

Scenario modelling to support policy making in Finland

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LTES webinar 13.12.2018

Recent energy and climate policy and strategy formulations in Finland

- New energy and climate strategy up to 2030 was launched in the late 2016 by the Government and approved by the Parliament in spring 2017
- In parallel, the 1st medium term climate plan was prepared, which was approved by the parliament in the fall 2017
- Currently, new low carbon strategy up to 2050 is being prepared by the Government

VTT has had a leading role in coordinating and carrying out multidisciplinary research projects for impact assessments of the energy and climate policies and strategies

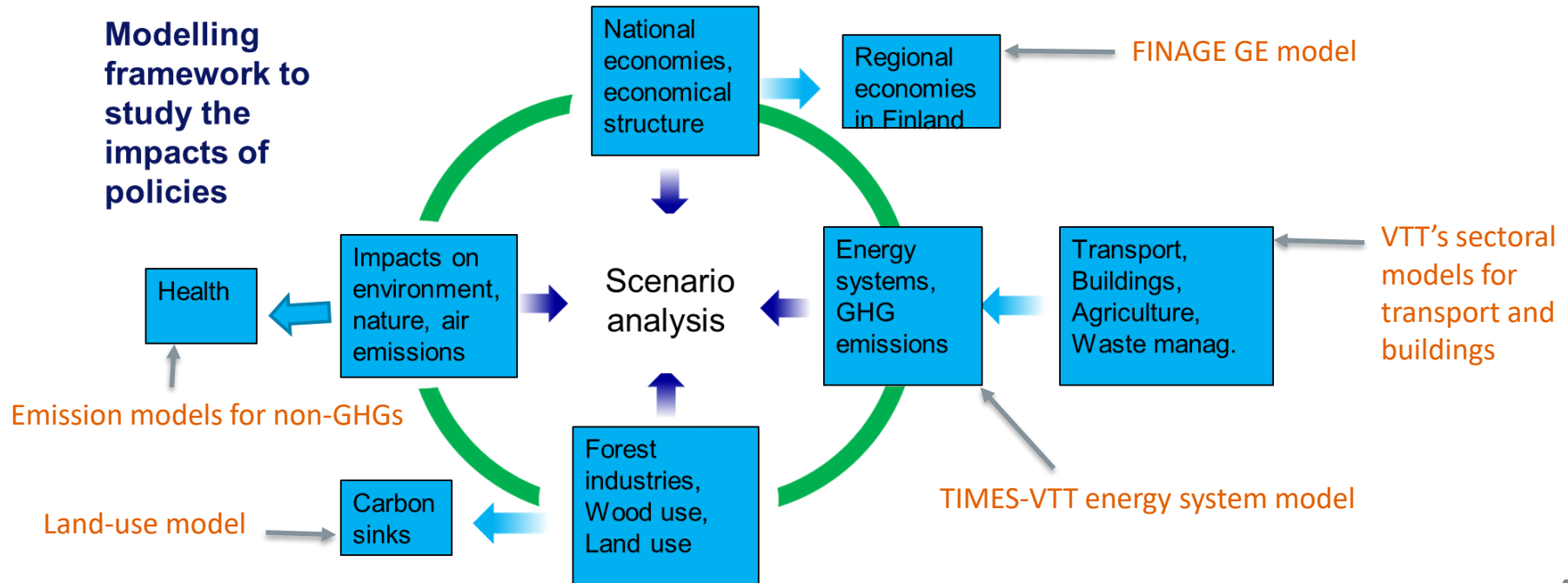


Strategies and policies by existing Government

- New energy and climate targets for 2030
 - The share of renewable energy above 50% from final energy consumption (EU2020 target 38%, which is already reached)
 - Reduce the use of mineral oil by 50% (compared with 2005 level)
 - Increase the share of domestic energy sources above 55%
 - Phase out of coal in energy production
 - Increase the share of renewables in transport to 40% (2020 target is 20%, which is already reached)
- Low emission strategy for 2050
 - Climate neutrality target by 2050 – debate is ongoing about the exact year and alternative pathways

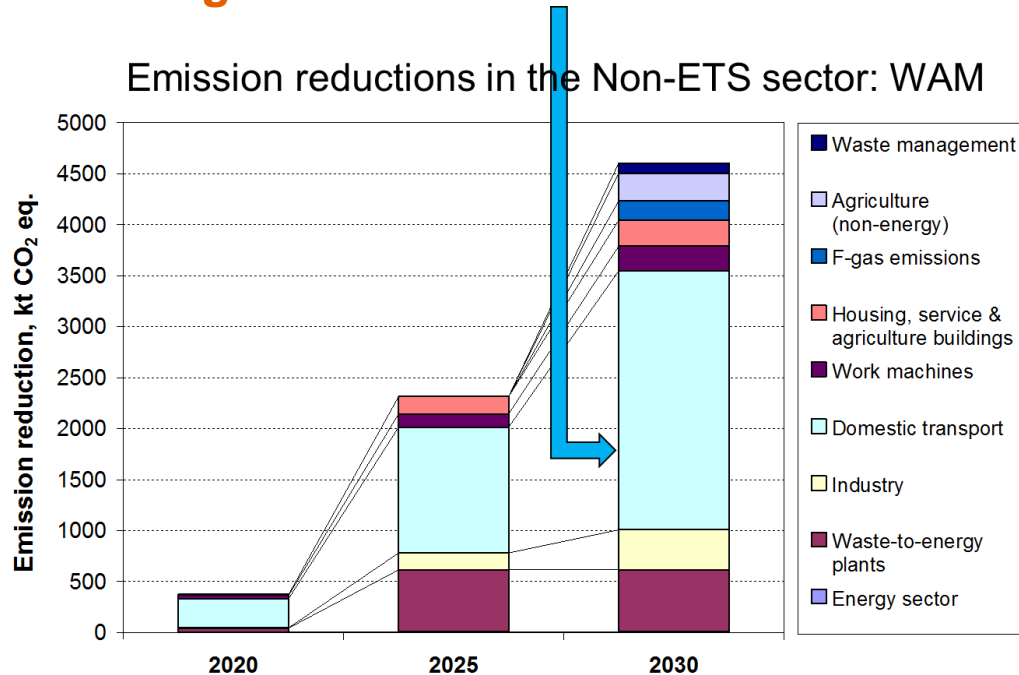


Five research organizations, 20-40 researchers, more than 10 models to analyse the impacts of the 2030 policies in Finland's national economy, energy economy, use of natural resources, emissions, health, ...



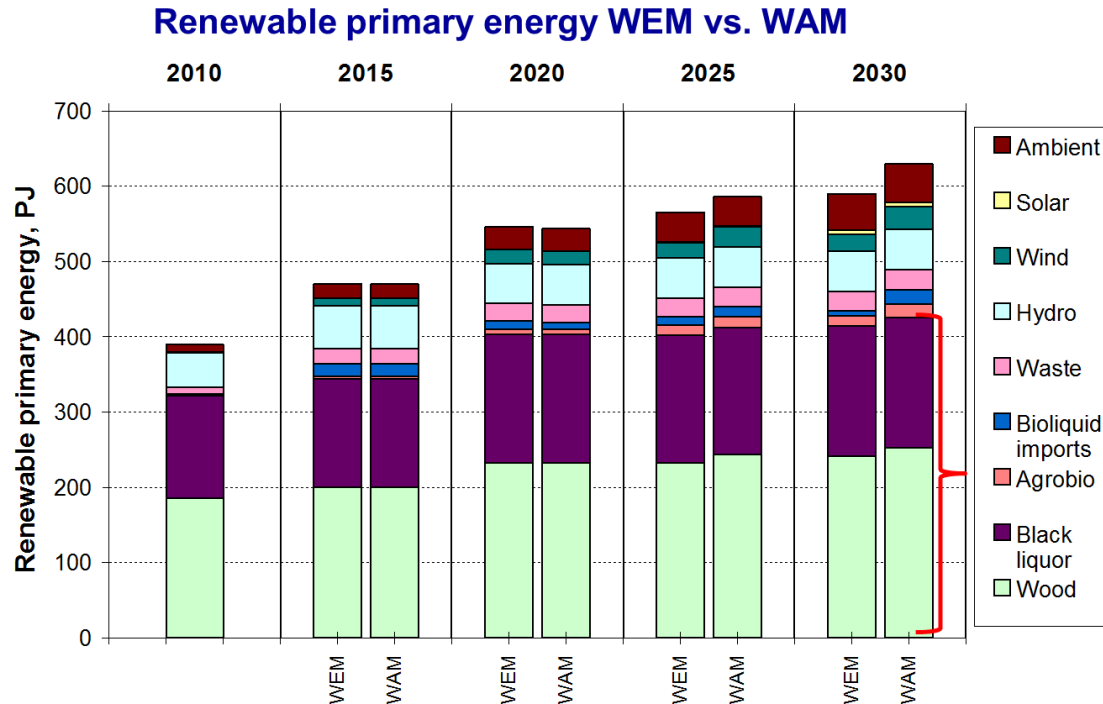
Example: 50% GHG reduction is required in transport by 2030 (compared with 2005)

⇒ A parliamentary group was established to solve the transport challenge



WEM: With Existing Measures
WAM: With Additional Measures

Example: Large share of RES growth is happening without any policies due to growth of forest industries



Collaboration is a key element in scenario planning

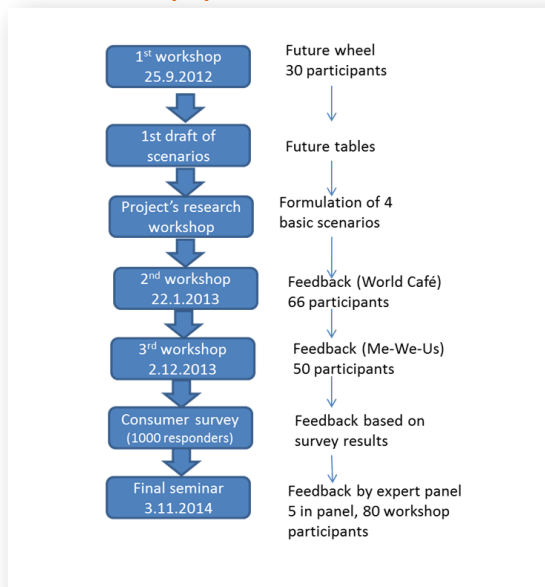
- 7 ministries
- 4 ministers from three Governmental parities
- 3 research institutes in addition to collaboration with other researchers
- Stakeholder communication
- Perspectives of private consumers/citizens

Scenario work in progress



From low carbon roadmap 2050 to low carbon strategy 2050

Roadmap process in 2012-14

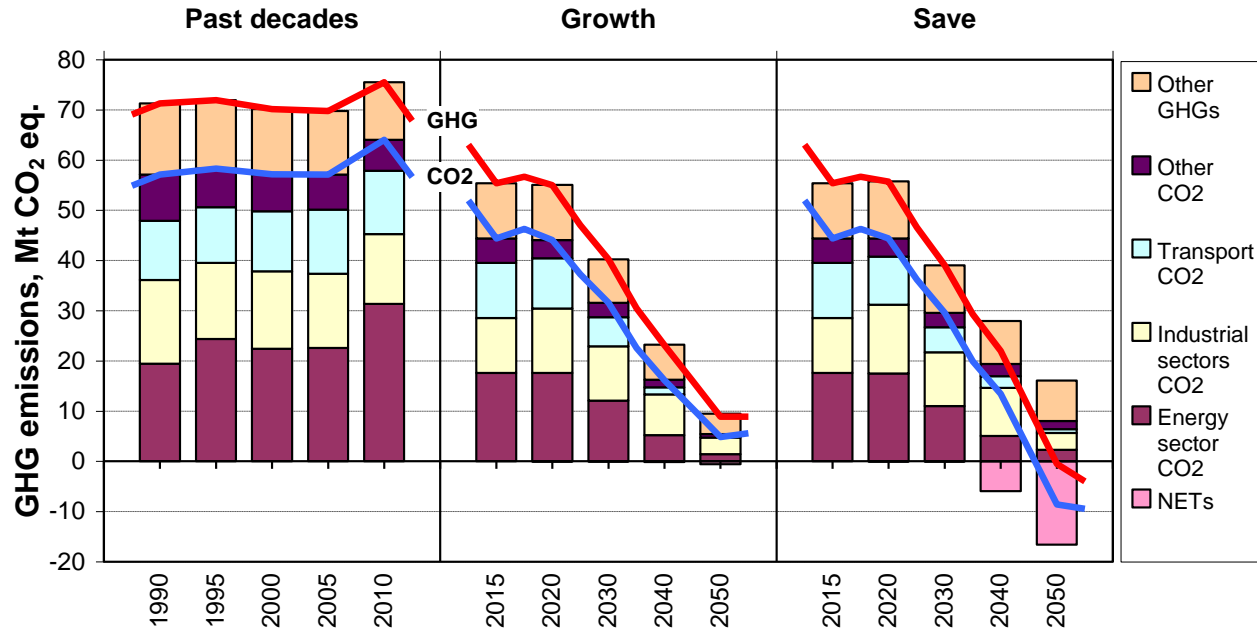


Four alternative pathways up to 2050:

1. Growth
2. Stagnation
3. Save
4. Change

- Strategy process in Sept.-Dec. 2018
 - Three workshops
 - Consumer survey (1000 responders)
 - Communication with ministries and responsible ministers
 - Impact assessments should be ready in Dec. 2018 and final report in Jan. 2019

Negative emissions (e.g. BECCS) is a key question in Finland in addition to LULUCF

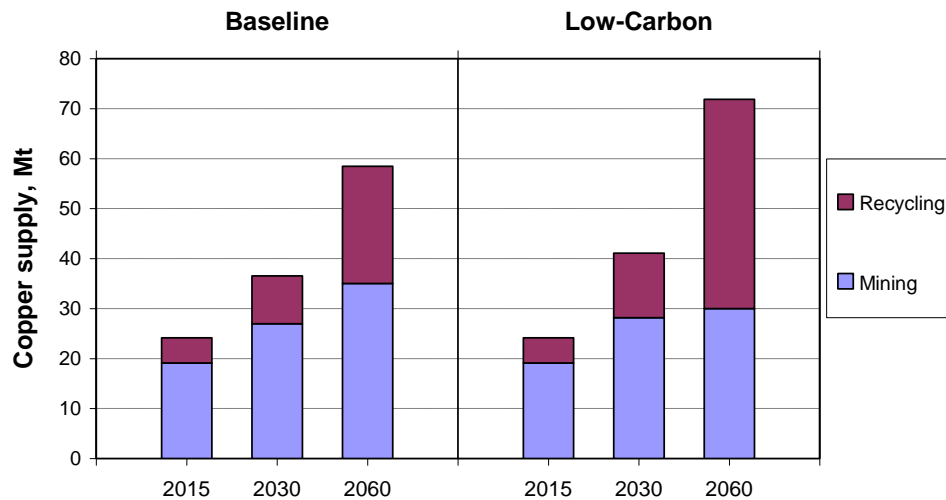


New research related to sustainable energy transition and scenario modelling

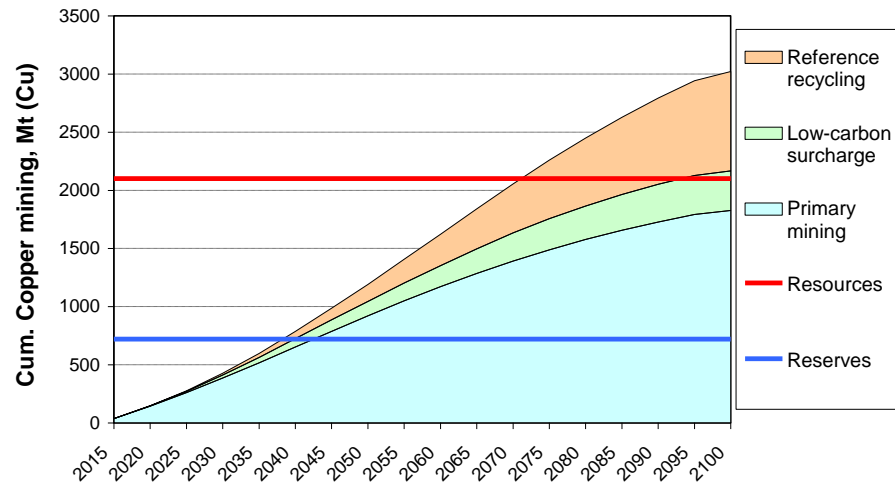
1. Social science and humanities in energy system transition
 - Combination of research on environmental psychology, social science, and foresight with analysis on clean energy systems and technologies => new data to understand and model behavior
2. Integrated assessments of material-energy-economy-environment (ME3)
 - Global assessments on supply and demand of metals and minerals (in addition to renewables and fossils)
3. Global mitigation scenarios to well below 2 degrees C (e.g. 1,5 degrees C)

Example: Long term Cu demand and supply projections for electrification of road transport

After 2050 most of Cu supply should be secondary



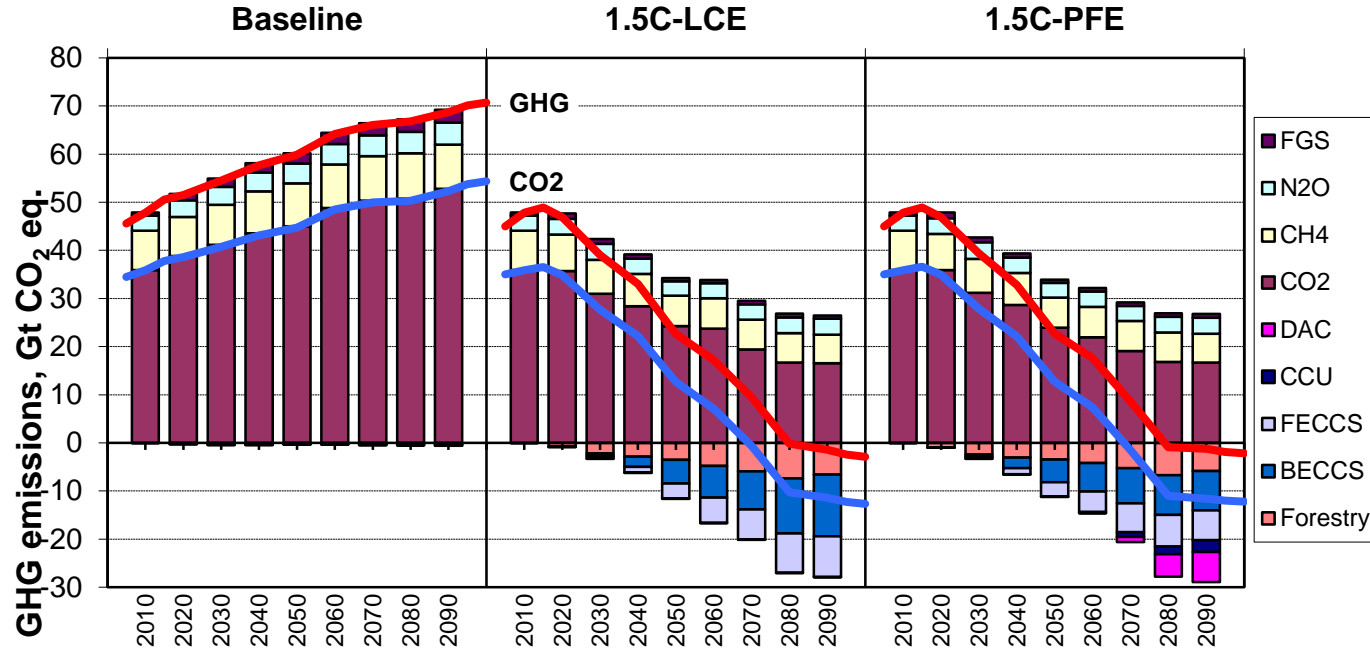
Scenario projections with TIMES-VTT model



Global scenario projections for two alternative 1,5 degree C mitigation pathways

Low carbon economy (LCE): CCS, BECCS, forestation

Post fossil economy (PFE): materials from air with DAC, BECCS, forestation



Conclusions

- Integration of energy and climate with other disciplines is required
 - Materials, water, etc.
 - Human behavior
- Challenge: complicated issue requires more complicated models, which also creates new challenges in communication
 - However, scenario modelling is only a part of the scenario planning process
 - Dialogue and open data supports dissemination and finally also acceptance of new policies and strategies

Thank you!

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Energy Systems and Climate

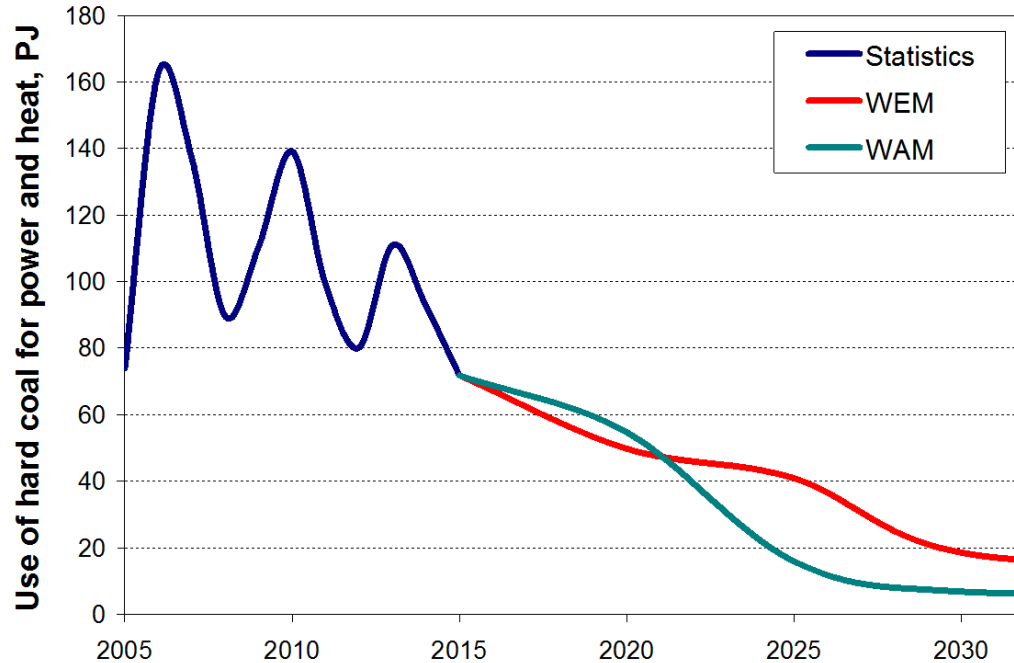
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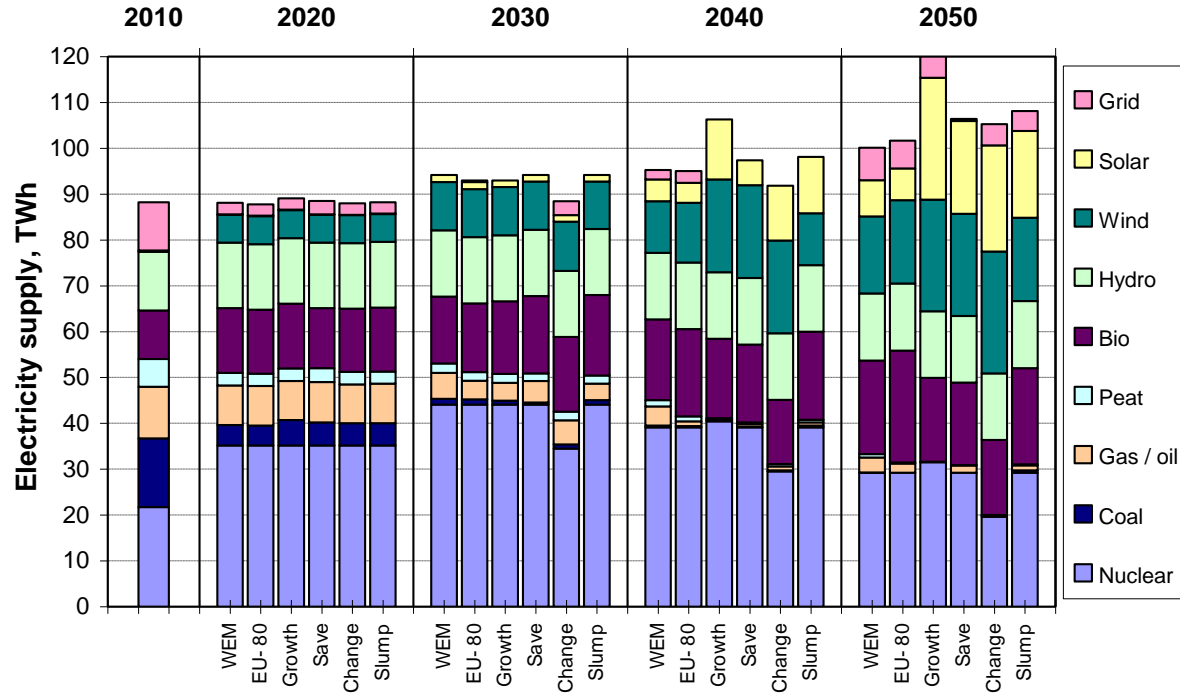
A hand is pointing at a button labeled 'CONTACT US' which features an envelope icon. The background is a blurred cityscape at night with blue lights.

CONTACT US

Phase out of hard coal for power and district heat creates new worries on energy security and security of energy supply



Electricity supply by 2050



Final energy in transport by 2050

