availability and gender considerations
- Focus energy planning more on some immediate needs, while other options can be developed further.

- Note: Australian Government supported research, via OXFAM.

Upper Paunglaung Hydropower Project, 140MW Project, completed 2014, Resettlement of 2524 Households, 9755 People.



Getting Opinion of Resident People in the Villages

- *To compensate land for cultivation and orchard with suitable price after discussing with land use department*
- *To arrange transportation for relocating demolished housings at the Department expenses*
- *To include cost of land preparation for new agri land, compensation for corps products and confiscated land, and to consider land for people who never owned any argi land*

Implemented Infrastructures for Resettlement Villages in Reservoir Area

- ***Land Developing for New Villages***
- ***Constructing Roads, Bridges and Buildings***
- ***Constructing Public Building such as Religious, Education, Health, Administration and other Social Affairs***
- ***Arrangement for Water Supply***
- ***Arrangement for Power Supply***
- ***Relocating the Villages***

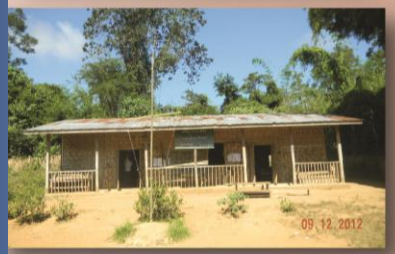
Constructing Public Buildings such as Religious, Education, Health, Administration, and other Social Affairs

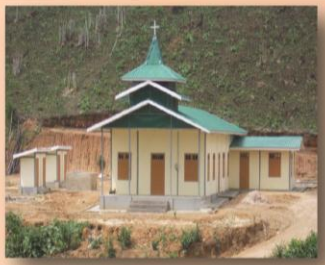
Pagoda	- 21 nos
Buddhist ordination hall	- 18 nos
Monastery	- 18 nos
Hermitage	- 3 nos
Public guesthouse	- 20 nos
Dhamma Hall	- 3 nos
Stairway	- 5 nos
Nun monastery	- 1 no
Church (including chairs)	- 1 no
School building (including teaching tables and chair)	- 20 nos
Housing for school teachers	- 21 nos
Administrator office	- 3 nos
Public Library	- 20 nos
Public Clinic	- 4 nos
Central market	- 3 nos
Total	161 nos

State Funding for Resettlement Projects

Compensation	-	11,398.732 million
Building public infrastructures such as monastery and school	-	4,607.139 million
Building pagodas and ordination hall	-	689.535 million
Building road infrastructures	-	4,730.676 million
Water supply, land developing and relocating villages	-	2,723.607 million
Electricity supply	-	7,303.435 million
Other related works	-	81.012 million
Total	-	**31,534.136 million Kyats**

Comparison Between Before and After Relocation

Before	After
	
	
	
	

Before	After
	
	
	
	

18 Factor Socio-Economic Survey:
Post Relocation Survey (1) undertaken – 88% of affected HH (2216 HH), 23 villages

Somewhat Better (4)

- Education, Health, Roads, Religious Buildings

Somewhat Worse (8)

- Water Supply, Sanitation, Electricity Supply, Community Development, Standard of Living, Relocation Standard, Housing Standard, Environmental Conservation Standard

Much Worse (6)

- Economic Growth, Job Opportunities, Personal Income, Livelihood Safeguards, Equal Financial Compensation, Standard of Farmlands and Cultivation Lands

Learnings from early phase research:
Post Relocation Survey – 2216 HH, 23 villages

- Upper Paunglaung is considered the largest and most generously compensated project in Myanmar's history – some positive results acknowledged by communities. (Education, Health, Roads, Religious Buildings)

- **Yet 14/18 factors considered worse off**
- **Men were 88% of respondents**
- **Early results show women more negative**

- **"Soft" issues and economic related issues are much harder to provide satisfaction compared with infrastructure construction**
- **Much more work needed on social, livelihoods and general economic well being / issues**
- **Can't really talk about improving "Benefit Sharing Models", until basic issues addressed.**

People Centered Energy Approach?

Action steps:

- Consider peoples needs
- Disaggregate ALL data for gender
- Separate appropriate areas (U/R) [One size does not fit all]
- Sort out cooking strategy…
- Remove energy progress obstacles
- Investment is ready if climate OK
- DO NO HARM in projects
- Many solutions are close at hand
- Gendered demand thinking critical
- Renewables Doable!

Development for Who ??????