



**MERCURY – Modeling the European power sector evolution: low-carbon generation technologies (renewables, CCS, nuclear), the electric infrastructure and their role in the EU leadership in climate policy (January 16, 2017 – January 15, 2019)**

## Introduction to the Project: Objectives and Methods

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Monitoring meeting with Project Officer – Milan, September 28, 2018



The MERCURY project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 706330.

# The project

## From the proposal abstract:

*“The reduction of greenhouse gas emissions is a vital target for the coming decades.*

*From a technology perspective, power generation is the largest responsible for CO<sub>2</sub> emissions, therefore great mitigation efforts will be required in this area.*

*From a policy perspective, it is common opinion that the European Union is and will remain leader in implementing clean policies.*

*Basing on these considerations, the **power sector** and the **European Union** will be the two key actors of this project.*

*The main tool adopted in this work will be **WITCH**, the integrated assessment model developed at Fondazione Eni Enrico Mattei (FEEM).”*

# The WITCH model

## WITCH – World Induced Technical Change Hybrid

- Climate-energy-economic IAM (Integrated Assessment Model) → Socio-economic impacts of climate change
- Hybrid: aggregated economic model + disaggregated description of the energy sector



CAJAZ  
(Canada, Japan,  
New Zealand)

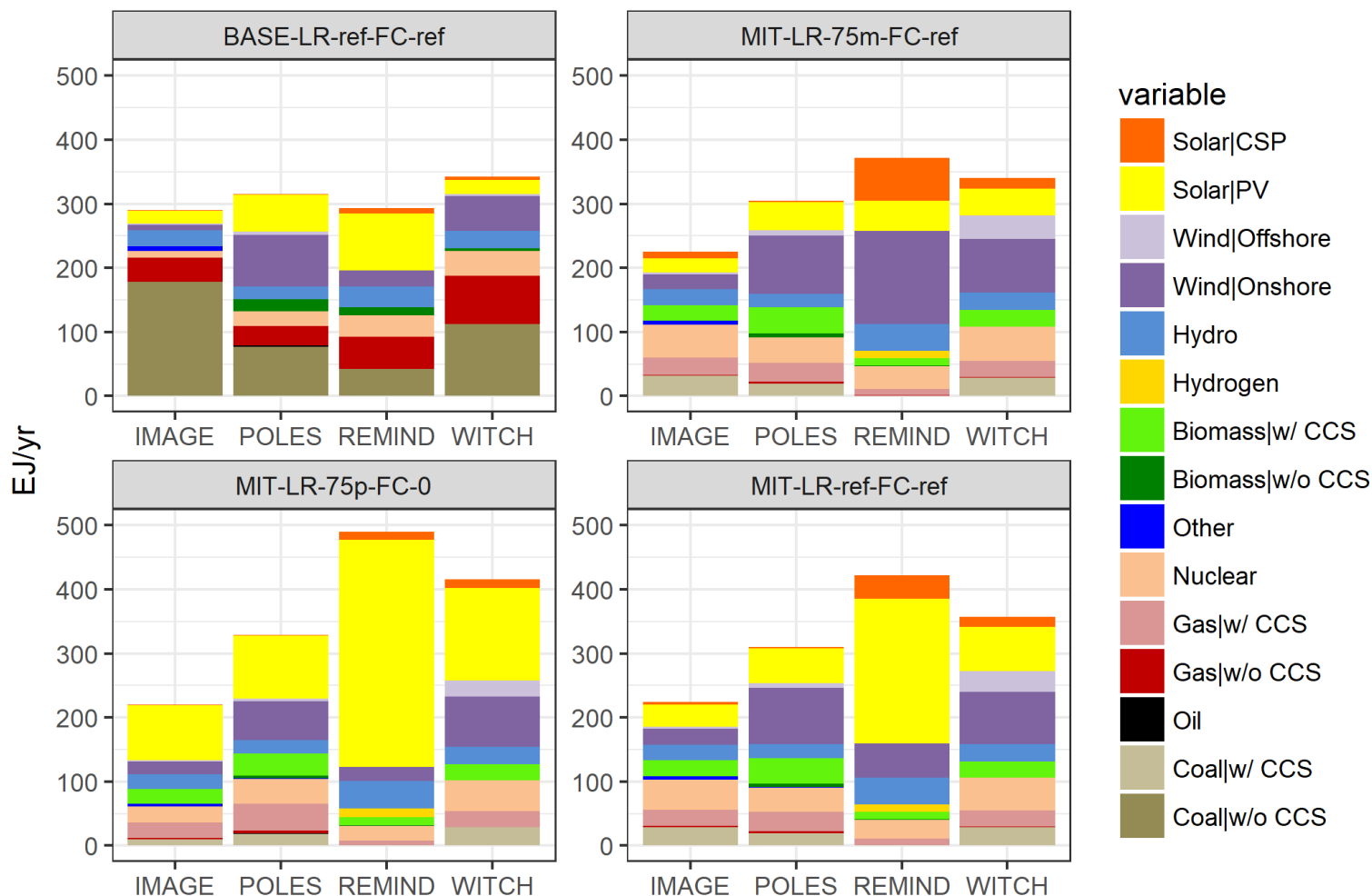
KOSAU  
(R. of Korea, South Africa,  
Australia)

# Project outline

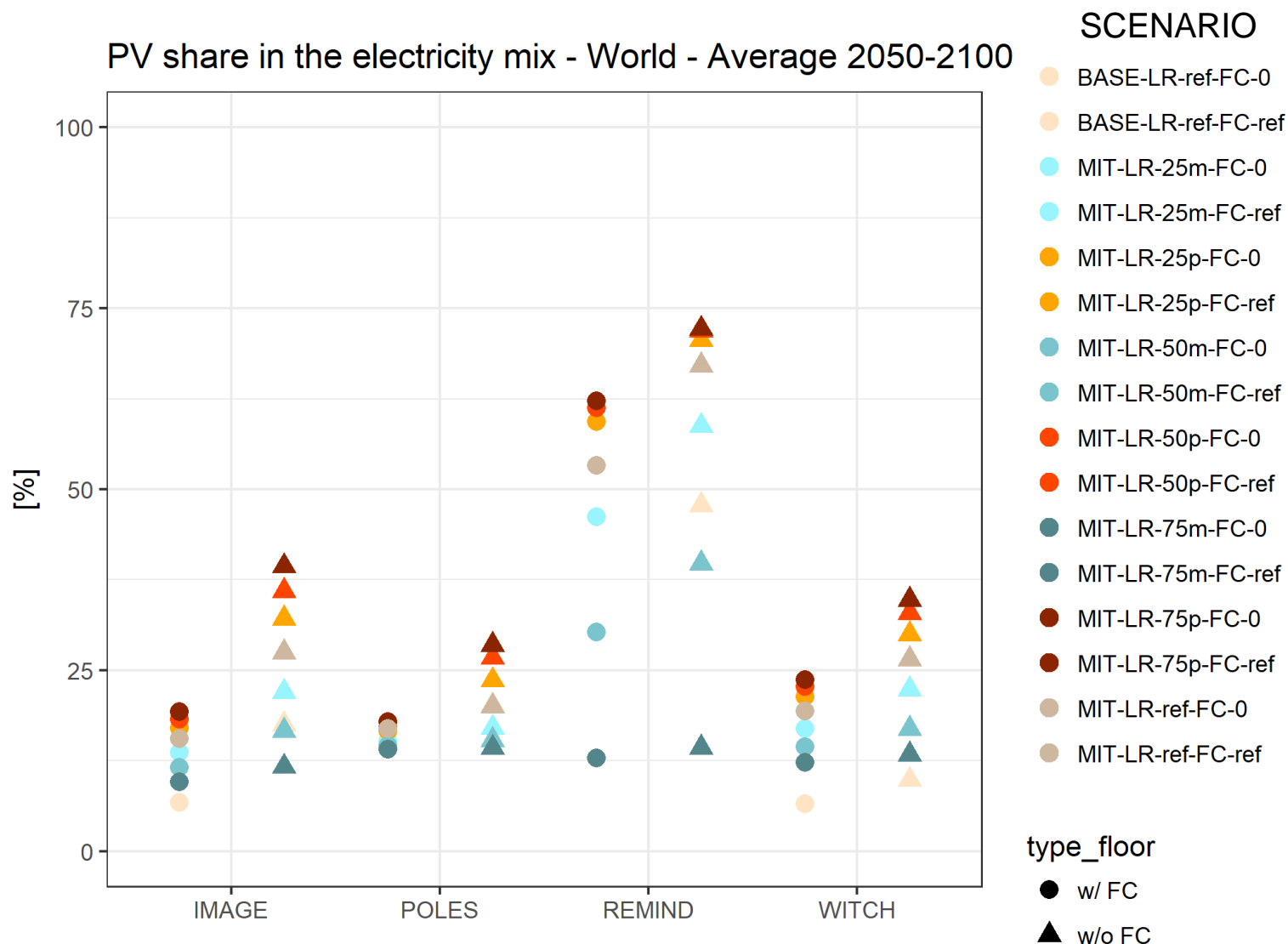
- WP 1 – Power sector modeling improvements (UC Berkeley)
  - Task 1.1 – Training on the SWITCH model (months 1-2)
  - Task 1.2 – System integration of Variable Renewable Energies (VRE) (months 3-4)
  - Task 1.3 – Electricity storage (months 5-6)
  - Task 1.4 – Electrical grid (months 7-8)
  - Task 1.5 – ~~Electricity trade (months 9-12)~~ → Interactions/integration with SWITCH
- WP 2 – Technology prospects: EU policy scenario (FEEM)
  - Task 2.1 – Study of the state of the art of renewables, nuclear and CCS in the European Union (month 13)
  - Task 2.2 – Scenario definition (month 14)
  - Task 2.3 – Scenario run and analysis (months 15-18)
- WP 3 – Technology prospects: global climate policies (FEEM)
  - Task 3.1 – Study of the state of the art of current EU and global climate policies (month 19)
  - Task 3.2 – Scenario definition (month 20)
  - Task 3.3 – Scenario run and analysis (months 21-24)

# The MERCURY project: some results (I)

Electricity mix in selected scenarios - Average 2050-2100 - World



# The MERCURY project: some results (II)





# The MERCURY project (??)





# THANK YOU FOR YOUR ATTENTION

[www.mercury-energy.eu](http://www.mercury-energy.eu)



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