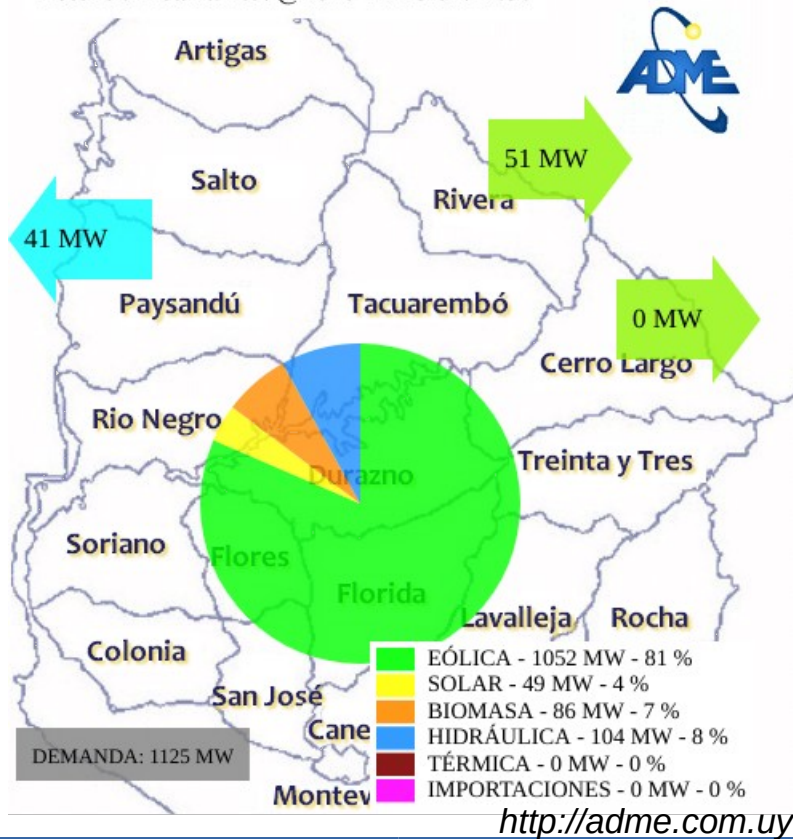


# XIII Foro de Integración Energética Regional

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## III SEMANA DE LA ENERGIA

Montevideo, Uruguay  
10 - 14 de diciembre 2018

El espacio para  
construir el futuro del  
sector energía en LAC

Regístrate

#SemanaEnergia2018



UruguayNatural  
Ministerio de Turismo

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## Wind, Solar and Hydro variability in Uruguay.

Solar

Wind

Hydro

For wind and solar energy, averaging **2 months**, the energy received will be in an interval of 10% of its expected value, with a 90% confidence

For hydro, to reach an interval of 10% of the expected value with a 90% confidence, we need to average **16 years**.

# Characterization of the variability.



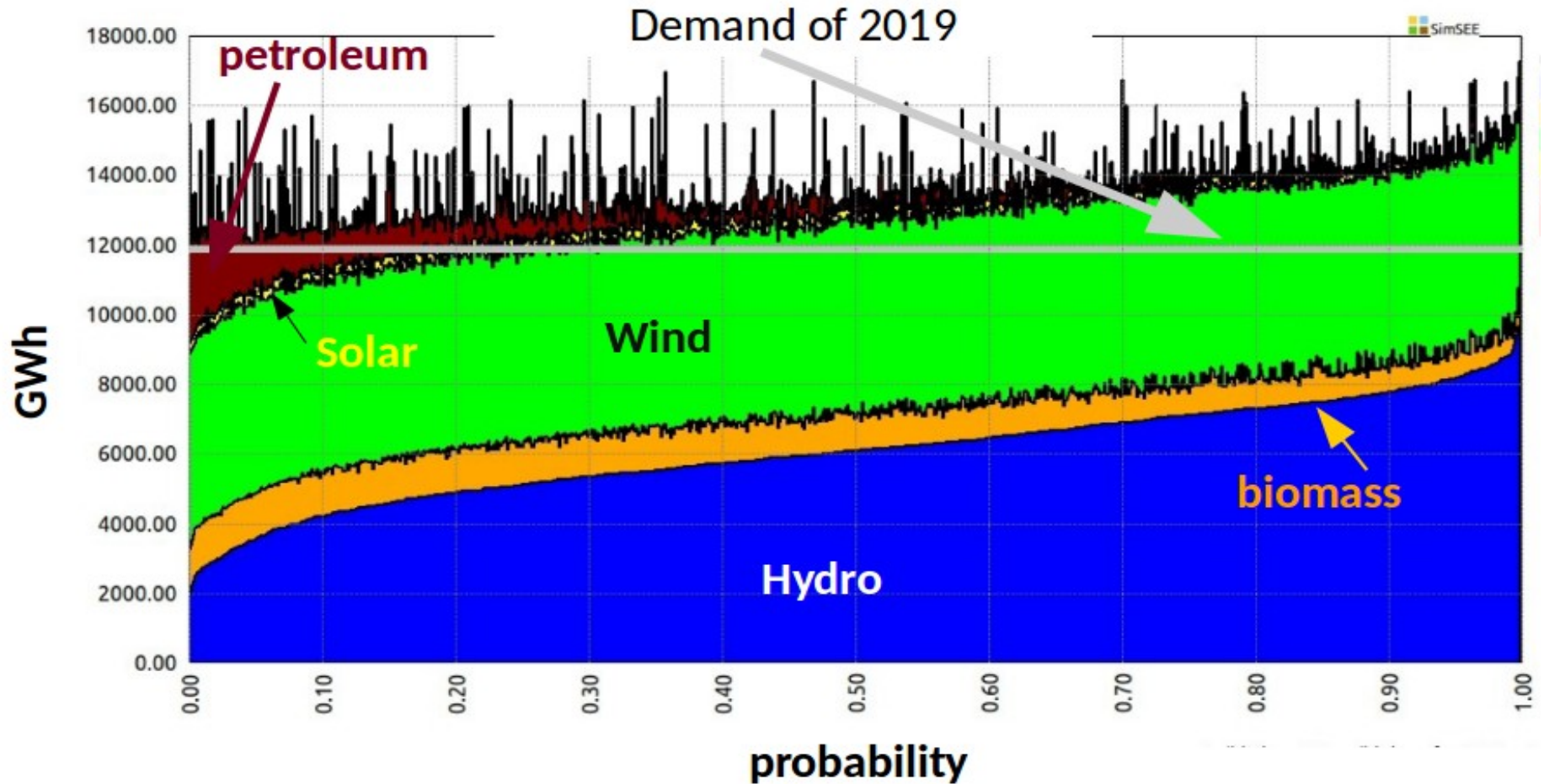
The averaging time, necessary to obtain the expected energy, is directly related to the volume of storage necessary to filter the variations. From this point of view, wind and solar energy require less filtering effort than hydro.



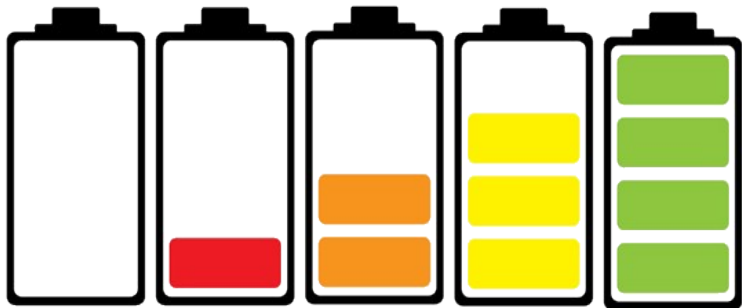
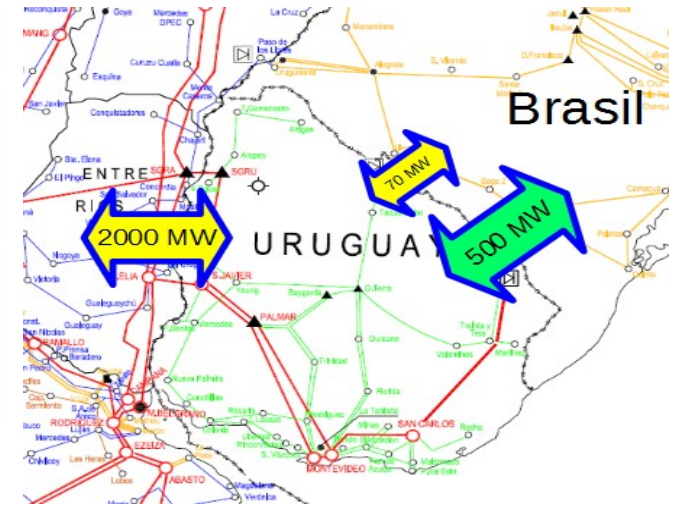
This characteristic of the variability leads to having to model very well the short-term dynamics of the system, since it will be this dynamic that will determine the amount of wind and solar energy that is manageable.

**Every day, we have Smarter Grids, Smarter Demands, Smarter Generators and, if we are smarter, we will be able to handle the new type of variations in a safe way.**

# Uruguay hoy, una foto del futuro



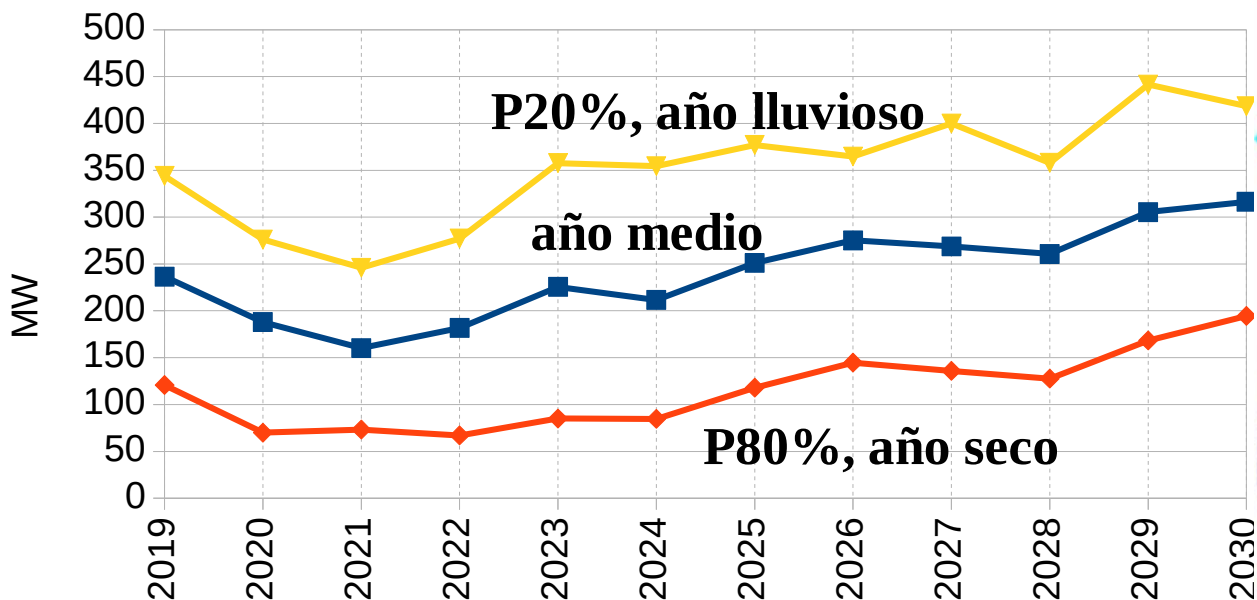
In the future, when the filtering capacity of the hydroelectric subsystem is exhausted, regional integration, Responsive Demands and Battery-storage will be the key to filter the variations of energy availability within the week.



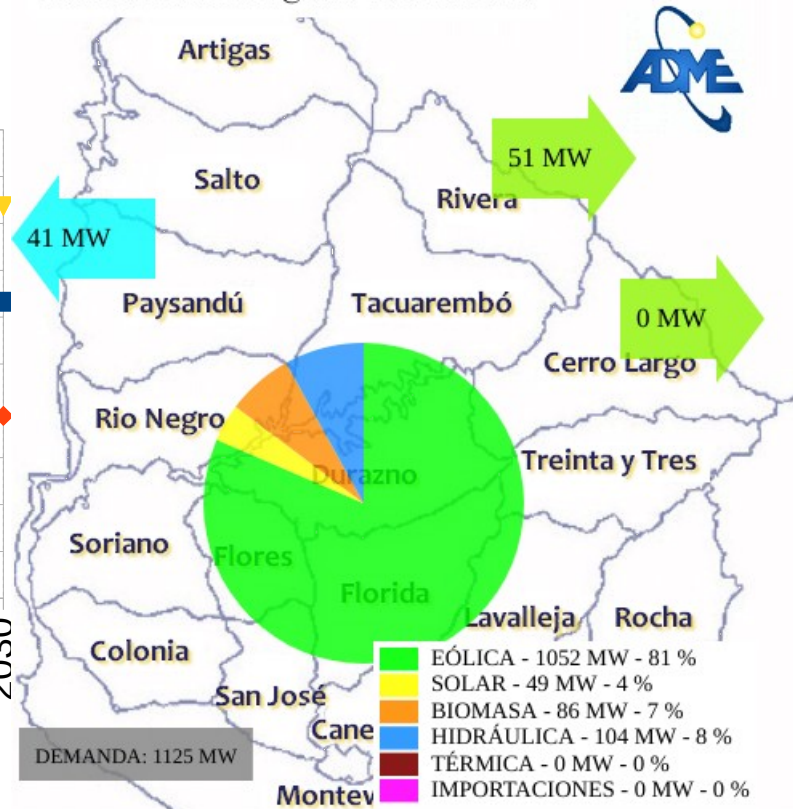
La expansión óptima genera excedentes ocasionales de energía, asociados a los años lluviosos.

La integración regional es la clave para poner en valor dichos excedentes.

Uruguay - excedentes de energía exportable.



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<http://adme.com.uy>

# Otros sectores.





# Seguridad Nacional Segurança nacional



# ¿Tenemos que ser CLONES?





Lo Mejor es  
enemigo de lo  
**BUENO.**

O melhor é  
inimigo do bom.



Gracias por su atención.  
Obrigado pela sua atenção.