

Eine modellbasierte Evaluierung der energiepolitischen Rahmenbedingungen des Erneuerbare-Energien-Sektors in der EU in Hinblick auf die 2020 Zielerreichung

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- Wie entsprechen der historische Verlauf und die Szenarienergebnisse des erneuerbaren Elektrizitäts-, Wärme- und Verkehrssektors den selbstgesteckten Zielen der nationalen Aktionspläne der 28 Mitgliedsstaaten?
- Welche Ergebnisse liefern modellbasierte Evaluierungen der energiepolitischen Rahmenbedingungen für den Sektor der Erneuerbaren Energien der 28 EU Mitgliedsstaaten in Hinblick auf die 2020 Zielerreichung eines 20% Anteils am Bruttoendenergieverbrauch?
- Ein Vergleich von verschiedenen Ausbauszenarien des Green-X Modells soll ein detailliertes Verständnis für den Stand, die Aussichten und Herausforderungen des Erneuerbare-Energien-Sektors innerhalb der EU und deren 28 Mitgliedsstaaten liefern.

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(1) Status Quo

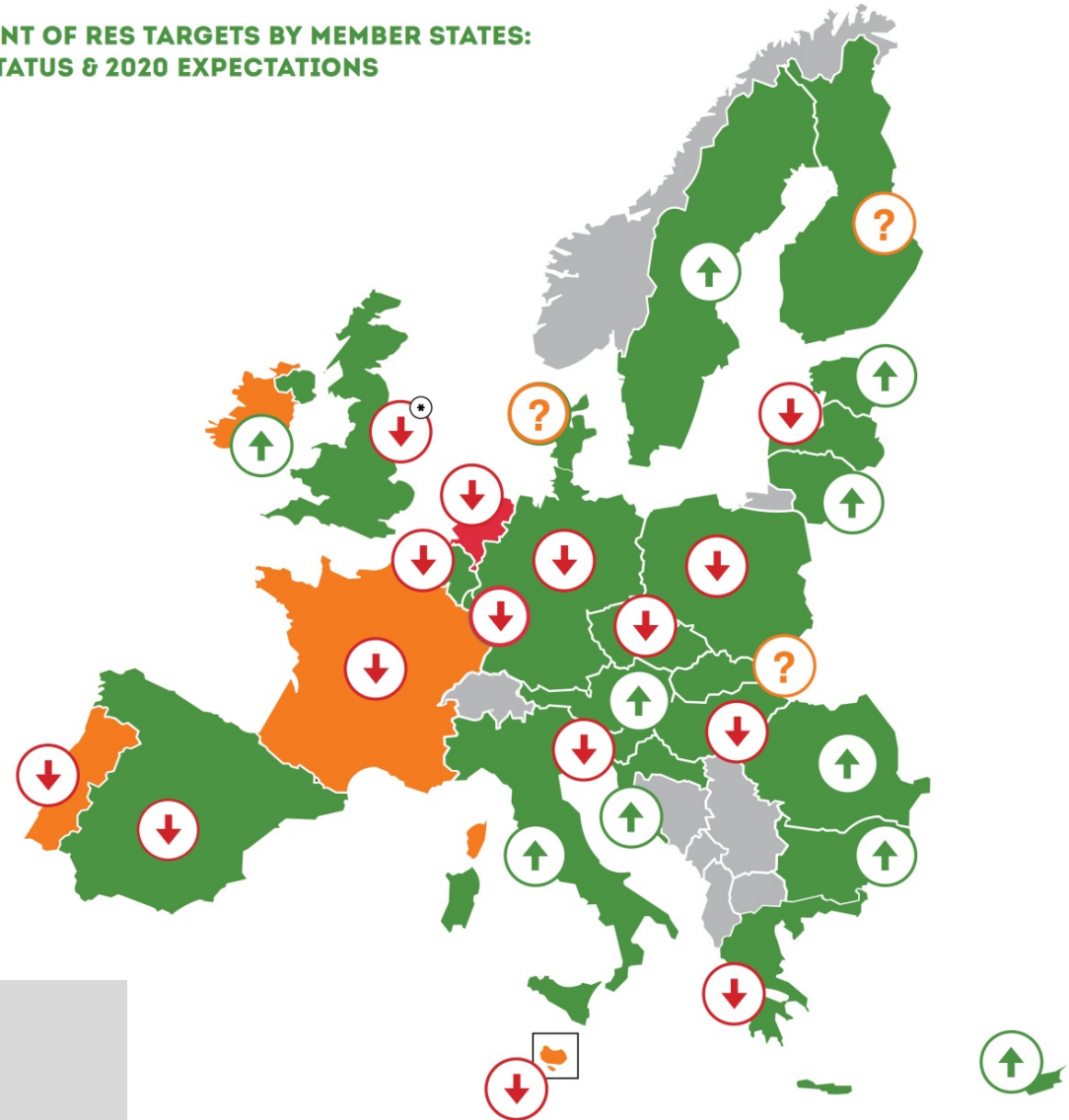
CURRENT STATUS

- This MS has achieved the NREAP 2014 target and the 2013/2014 interim target set by the RES Directive
- This MS has NOT achieved the NREAP 2014 target but has achieved the 2013/2014 interim target set by the RES Directive
- This MS has NOT achieved the NREAP 2014 target and has NOT YET achieved the 2013/2014 interim target set by the RES Directive
- No data.

2020 EXPECTATIONS

- ↑ This MS is expected to reach the 2020 target.
- ↓ This MS is NOT expected to reach the 2020 target.
- ? There are doubts whether this MS will achieve the 2020 target.

ACHIEVEMENT OF RES TARGETS BY MEMBER STATES: CURRENT STATUS & 2020 EXPECTATIONS

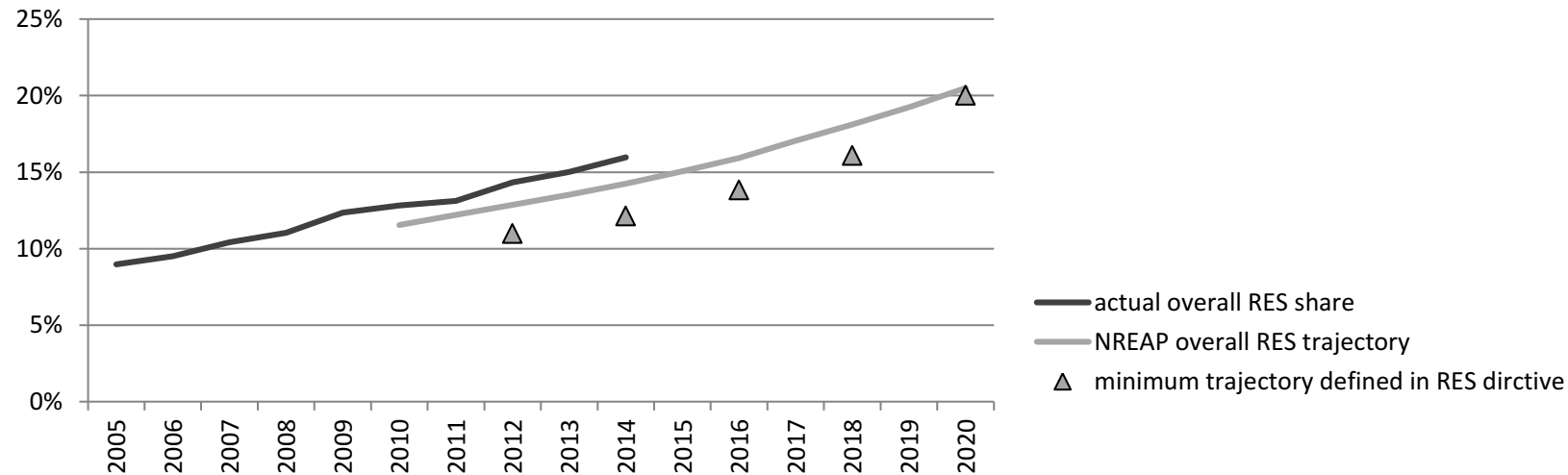


→ 24 MS on track regarding NREAP targets, and 4 underachieved.

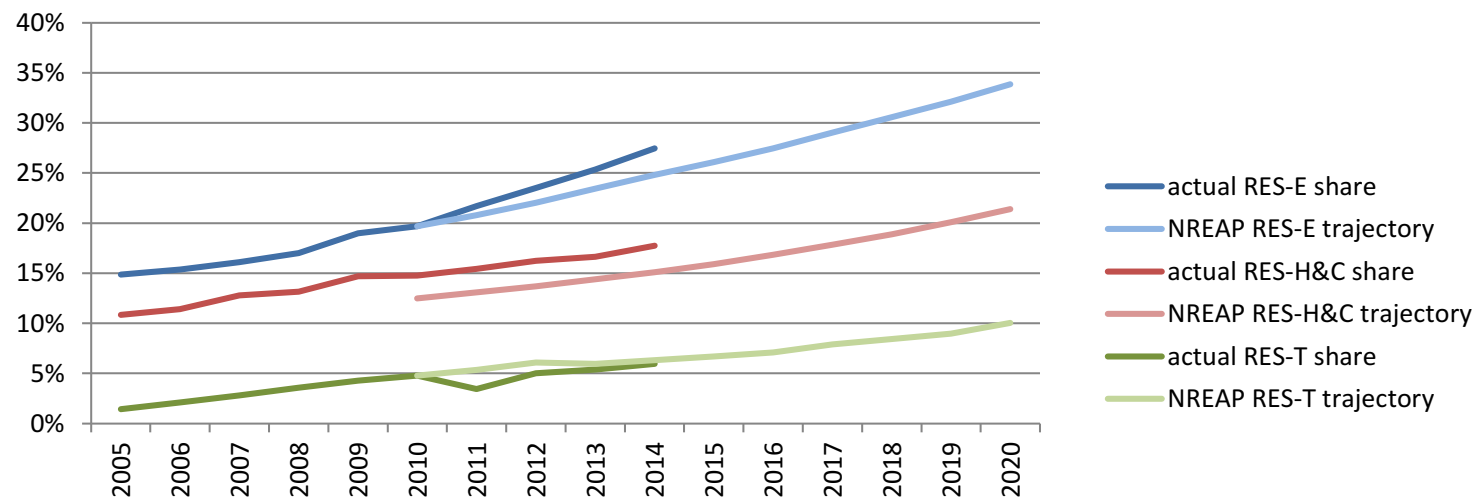
→ 27 MS have met the 2013/2014 RES directives interim trajectory milestone.

(1) Status Quo

RES SHARE IN GROSS FINAL ENERGY CONSUMPTION

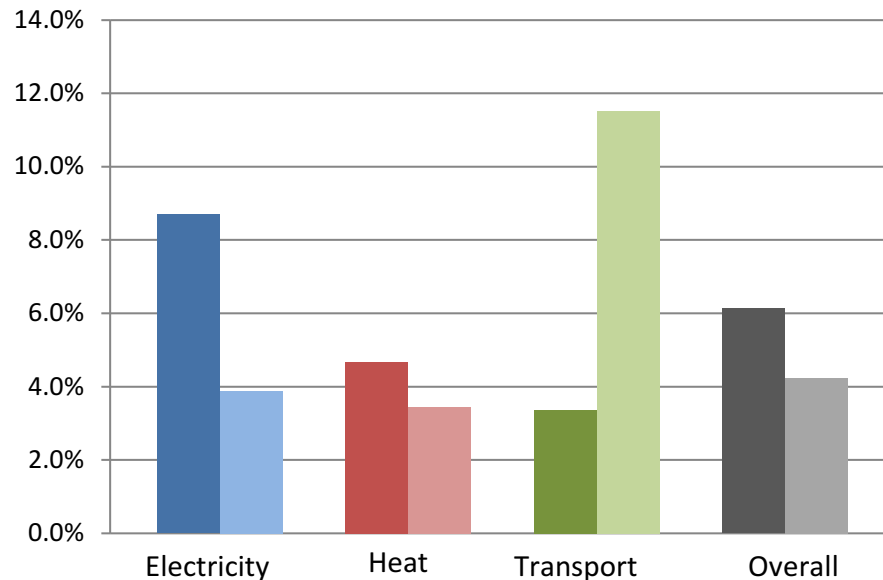


RES SECTOR SHARE IN FINAL SECTORAL ENERGY CONSUMPTION



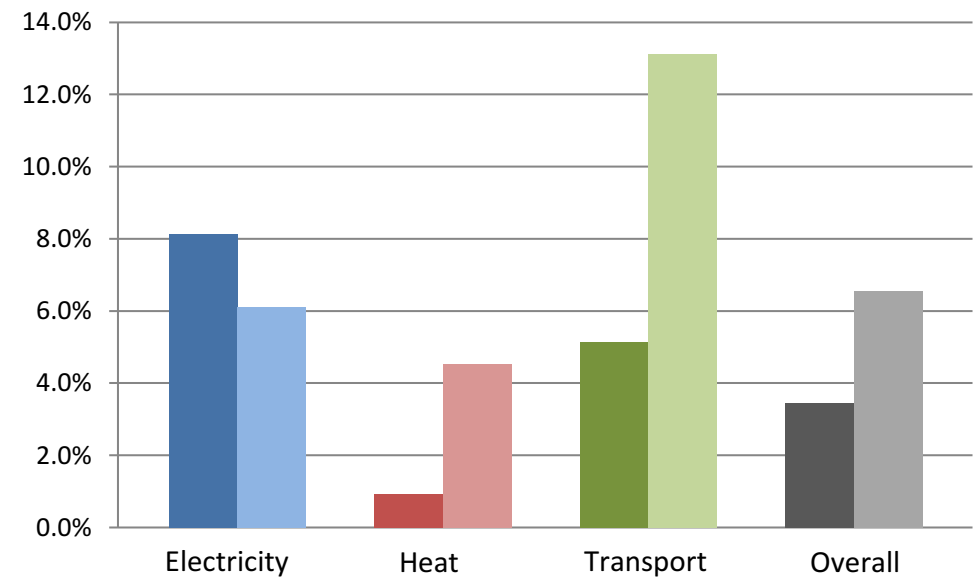
(1) Status Quo

GROWTH RATE IN RES SHARES



■ Electricity 2010-2014 ■ Electricity 2014-2020
■ Transport 2010-2014 ■ Transport 2014-2020

GROWTH RATE IN RES (ABSOLUTE FIGURES)



■ Heating & Cooling 2010-2014 ■ Heating & Cooling 2014-2020
■ Overall 2010-2014 ■ Overall 2014-2020

Growth rates of RES 2010-2013 [%/a] versus average annual growth rates [%/a] required from 2014 to 2020 to achieve the 2020 target.

Source: All MS NREAPS and EUROSTAT Shares (2016)

► *Key assumptions*

... by use of a specialised energy system model (Green-X) a quantitative assessment was conducted to assess feasible RES developments up to 2020 according to the defined policy pathways, indicating feasible RES deployment at country level that can be expected in the near future as well as related impacts on costs and benefits in a brief manner.

Main input sources for scenario parameters

Based on PRIMES	Based on Green-X database	Defined for this assessment
Primary energy prices	RES cost (investment, fuel, O&M)	RES policy framework
Conventional supply portfolio and conversion efficiencies	RES potential	Reference electricity prices
CO ₂ intensity of sectors	Biomass trade specification	Modified data on energy demand by sector, impacted by energy efficiency*
Default data on energy demand by sector	Technology diffusion / Non-economic barriers	
	Learning rates	

**Primes scenario used: Reference case (as of 2013)*

(2) Ergebnisse einer modellbasierten Evaluierung

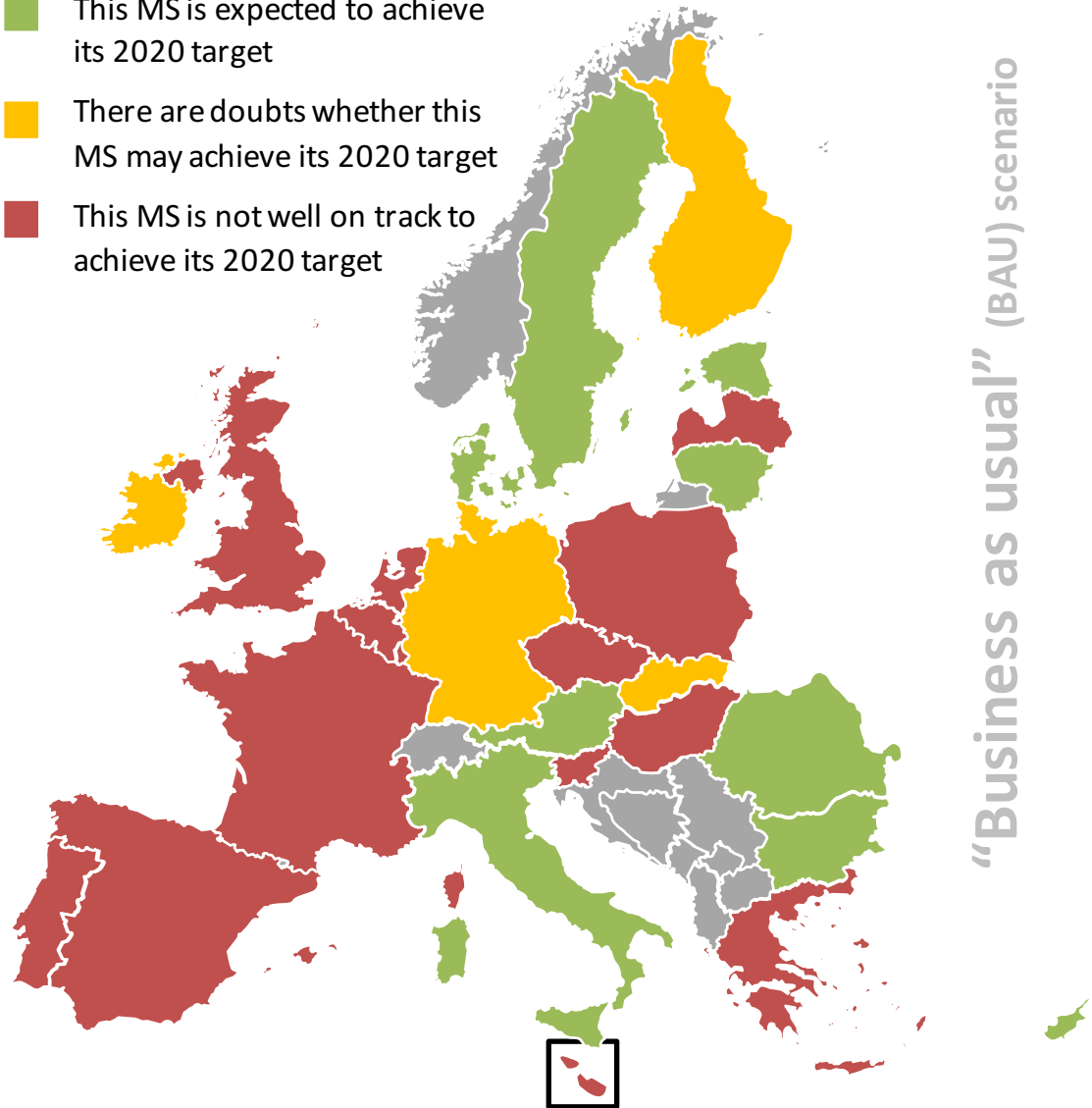
Results:

Business-as-usual scenario

... 2020 RES target achievement

- ▶ 9 MSs appear being well on track
- ▶ In another 4 MSs there are doubts whether 2020 targets are reached
- ▶ 14 MSs can be classified as “not well on track”!

- This MS is expected to achieve its 2020 target
- There are doubts whether this MS may achieve its 2020 target
- This MS is not well on track to achieve its 2020 target



(2) Ergebnisse einer modellbasierten Evaluierung

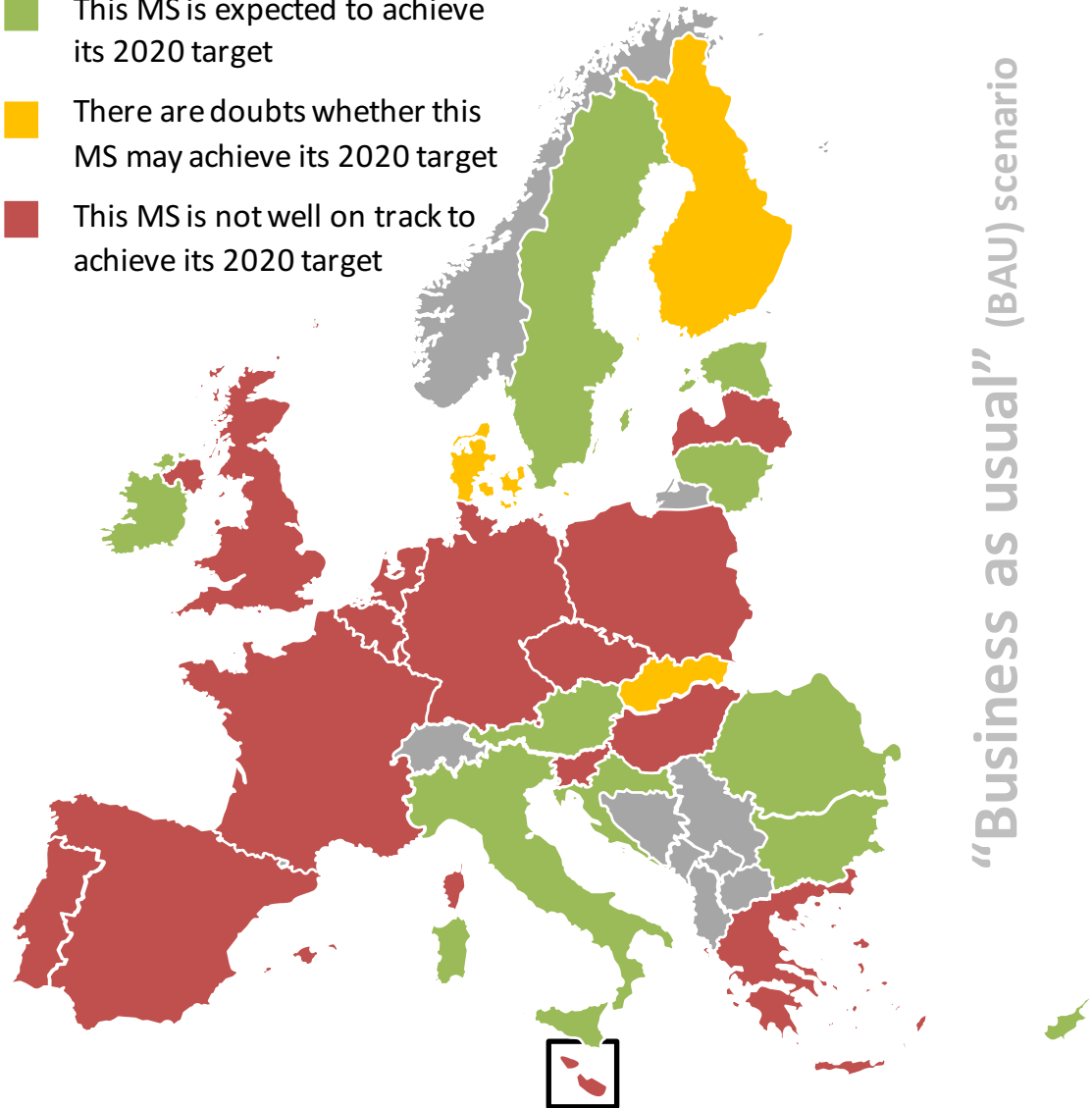
Results:

Business-as-usual scenario

... 2020 RES target achievement

- ▶ 10 MSs appear being well on track
- ▶ In another 3 MSs there are doubts whether 2020 targets are reached
- ▶ 15 MSs can be classified as “not well on track”!

- This MS is expected to achieve its 2020 target
- There are doubts whether this MS may achieve its 2020 target
- This MS is not well on track to achieve its 2020 target



(2) Ergebnisse einer modellbasierten Evaluierung

Results:

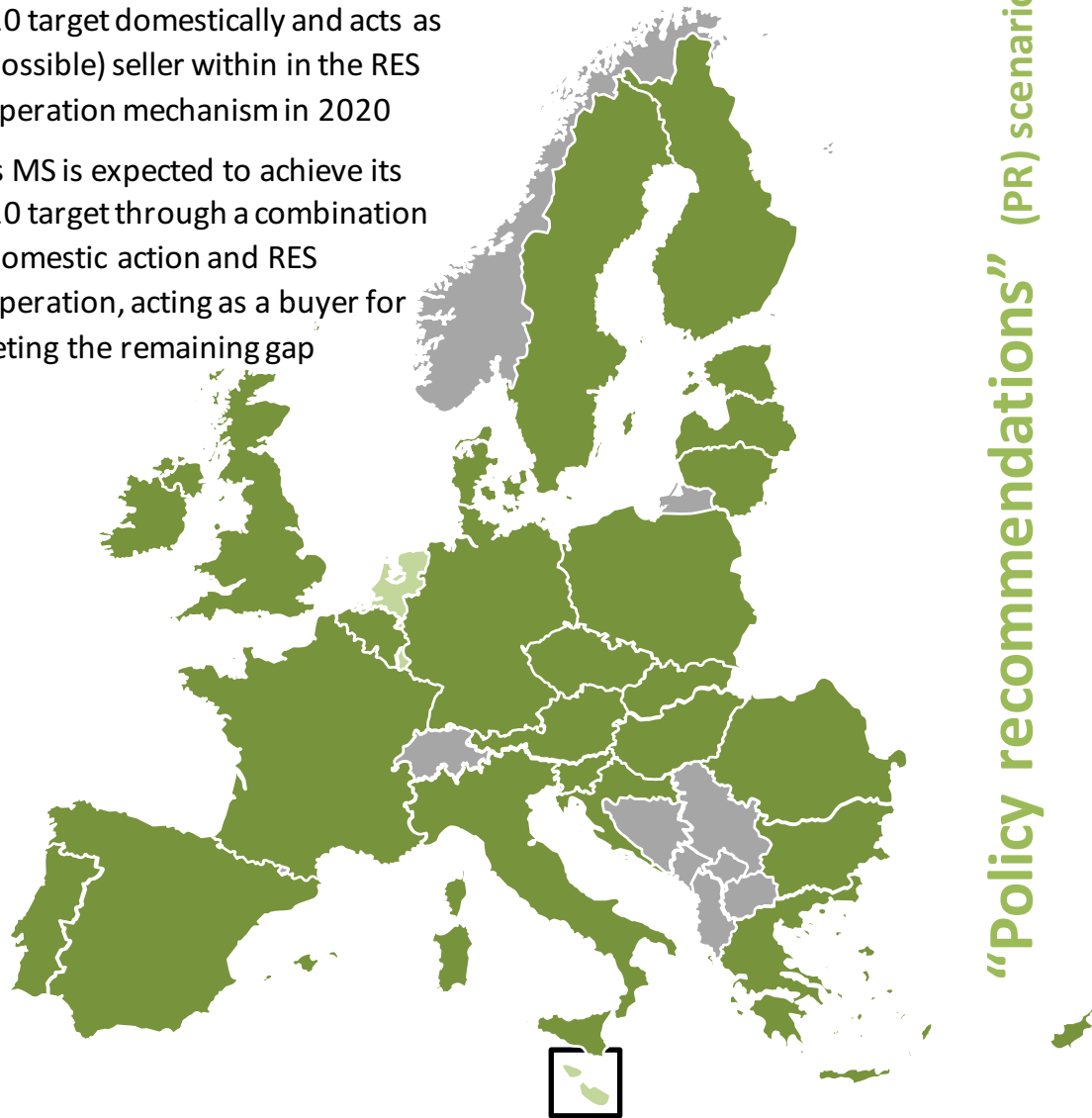
Policy recommendations

scenario (incl. complementary activities to improve energy efficiency)

... 2020 RES target achievement

- ▶ All MSs achieve their 2020 RES targets
- ▶ The majority of MSs even exceeds its obligations - there are good reasons doing so! (Supply security, local employment, ...)
- ▶ 3 MSs make use of cooperation mechanisms as a buyer while all other act as (possible) seller

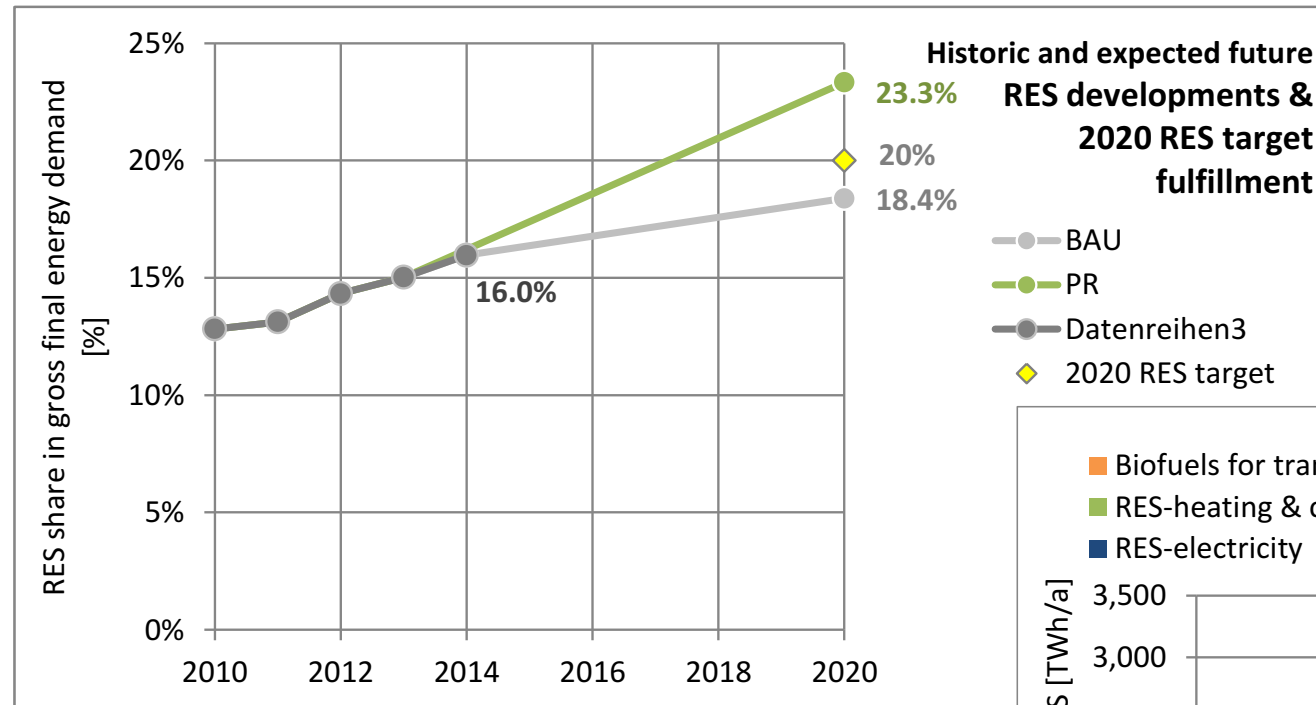
- This MS is expected to exceed its 2020 target domestically and acts as a (possible) seller within in the RES cooperation mechanism in 2020
- This MS is expected to achieve its 2020 target through a combination of domestic action and RES cooperation, acting as a buyer for meeting the remaining gap



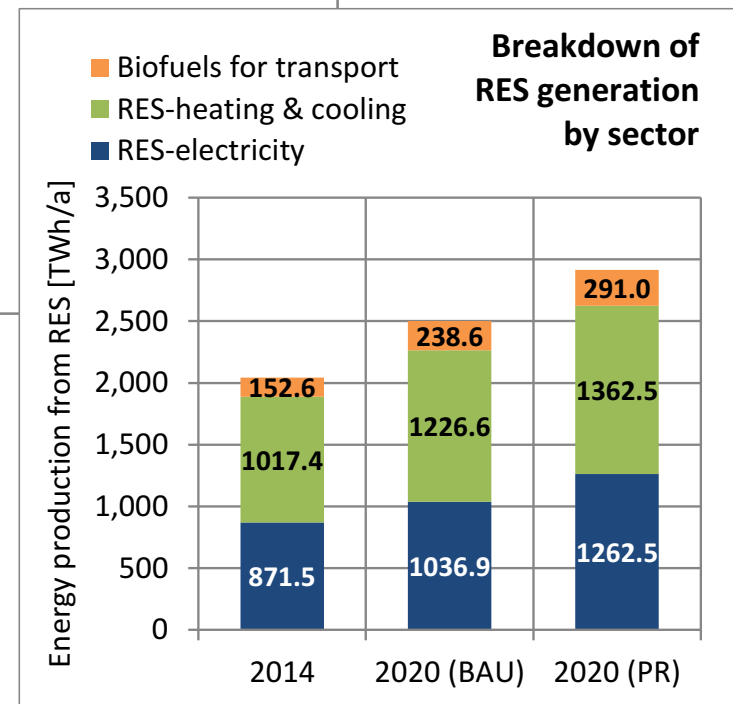
“Policy recommendations” (PR) scenario

(3) Ein Vergleich von unterschiedlichen Ausbauszenarien

Results: RES-H share development and absolute RES deployment at EU level

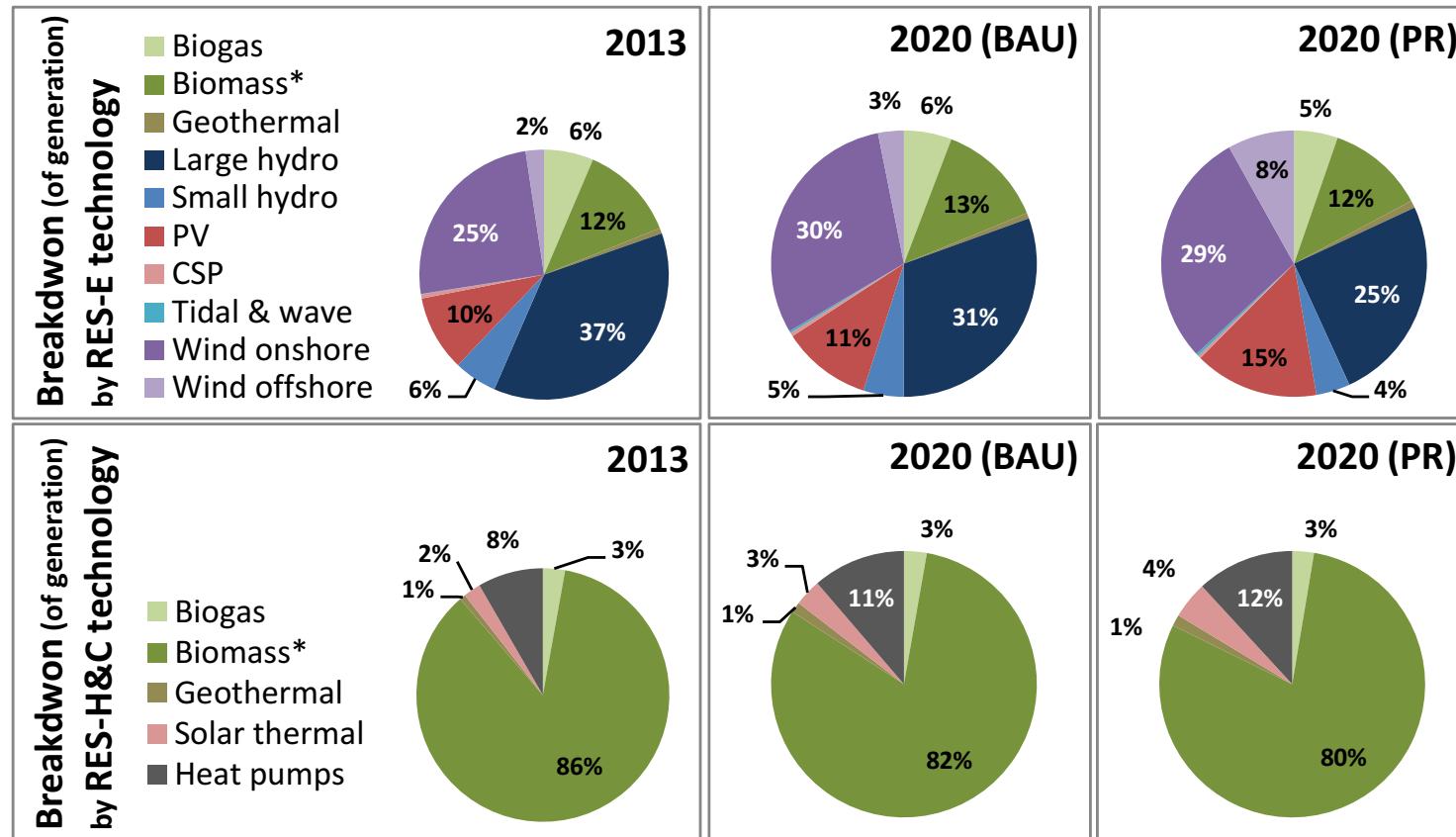


RES share in gross final energy demand
at EU level
according to the BAU and PR case



(3) Ein Vergleich von unterschiedlichen Ausbauszenarien

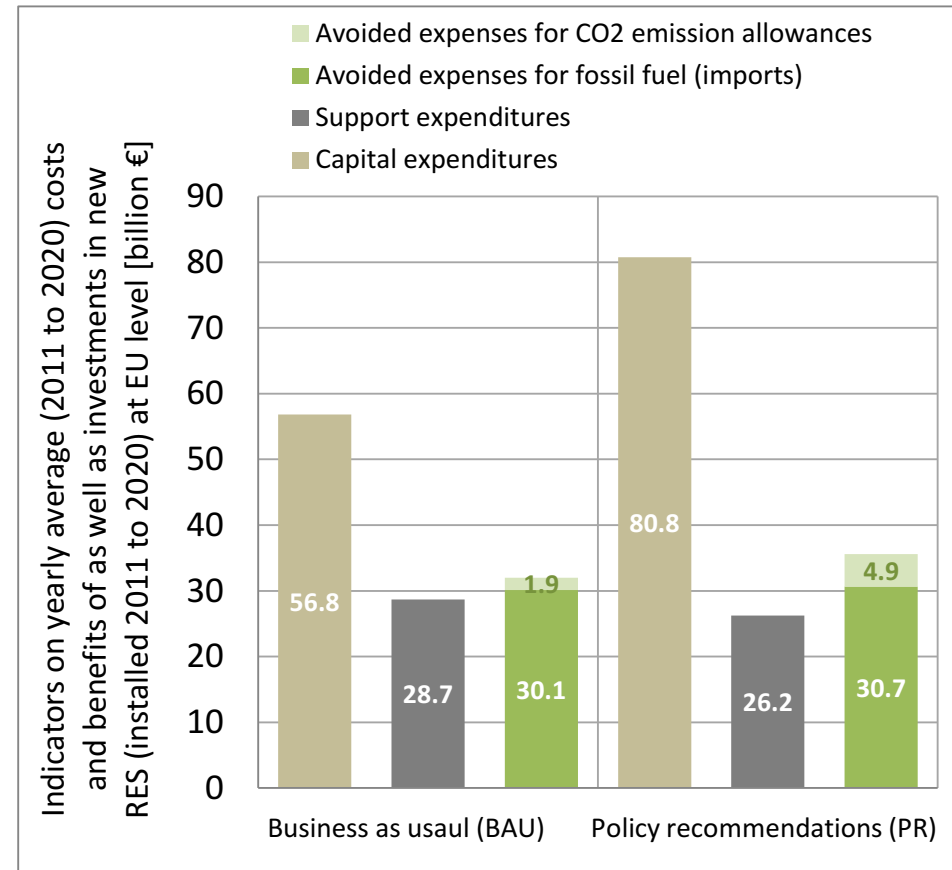
Results: Comparison of sector-specific RES deployment by 2020 at EU level



Breakdown (of generation) by RES-E and RES-H&C technology for EU-28 according to the BAU and PR case

(3) Ein Vergleich von unterschiedlichen Ausbauszenarien

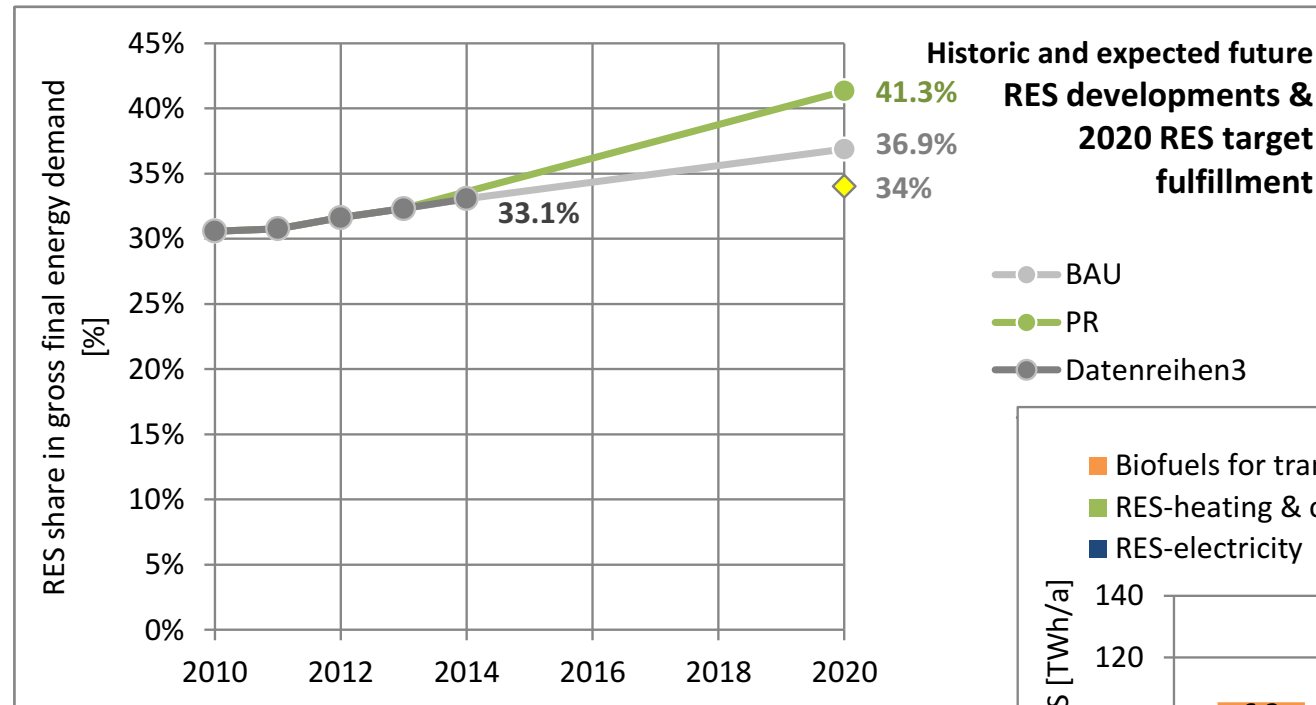
Results: Investments, costs & benefits of RES deployment at EU level



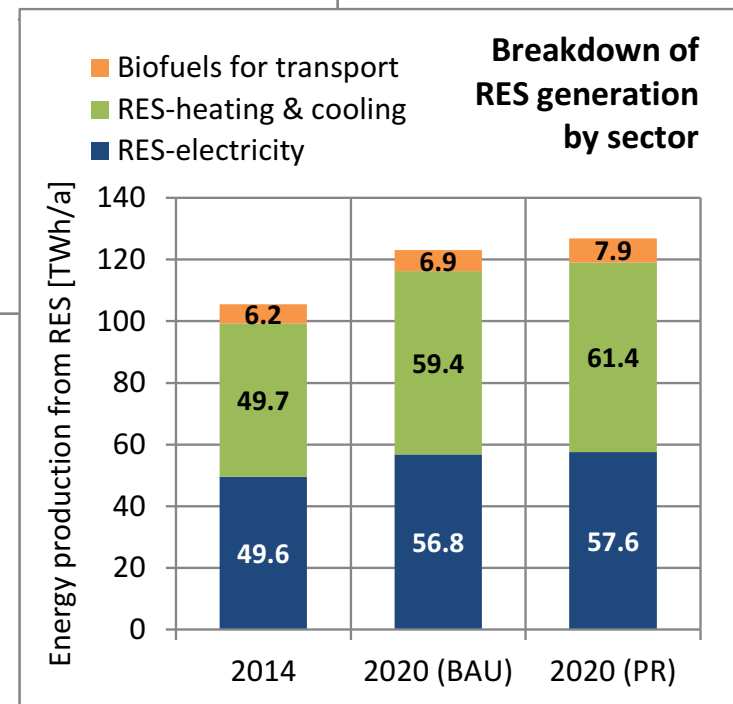
Investments, selected costs & benefits
according to the BAU case (left) and the
“Policy recommendations” (PR) case

(3) Ein Vergleich von unterschiedlichen Ausbauszenarien

Results: RES-H share development and absolute RES deployment in Austria

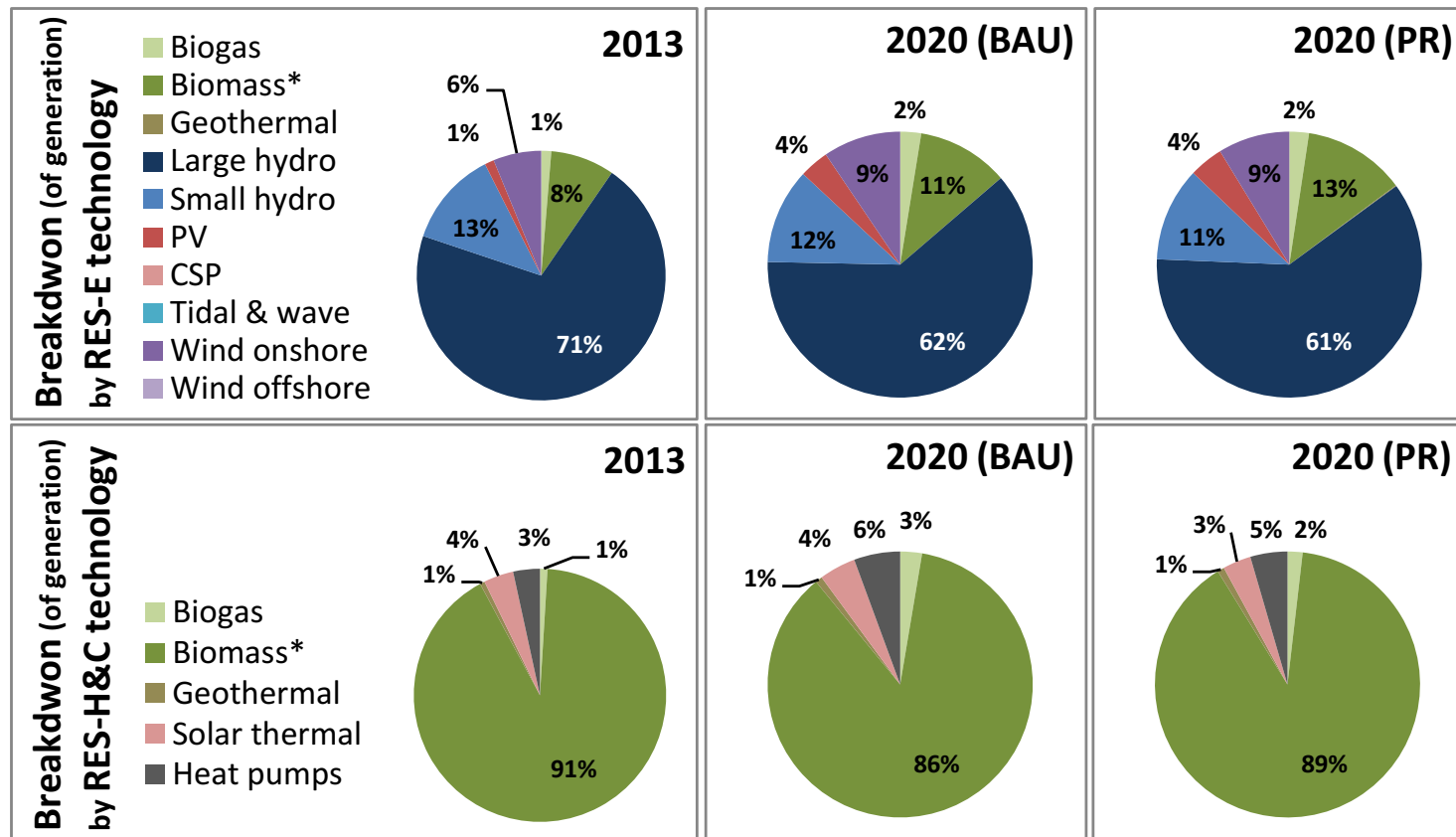


RES share in gross final energy demand
at EU level
according to the BAU and PR case



(3) Ein Vergleich von unterschiedlichen Ausbauszenarien

Results: Comparison of sector-specific RES deployment by 2020 in Austria



Breakdown (of generation) by RES-E and RES-H&C technology for EU-28 according to the BAU and PR case

(3) Recommendations

In the Communication of the Energy Union Package, **the EU dedicated itself to becoming the world's “number one in renewables”**. This is a much welcomed commitment, especially at a time with global warming on the rise and the lingering question of security of energy supply, enhanced by the continuing geopolitical tensions between Russia and the EU.

In order **to truly achieve the goal** of making the EU the number one in renewables, the EU must:

- ▶ **Ensure the achievement of its 20% renewables target by 2020.**
- ▶ **Strive for an ambitious and binding 2030 renewable energy target which is significantly higher than 27%**, alongside energy efficiency and greenhouse gas emissions targets. Adopt a strong governance framework to facilitate and ensure the achievement of these targets.
- ▶ **Ensure a predictable and stable legislative framework for renewables** at the national level and in particular to avoid any retroactive changes to existing support schemes.
- ▶ **Establish an energy market design based on increasing shares of renewable energies.** Remove all subsidies for fossil fuels and nuclear.

Danke für Ihre Aufmerksamkeit!

Literatur

- [1] Richtlinie 2009/28/EG Des europäischen Parlaments und des Rates vom 23. April 2009 zur Förderung der Nutzung von Energie aus erneuerbaren Quellen und zur Änderung und anschließenden Aufhebung der Richtlinien 2001/77/EG und 2003/30/EG.
- [2] Hamelinck, C., de Lovinfosse, I., Koper, M., Beestermöller, C., Nabe, C., Kimmel, M., van den Bos, A., Yildiz, I., Hartevelde, M., Ragwitz, M., Steinhilber, S., Nysten, J., Fouquet, D., Resch, G., Liebmann, L., Ortner, A., Panzer, C., Walden, D., Diaz Chavez, R., Byers, B., Petrova, S., Kunen, E., Fischer, G. (2012) Renewable energy progress and biofuels sustainability, Ecofys: Utrecht, Niederlande
- [3] Hamelinck, C., Koper, M., Janeiro, L., Klessmann, C., Kuwahata, R., Nabe, C., Doering, M., Cuijpers, M., van den Bos, A., Spoettl, M., Alberici, S., Ragwitz, M., Steinhilber, S., Nysten, J., Fouquet, D., Resch, G., Liebmann, L., Ortner, A., Panzer, C., Johnson, F., Olsen, O., Godar, J., Karlberg, L., Fischer, G. (2014) Renewable energy progress and biofuels sustainability, Ecofys: Utrecht, Niederlande, Verfügbar unter <https://ec.europa.eu/energy/sites/ener/files/documents/Final%20report%20-November%202014.pdf>.
- [4] Resch, G., Liebmann, L., Ortner, A., Busch, S. (2014) 2020 RES scenarios for Europe - are Member States well on track for achieving 2020 RES targets?, Ein Bericht erstellt im Rahmen des Intelligent Energy Europe Projekts Keep-on-Track!, koordiniert von Eufores und Eclareon, Technische Universität Wien - Energy Economics Group (EEG): Wien, Österreich, Verfügbar unter www.keepontrack.eu.
- [5] Resch, G., Liebmann, L., Welisch, M. (2015) 2020 RES scenarios for Europe - are Member States well on track for achieving 2020 RES targets?, Ein Bericht erstellt im Rahmen des Intelligent Energy Europe Projekts Keep-on-Track!, koordiniert von Eufores und Eclareon, Technische Universität Wien - Energy Economics Group (EEG): Wien, Österreich, Verfügbar unter www.keepontrack.eu.

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► **Green-X modelling of expected future (2020) RES progress**

... from “business as usual” (BAU) to improved RES policies
in accordance with a detailed qualitative assessment
 (“Policy recommendations” scenario)

BAU case:

RES policies are
applied as currently
implemented
(without any
adaptation) until
2020,
i.e. a **business as
usual (BAU)**
forecast.



Policy recommendations scenario:

- ◀ Meeting/Exceeding 20% RES by 2020
as precondition
 - ◀ Continuation BUT fine-tuning
(increasing cost-efficiency & **effectiveness**)
of national RES policies: improving the design of
RES policies but no change of the in prior chosen
RES policy instrument type
 - ◀ Mitigation of non-cost barriers
 - ◀ RES cooperation comes into play in the
exceptional case that pure national target
fulfilment appears not feasible
- ◀ Increase in energy efficiency in accordance
with 2020 energy efficiency targets

