

**Assessing the benefits of enhanced
cooperation between EU
and third countries
– A scenario analysis to 2020 and beyond**

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A complementing* integrated assessment from the “EU plus its neighbours” perspective



A model-based integrated assessment taking into account the *EU and Third country (EU neighbour)* perspective to explore whether cooperation mechanisms can:

- ▶ Help the EU achieve its RES targets to 2020 and beyond
- ▶ Trigger the deployment of RE projects in Third countries
- ▶ Create synergies and co-effects besides economic savings

Methodology: distinct models with complementing skills and strengths have been used (**Green-X** (policy/economic assessment), **HiREPs** (power system modelling, considering infrastructural prerequisites), ...) in an iterative way

→ Model results and sensitivity analysis provide quantitative information to derive policy conclusions and recommendations for the roadmap and action plans

Results: 2020 perspective ...

RES cooperation limited to West Balkans



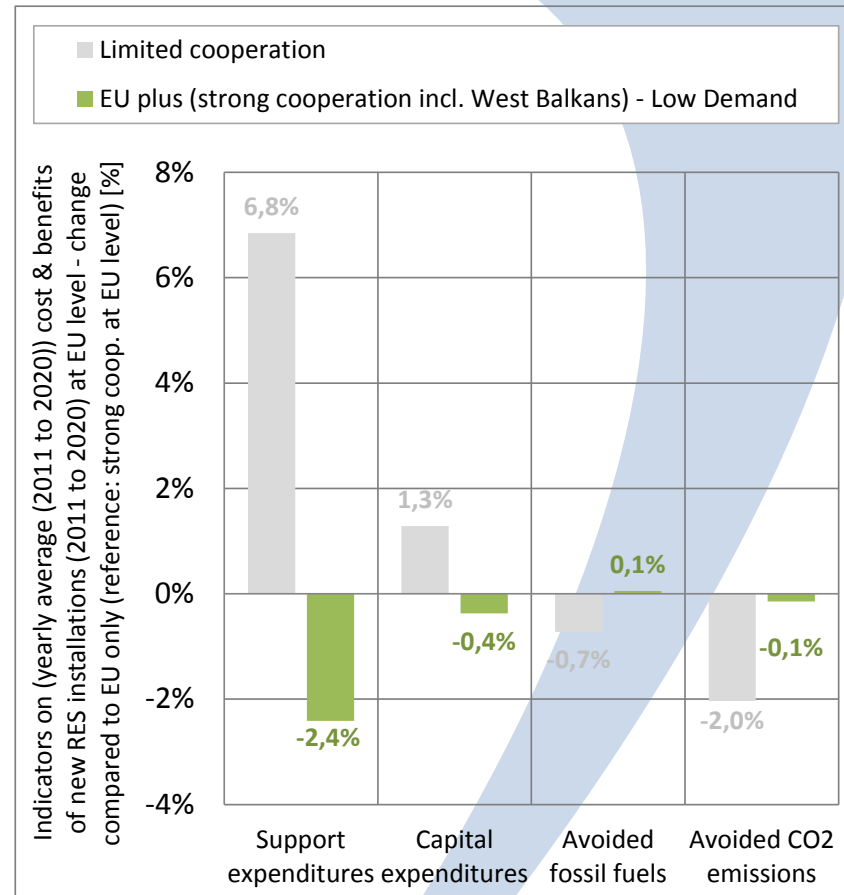
- For achieving own 2020 RES targets in West Balkan countries: **RES support needs to be strengthened & non-cost barriers rapidly mitigated**
- Under strong RES cooperation between EU and West Balkans the future demand development in West Balkans determines the flow of exchange:

RES exchange between EU and West Balkans by 2020

EU plus (strong cooperation incl. West Balkans) - Low Demand	EU plus (strong cooperation incl. West Balkans) - High Demand
-2.4 TWh	4.2 TWh

(- ... import to EU, + ... export from EU)

→ Economically viable exchange amounts to 2.8-4.4% (0.1-0.15%) of required RES volumes at West Balkans level (EU level)



Impacts on costs, expenditures and benefits on average (2011-2020) by year at EU level

Approach taken for the **policy/economic assessment (Green-X)** of long-term prospects for RES cooperation



Assessed cases

- **Three distinct RES pathways** were assumed for 2030 (and beyond (2040)), one following a **strong RES target** for 2030 (~ **32.5%**), one a **moderate RES target** (~**30.0%**), and one a **weak RES target** (**27.0%**)
- **Different policy cases** were assessed to achieve these targets, all assuming **full cooperation** within its system boundaries ...
 - **RES cooperation only within the EU** (*EU only (reference)*)
 - **RES cooperation including all three case regions** (**North Africa, West Balkans and Turkey**) (*EU plus*)
 - ... *Sensitivity analysis to incorporate regional specifics*

Assessed cases (Green-X)



EU only: reference case of no RES co-operation with EU neighbours*

EU plus: default case of full RES co-operation between the EU and its neighbours beyond 2020

Sensitivity analysis (related to "EU plus" scenarios), incorporating regional specifics

Turkey: non-affiliation to EU/EC (... low domestic RES targets by 2030 and beyond)

North Africa: moderate AC grid expansion (... reduced expansion of wind & PV)

Strong RES target by 2030
(i.e. 32.5% RES at EU level) **and beyond**

EU only
(strong target)

EU plus
(strong target)

Sensitivity case:
EU plus – Turkey: non-affiliation to EU/EC
(strong target)

Sensitivity case:
EU plus – North Africa: moderate AC grid expansion
(strong target)

Moderate RES target by 2030
(i.e. 30% RES at EU level) **and beyond**

EU only
(moderate target)

EU plus
(moderate target)

Sensitivity case:
EU plus – Turkey: non-affiliation to EU/EC
(moderate target)

Sensitivity case:
EU plus – North Africa: moderate AC grid expansion
(moderate target)

Weak RES target by 2030
(i.e. 27% RES at EU level) **and beyond**

EU only
(weak target)

EU plus
(weak target)

Sensitivity case:
EU plus – Turkey: non-affiliation to EU/EC
(weak target)

Sensitivity case:
EU plus – North Africa: moderate AC grid expansion
(weak target)

Ambition level related to RES deployment



Ambition level related to RES cooperation with neighbours

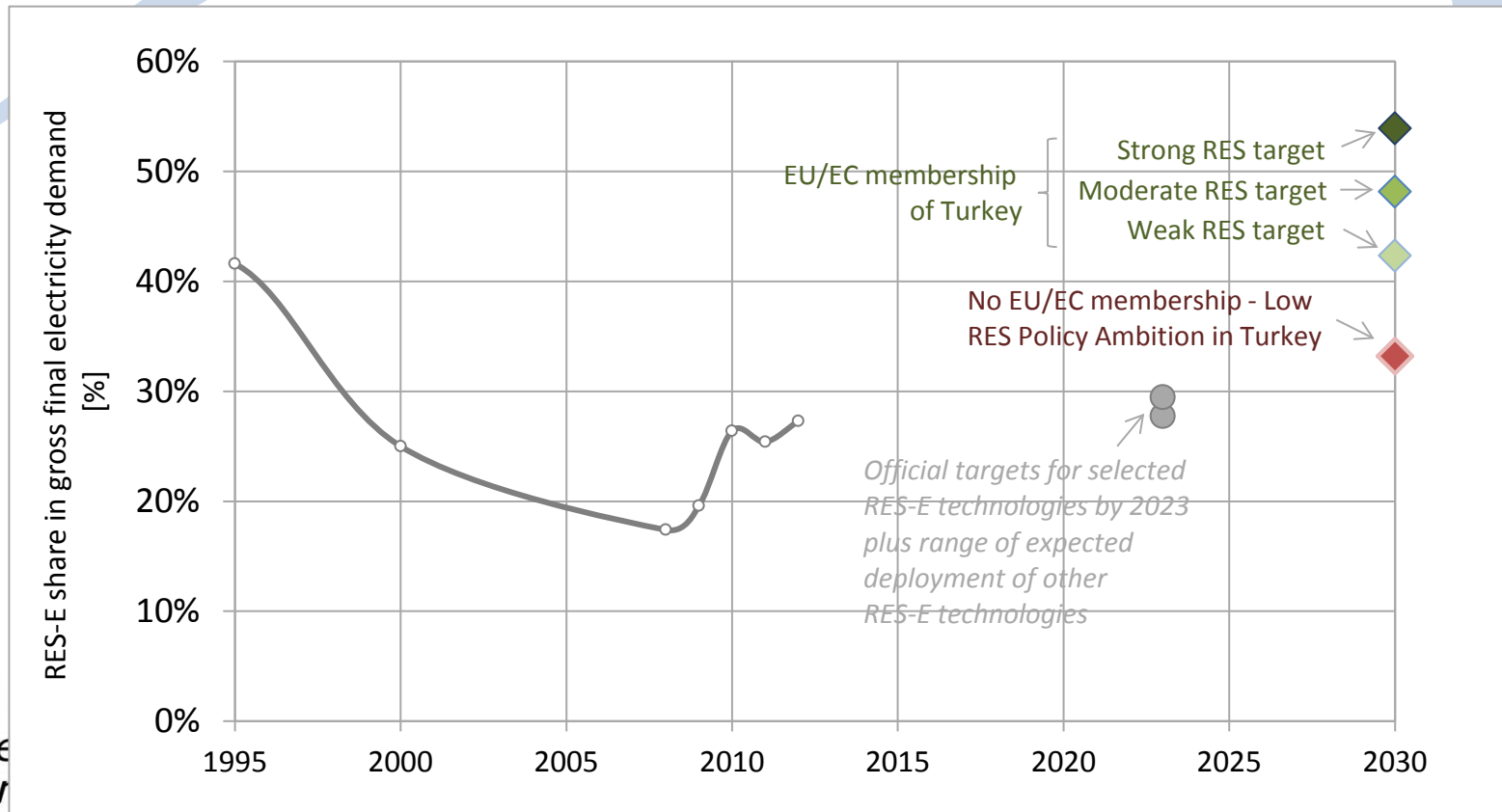
*Full RES cooperation between EU Member States is however assumed



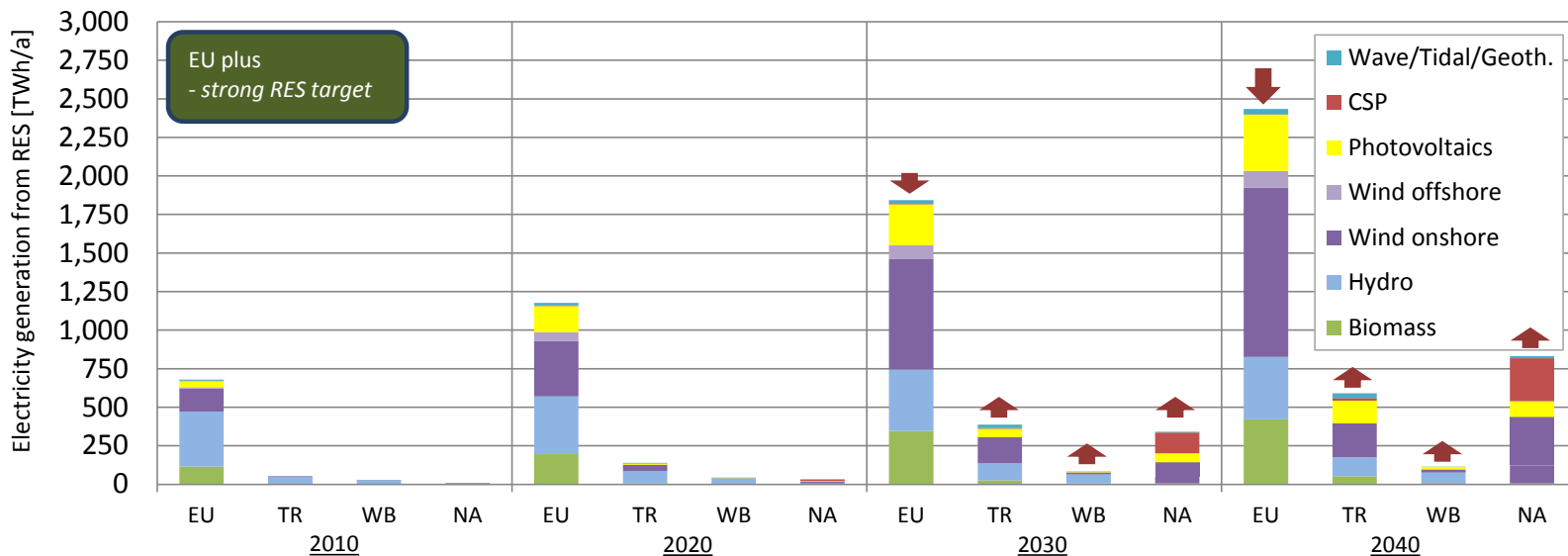
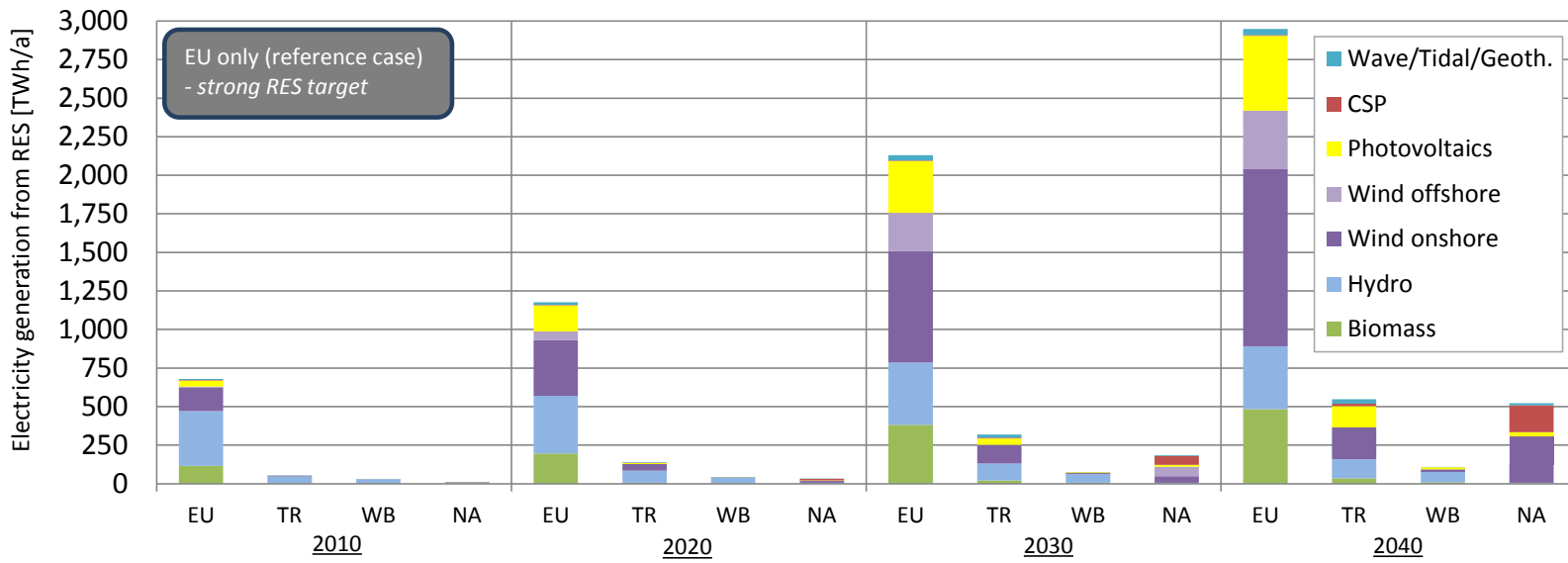
Approach taken for the policy/economic assessment (Green-X) of long-term prospects for RES cooperation



Turkey: non-affiliation to EU/EC as *sensitivity track*
(→ low domestic RES targets by 2030 and beyond)



Results: RES developments by region (exemplified for the cases related to a strong RES target)



Electricity production from RES by technology and by region over time

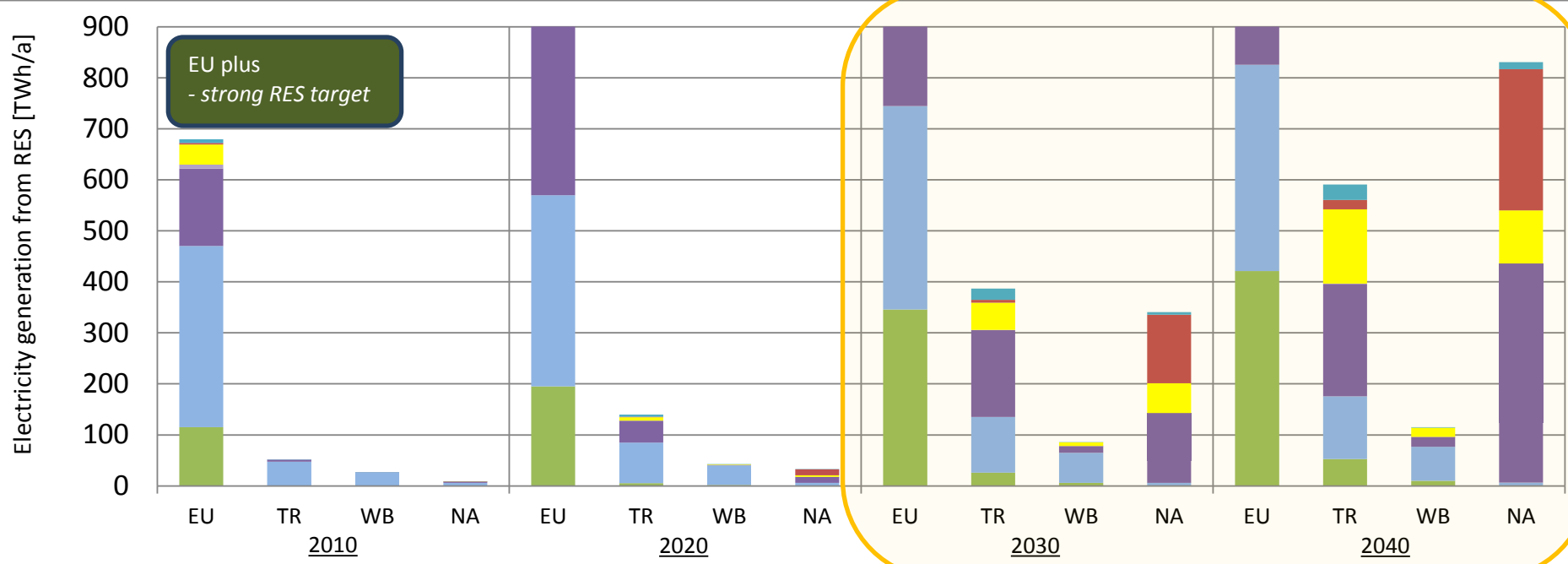
Results: RES developments by region

(exemplified for the cases related to a strong RES target)



Zooming in on Turkey, West Balkans and North Africa

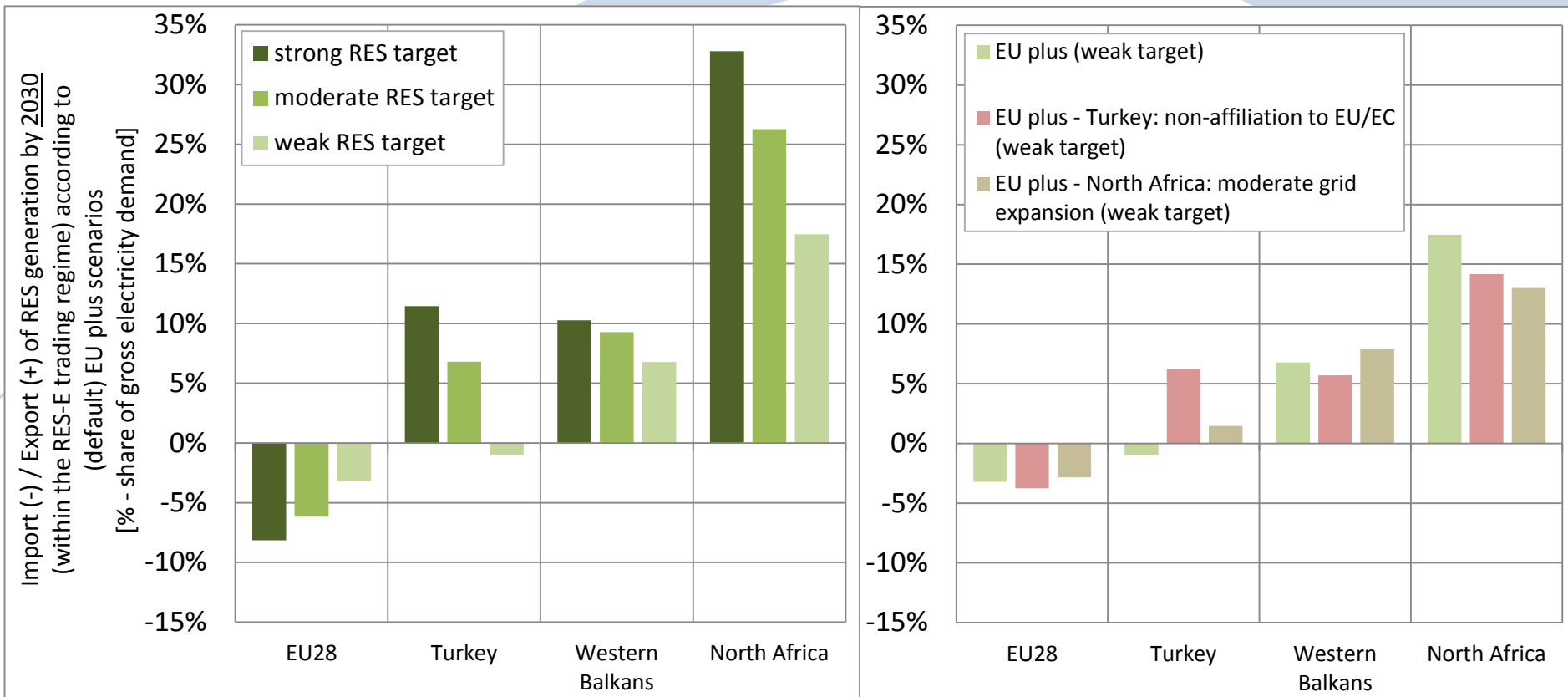
Electricity production from RES by technology and by region over time



→ ... different RES-E portfolios by region

- Mixture of wind, solar and hydro in Turkey
- Hydro dominated in West Balkans
- CSP, PV and wind in North Africa

Results: (Virtual & physical) Exchange of RES volumes by 2030



Import / Export of RES volumes by region in 2030

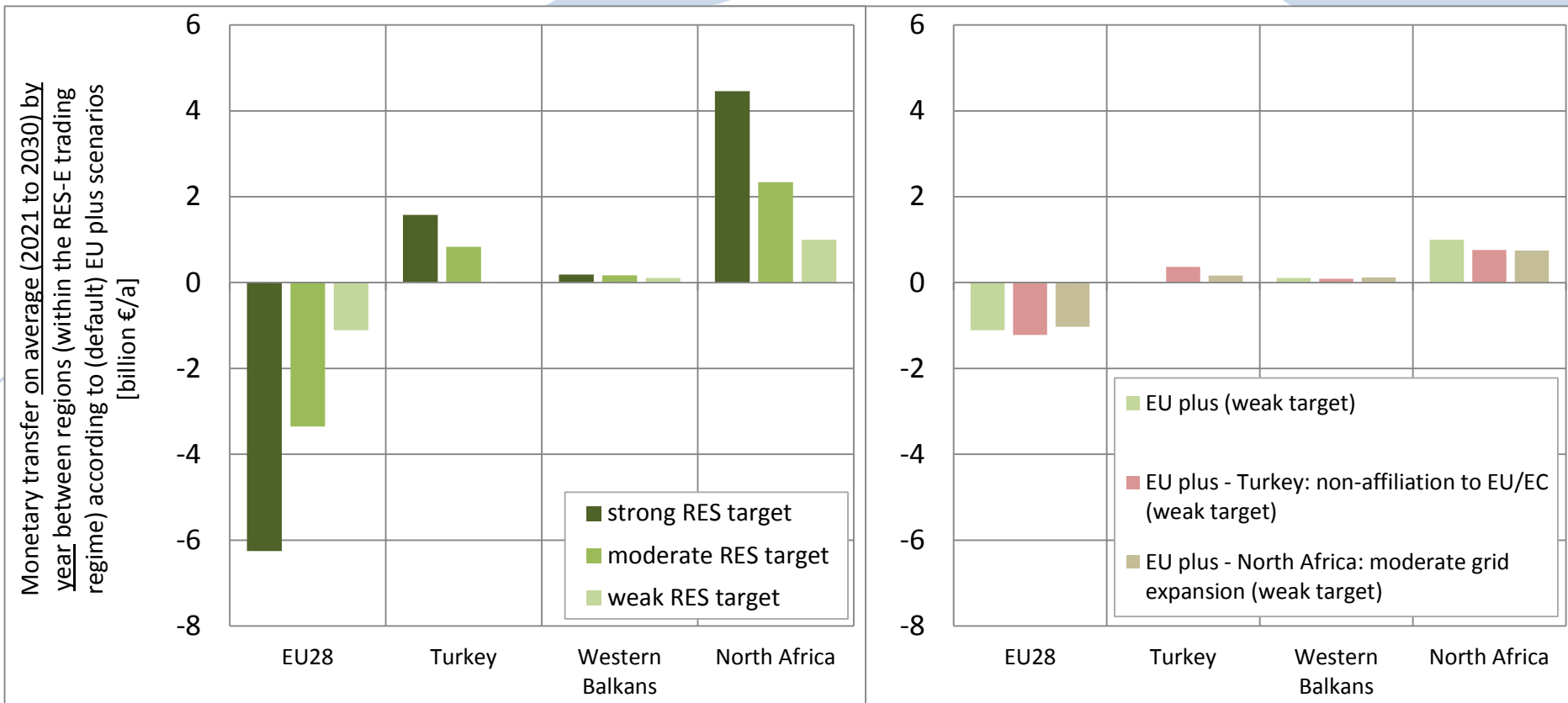
(in relative terms (% domestic demand share))

- **RES-E trade of up to 4% of EU's gross electricity demand by 2030** appears beneficial from a cost-perspective under current policy thinking (27% RES by 2030)
- Under a stronger 2030 RES target this number increases significantly



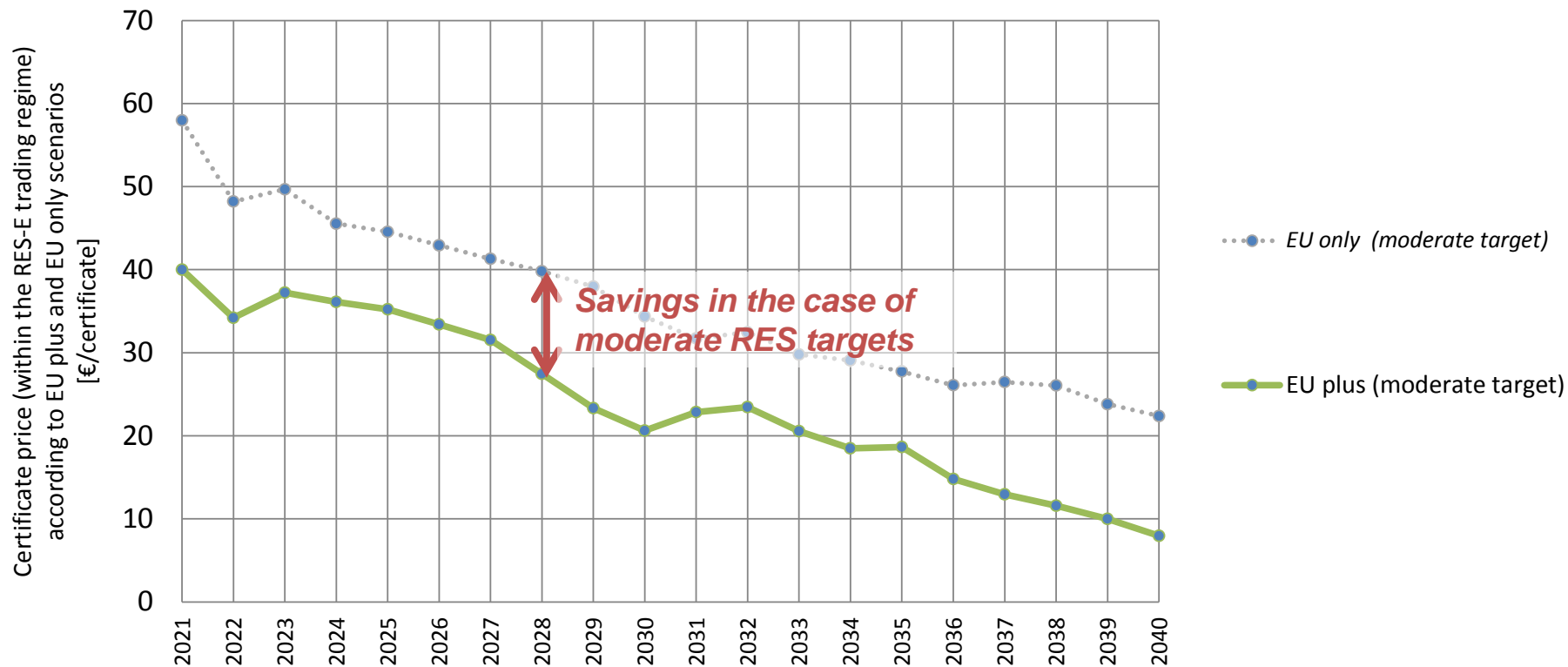
Results: Economic impacts ...

Monetary transfer between regions



Monetary transfer between regions on average (2021 to 2030) by year (in absolute terms (billion €/a))

Results: Economic impacts ... Changes in Certificate prices / RES premiums



RES premiums / Certificate prices (at international / EU level)
 according to **EU plus** (default full cooperation) and
EU only (reference: cooperation only among
 EU28 member states) **scenarios** (€/certificate)

Results: Economic impacts ...

Benefits at EU level



Economic benefits at EU level

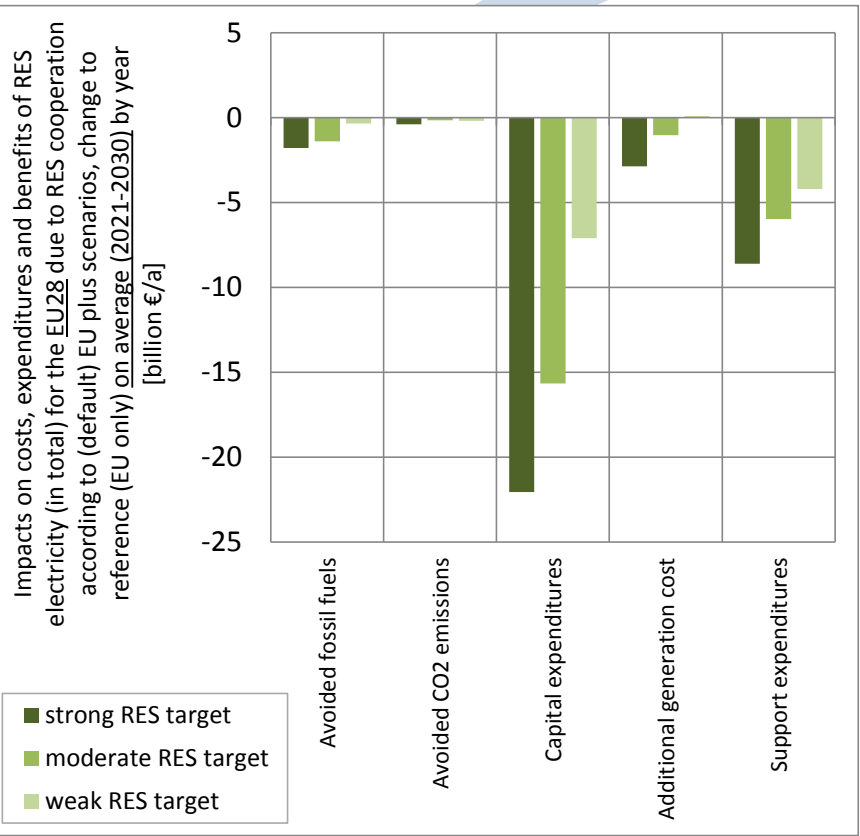
(support expenditures for new RES-E installations post 2020 on average per year, change compared to reference (EU only))



Average per year (2021-2030)	billion €	-8.6	-6.0	-3.8	-3.8	-4.4	-3.4
	% (compared to ref.)	-26.8%	-29.4%	-33.4%	-33.4%	-38.4%	-29.5%
Average per year (2021-2040)	billion €	-27.1	-24.3	-17.4	-8.7	-9.4	-5.3
	% (compared to ref.)	-28.9%	-39.4%	-59.7%	-59.7%	-64.7%	-36.6%

- **Monetary savings** in terms of support expenditures at EU level range from 3.8 to 4.4 billion € on average per year (2021 to 2030) under current policy thinking (27% RES by 2030)
- Savings increase over time (post 2030) and with the ambition level (moderate or strong RES target)

Results: Economic impacts ... Changes in costs, expenditures and benefits related to RES-E generation



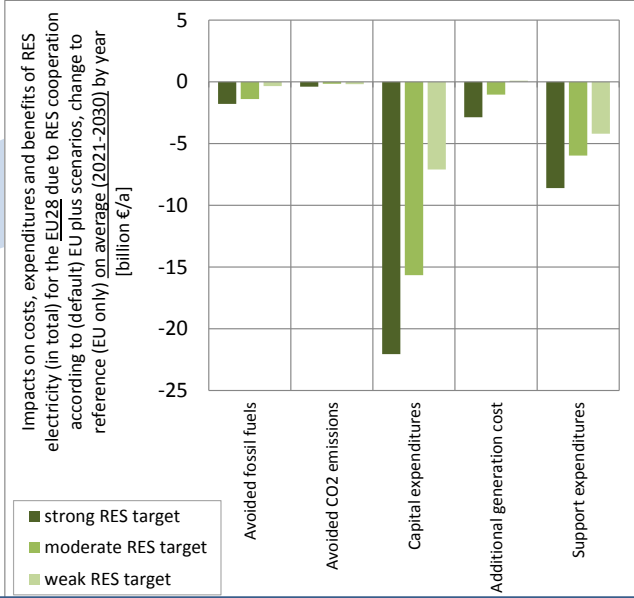
Impacts on costs, expenditures and benefits of RES electricity (in total) for the EU28 (change compared to reference (EU only))

- **Strong decrease of support and capital expenditures at EU level**
- Avoidance of fossil fuels and carbon emissions is less affected

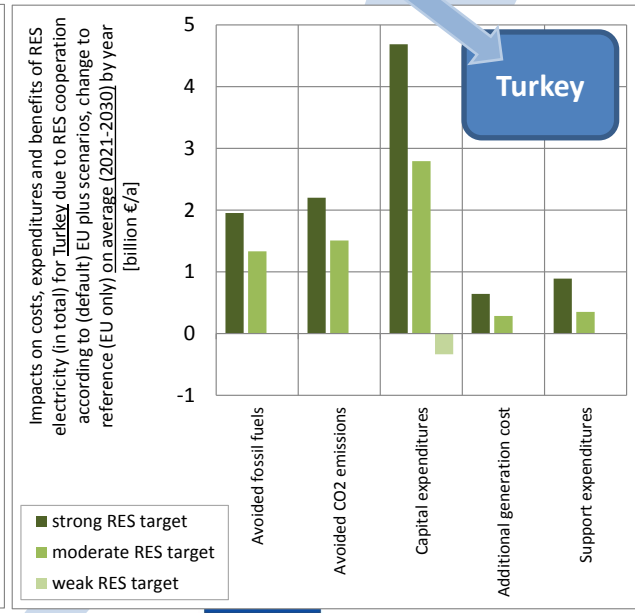
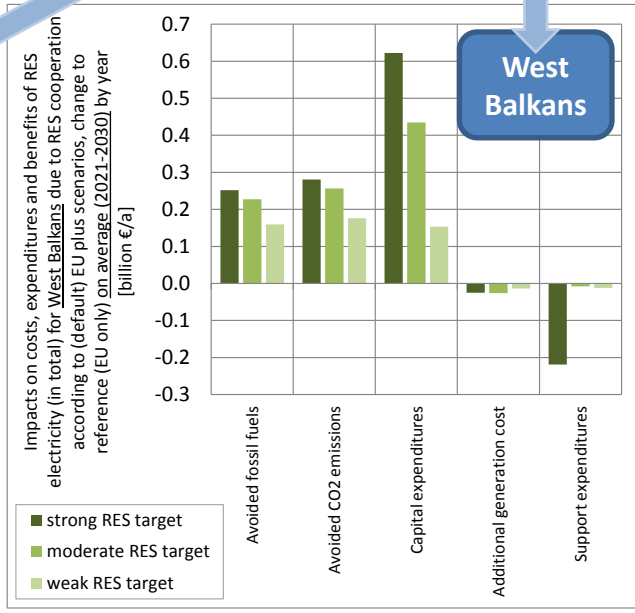
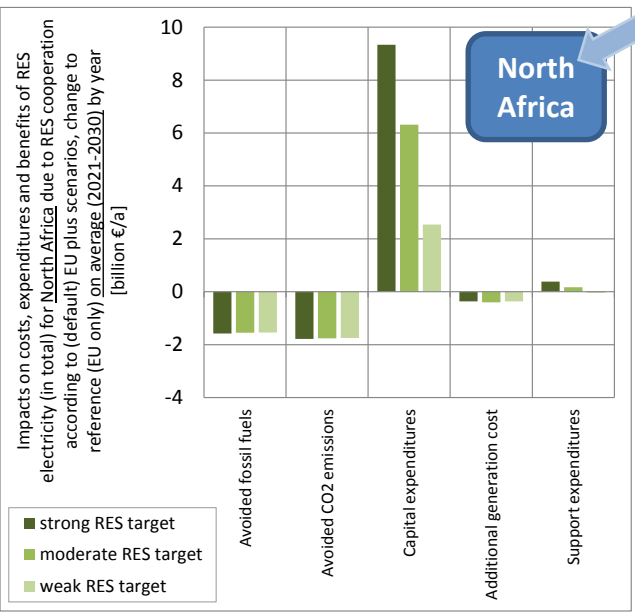
Results: Economic impacts ... Changes in costs, expenditures and benefits related to RES-E generation



Impacts on costs, expenditures and benefits of RES electricity (in total) (change compared to reference (EU only))



EU28



Conclusions and remarks



- From an economic perspective RES cooperation between the EU and its neighbours is beneficial
- Benefits occur independent of the ambition level aimed for RES at EU level by 2030 ...
However, a strong RES target (e.g. 30...35%) “requires” RES cooperation with neighbours to assure a cost-efficient RES target fulfilment *that comes along with an important contribution to combat climate change also outside the EU*
- The largest benefits can be expected *if all RES options (within all regions) can contribute to that – from a pure economic viewpoint ...*

**BRINGING EUROPE AND THIRD COUNTRIES CLOSER
TOGETHER THROUGH RENEWABLE ENERGIES**



**Thank you
for your attention!**

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