



Options for Determining Grid Emission Factors in Lao PDR

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How to calculate Grid Emission Factor

Combined margin

- Wind and solar power generation
- First crediting period
- Second crediting period

The weights for grid emission factor under the CDM



Operating Margin



W_{OM}

- 0.75
- 0.5
- 0.25



Build Margin



W_{BM}

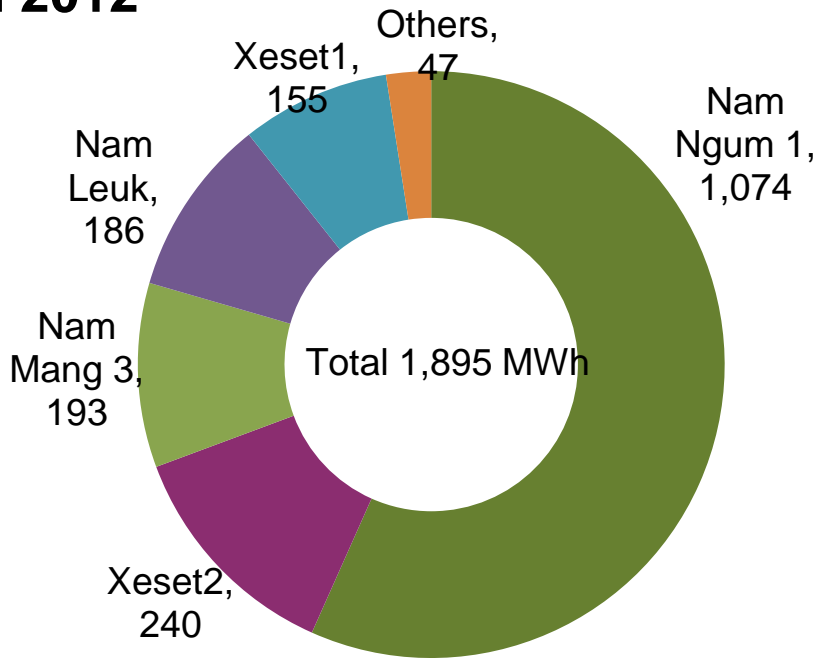
- 0.25
- 0.5
- 0.75

- Grid emission factor of operating power generation
- **Import electricity** cannot be reflected under the JCM.

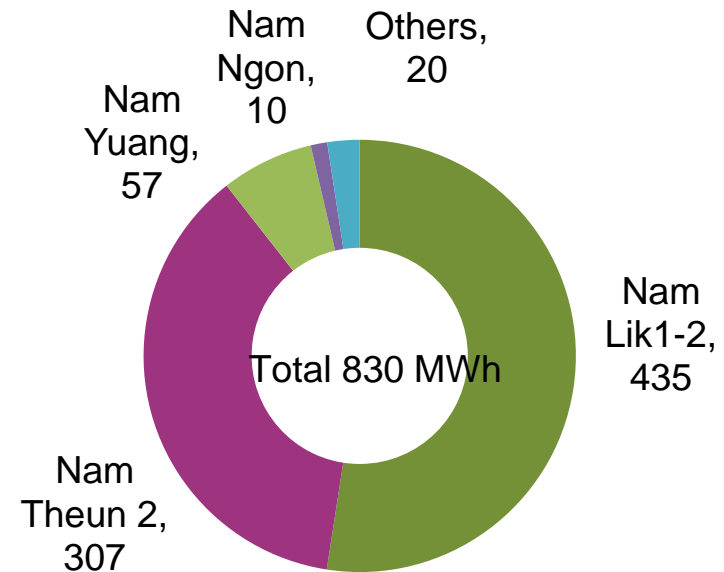
Grid emission factor that refers the group of prospective power plants

OM, BM :Power generators in Lao PDR are hydro power plant

Electricity supply to EDL grid from power plants owned by EDL
In 2012



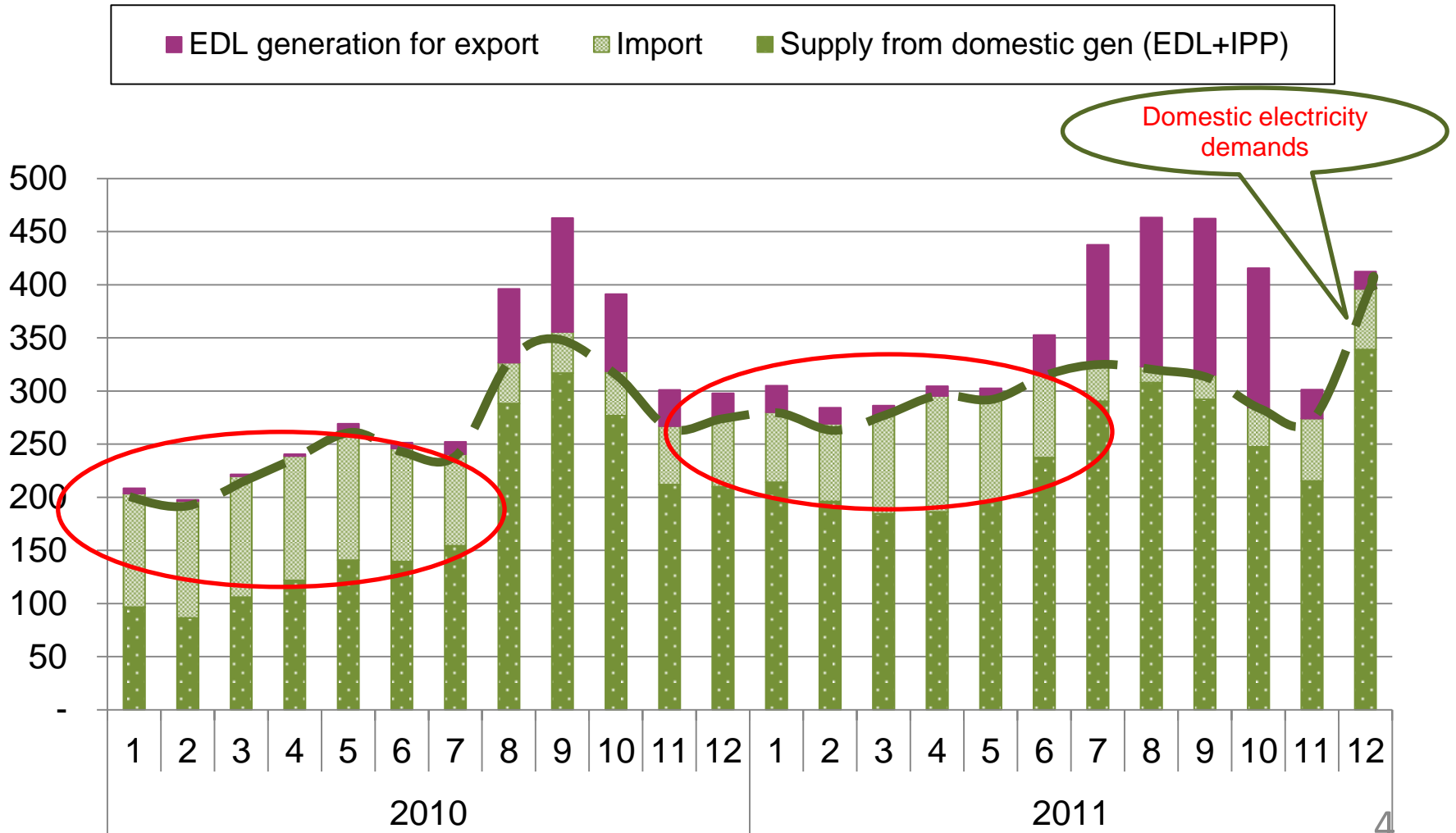
Electric supply to EDL grid from power plants owned by IPP in 2012



Source: Author based on EDL internal data

OM: Lao PDR imports more electricity during dry season

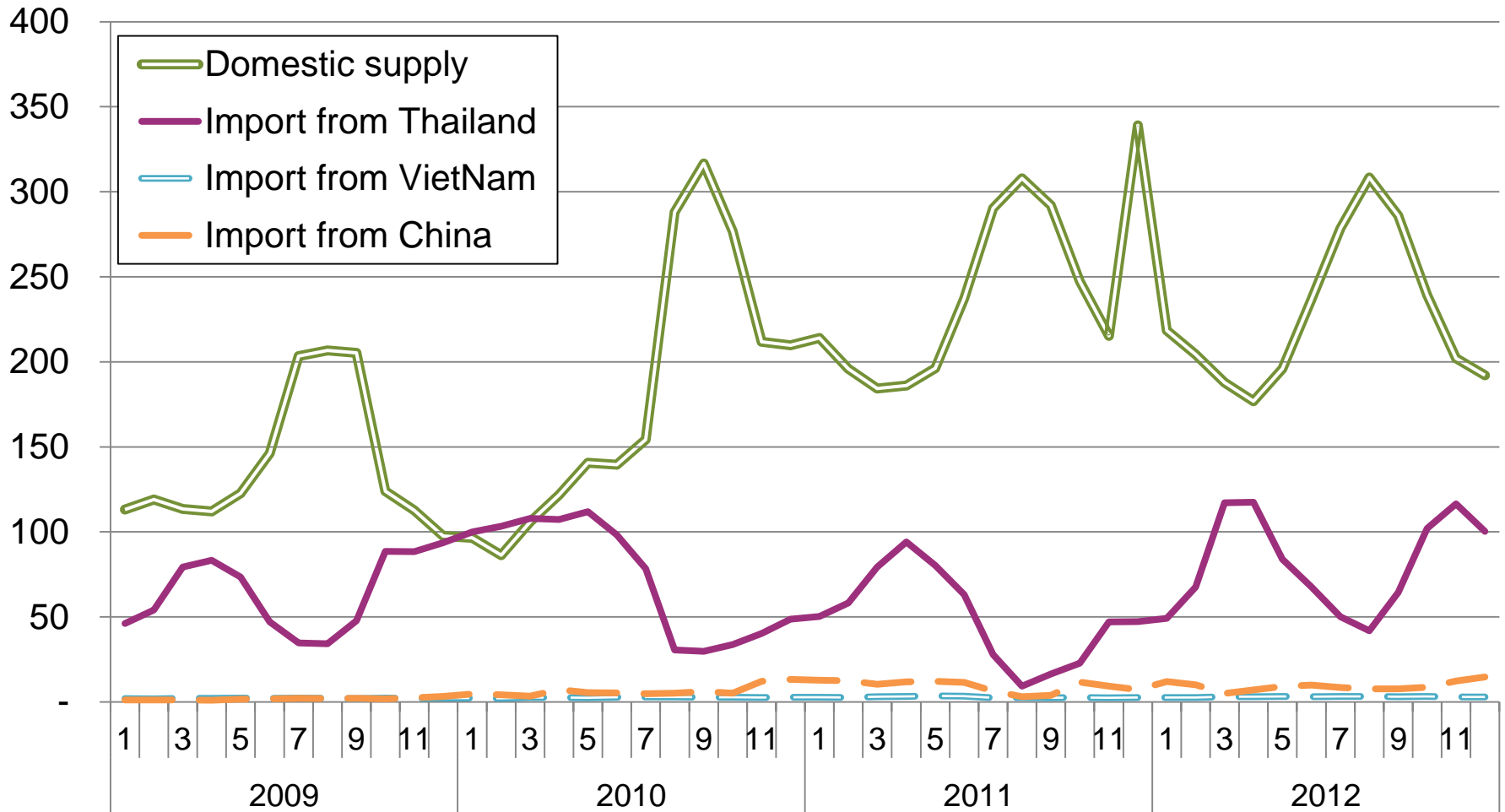
(MWh)



Source: Author based on EDL internal data

OM: Import from Thailand contributes stable supply of electricity

(MWh)



Source: Author based on EDL internal data

"Coal" is one of the prospective power source

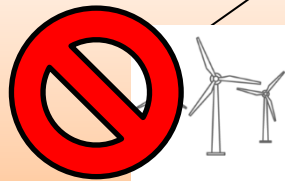
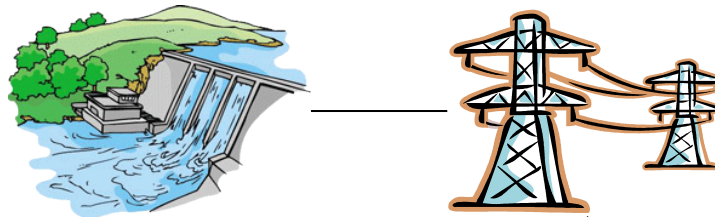
This issue affects only BM

Name of project	Location	Installed capacity	Commercial operation year	Source of electricity
Tad Salen Hydropower (IPP)		3.2 MW	2012	Hydro
Xekaman 3 Hydropower (IPP)	Sekong	250 MW	2012	Hydro
Nam Long	Luangnamtha	5 MW	2013	Hydro
Xenamnoy 1	Attapeu	14,8 MW	2013	Hydro
Hongsa Lignite (IPP)	Xayaboury	1878 MW	2015	Coal
Nam Kong 2	Attapeu	66 MW	2015	Hydro
Nam Ngiep 2	Xiengkhouang	180 MW	2015	Hydro
Nam Sim (IPP)	Houaphan	8 MW	2015	Hydro
Xekaman 1 Hydropower (IPP)	Attapeu	322 MW	2015	Hydro
Nam Beng	Oudomxay	34 MW	2016	Hydro
Nam Mang 1 (IPP)	Bolikhamxay	57 MW	2016	Hydro
Xepian- Xenamnoy (IPP)	Attapeu and Champasak	410 MW	2018	Hydro
Xayabouri (Mekong) (IPP)	Xayaboury/ Luangprabang	1285 MW	2019	Hydro
NamOu 2,5,6 (Cascade)	Phongsaly/ Luangprabang	120, 240,180 MW	2013-2017	Hydro 6

Issue: Emission factor is calculated to be zero under the current conditions

- Import electricity from neighbor countries cannot be included since the JCM is bilateral mechanism.
- Electric source of all existing power plant in Lao PDR is hydro.

Cannot promote renewable energy or energy efficiency projects which reduce usage of electricity



Construction of new wind power

Possible options for grid emission factor under the JCM

Issue

- Issue: Emission factor is calculated to be zero under the current conditions

➔ This value could be difficult to be approved by the JC since energy efficient project would be excluded under this option.

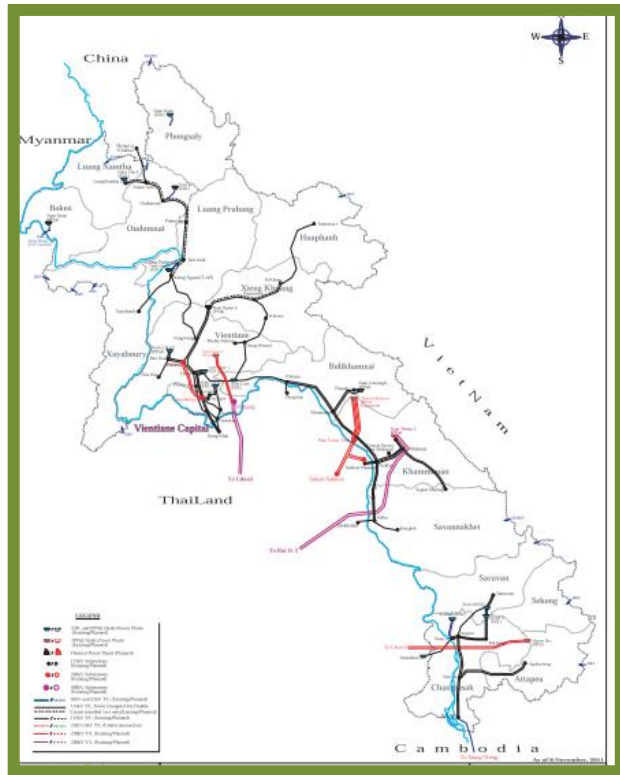
Option1


Reflect GHG emissions of import electricity from Thailand

Option2

Update grid emission factors when coal fire plant operates and data is available

Option 1: Reflect GHG emissions of import electricity from Thailand



 0.3 ~ 1.3
tCO₂/MWh
(Depending on assumptions)

Only when Thailand signs bilateral documents on the JCM
=> There would be still technical issues to include import electricity from Thailand under the JCM since it is “Bilateral” scheme.

Option2: Update grid emission factors when coal fire plant operates

The calculation of grid emission factor under the CDM



- The 5 most recent power units, excluding the CDM
Or
- The units that comprise at least 20% of the system, excluding the CDM

GHG emissions from coal fire plant can be included only when its actual data will be available after its operation.

Way forward

- To adopt option 1, it can be considered only when Thailand sign a bilateral document on the JCM.
- To adopt option 2, GHG emissions from coal fire plant (i.g. Hongsa Lignite) can be included only when its actual data will be available after its operation.