

# Ireland's Sustainable Energy Investment Model (SEIM)


66<sup>th</sup> Semi-annual ETSAP meeting  
Copenhagen  
19<sup>th</sup> November 2014

**Sarah Stanley**

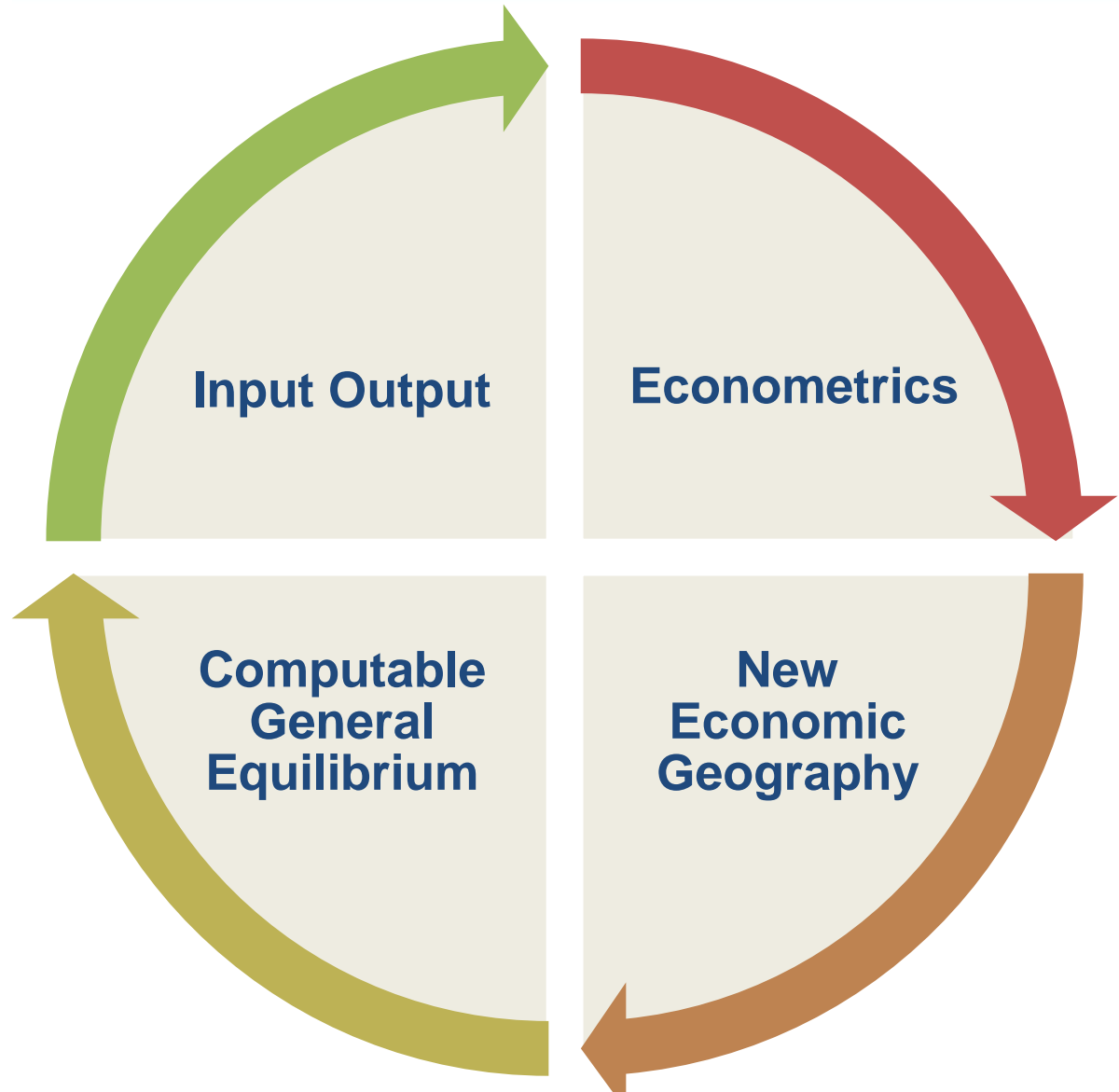
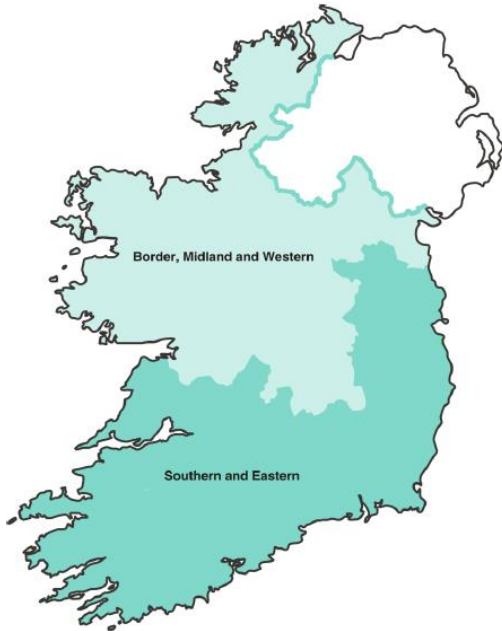
**ESRI/SEAI Fellow,  
Economic Modelling Group,  
Sustainable Energy Authority of Ireland (SEAI)**

# Introduction to the Sustainable Energy Investment Model (SEIM)

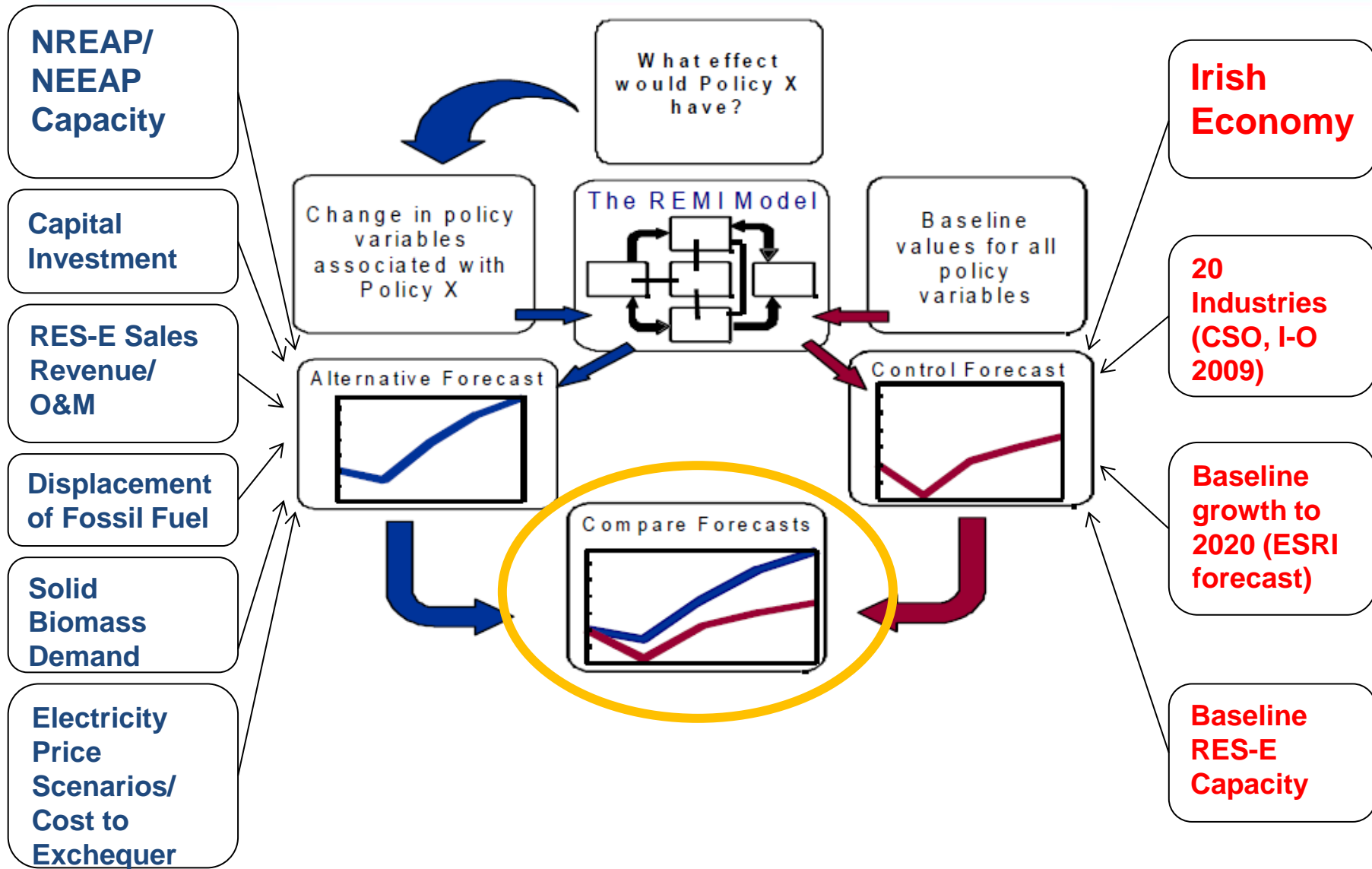
---

- SEIM based on popular American model REMI  
(Regional Economic Models, Inc.) 
- Net Employment and Macroeconomic impact of Ireland's  
2020 NREAP/NEEAP Targets.
- Presentation outline:
  - SEIM Methodology/Structure
  - SEAI Inputs and Outputs
  - Interface
  - Limitations and Benefits
  - Some Results

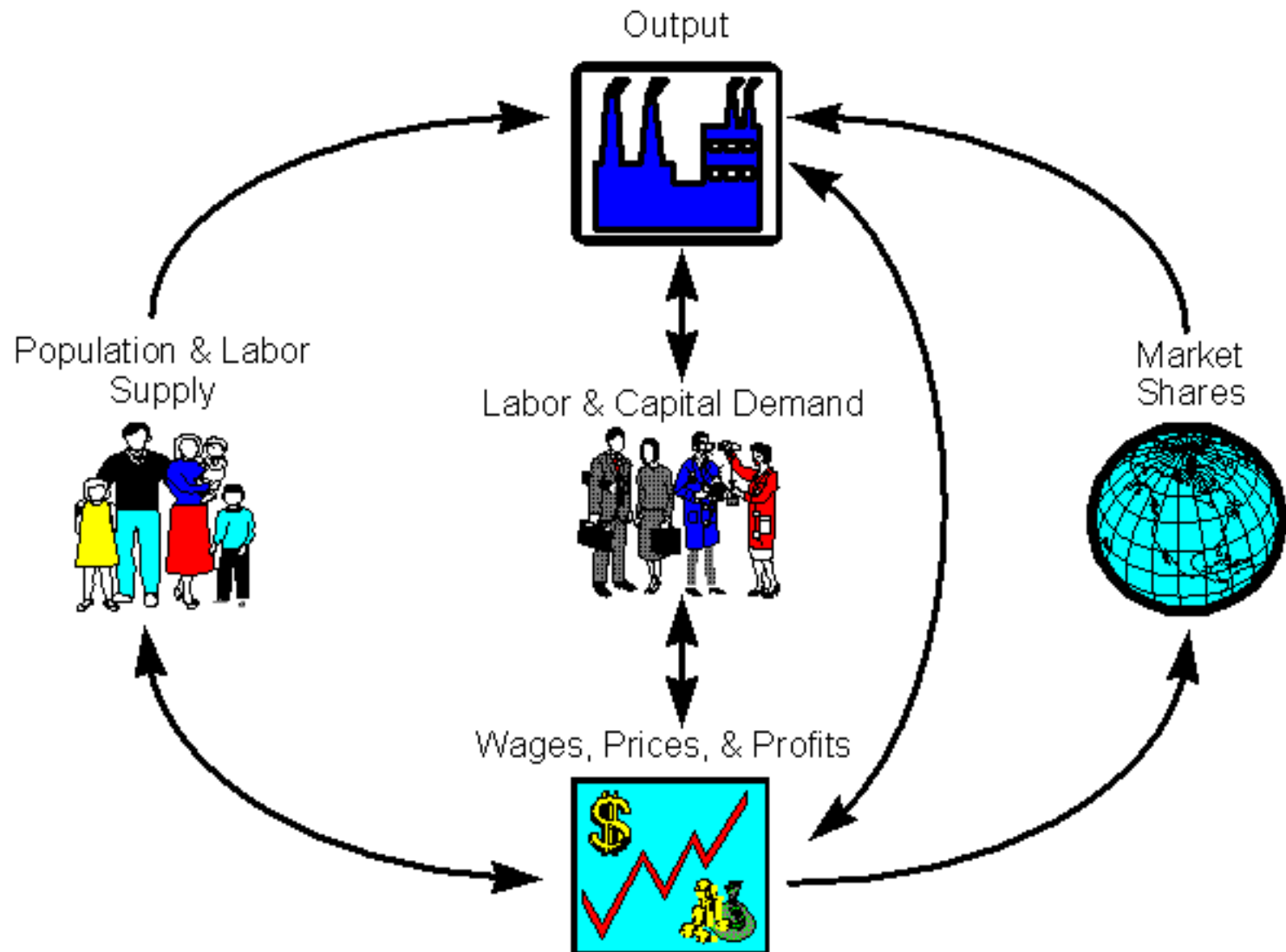
# Methodology

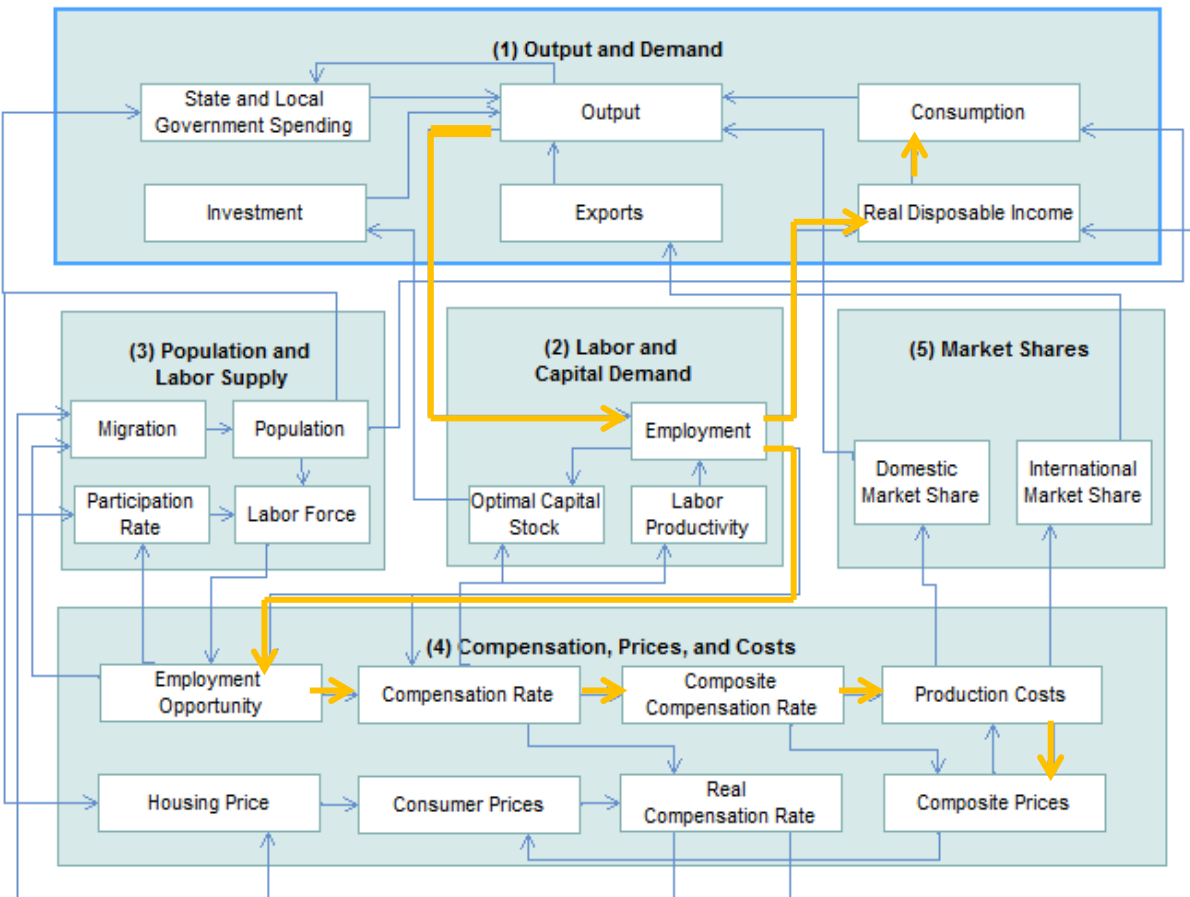


# Model Calibration



# Model Structure



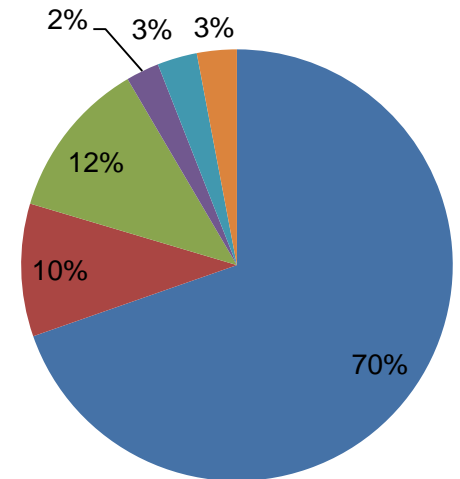


- **Model Blocks and Linkages:** A change in one input will create a reactionary change in all other endogenous areas of the economy
- **E.g. Capital investment in onshore wind:**
  - Demand increases, primarily in construction
  - Generates employment
  - Employment stimulates higher disposable income and consumption
  - In price block, employment feeds into a change in employment opportunities, compensation, production costs, and prices

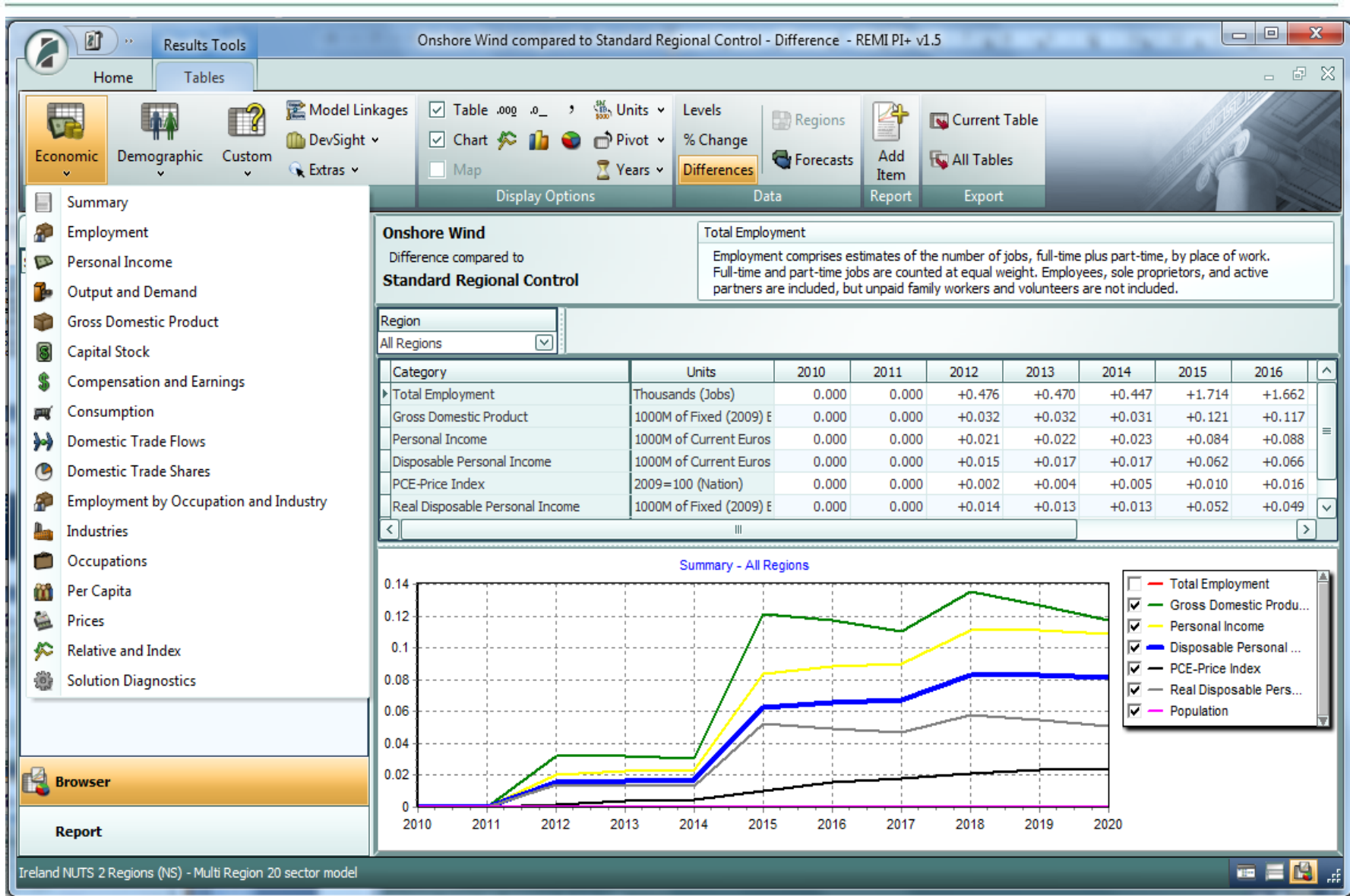
The screenshot shows the 'Custom Industry' configuration window. The 'Name' field is 'Onshore Wind Capital Investment (M2 Custom Industry)'. The 'Selector' table lists various industry categories, with 'M2 Onshore Wind Capital Inv SE - Base Y...' selected. The 'Editor' table shows the following data:

Category	Detail	Region	Units	ID	2010	2011	2012	2013	2014	2015	2016
Custom Industry Output / Sales	M2 Onshore Wind Capi...	Southern and Eastern ...	2012 National EUR (000s)	CSI2	0	0	25306...	25306...	25306...	96962...	96962...
Custom Industry Output / Sales	M2 Onshore Wind Capi...	Border, Midland and W...	2012 National EUR (000s)	CSI2	0	0	25306...	25306...	25306...	96962...	96962...

**Onshore Wind Custom Industry – Capital Investment**



- Manufacturing
- Electricity Supply Services
- Construction
- Transport
- Finance
- Professional Services

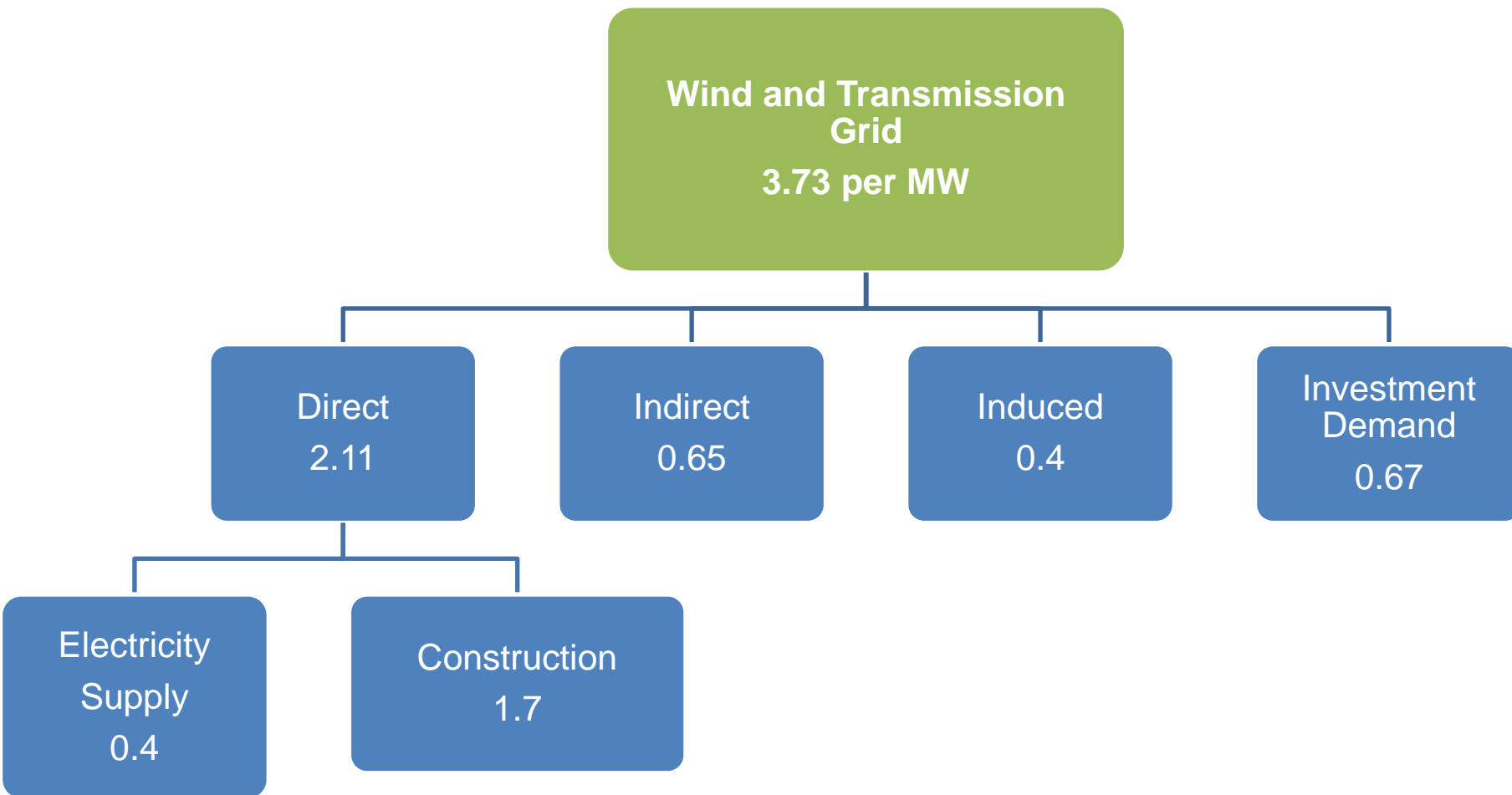




- Fixed intermediate input proportions
- No monetary or fuel price block
- Estimated regional industrial activity
- Some US parameters
- Global economy exogenous
- Relatively complex model with large data requirements and some training required for interpretation

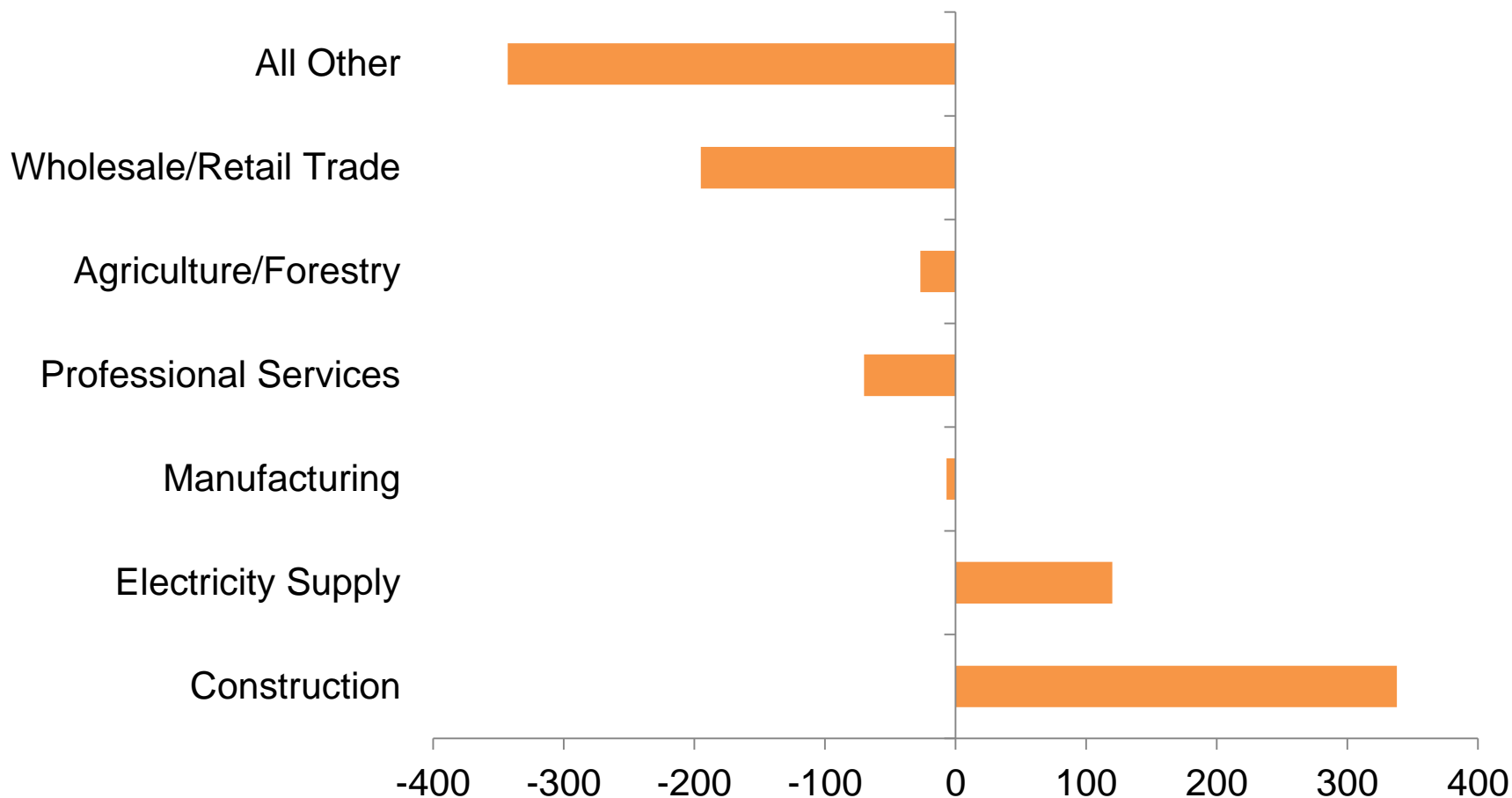
- Combines benefits of multiple methodologies
- Forecasting, industrial disaggregation, inter-regional analysis
- Substitution effects
- Dynamic incomes, prices, and costs subject to scarce resources
- Wide range of outputs and policy analysis options
- Clear breakdown of direct, indirect and induced net employment by sector

# Initial Outputs: Onshore Wind, Net Employment per MW 2020



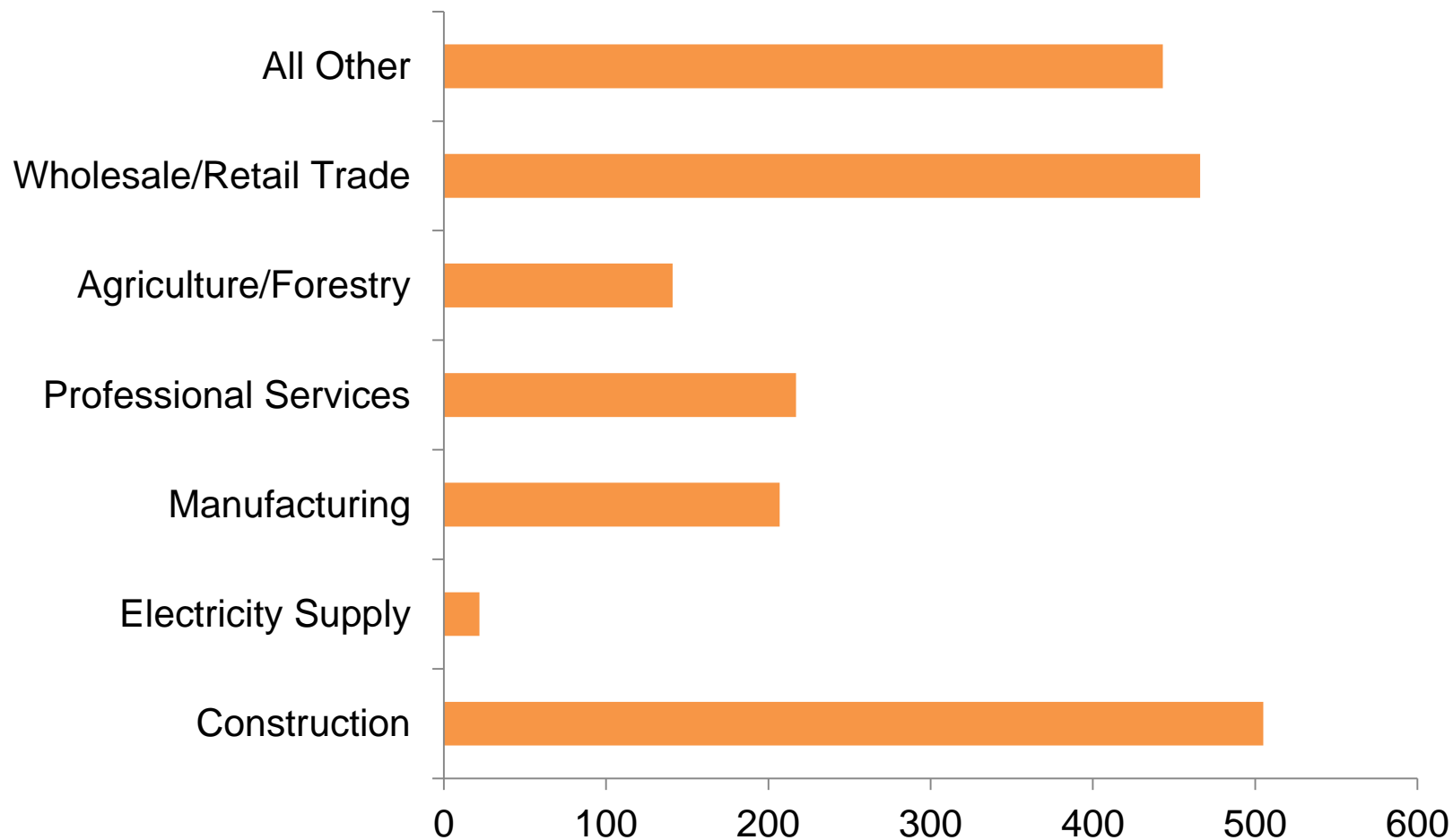
# Initial Outputs: 5% Biomass RES-E 2020 (imported solid biomass, with 2% electricity price increase)

## Biomass RES-E Net Employment by Sector, SE Region



# Initial Outputs: 12% RES-H 2020 (imported solid biomass)

## RES-H, Net Employment by Sector, SE Region



- **Lessons:**

- Collaboration with stakeholders important
- Considerable background analysis required for ‘custom industries’ and calculation of inputs into the model

- **Forthcoming and Future Analysis:**

- Reports specific to Onshore Wind, Biomass/Renewable Heat and Energy Efficiency Targets
- Post 2020
- Utilise price outputs from energy models

Thank you.  
Any questions?

[Sarah.Stanley@seai.ie](mailto:Sarah.Stanley@seai.ie)

