CBA 2.0

Improving the pan-European cost-benefit analysis methodology

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ACER Workshop

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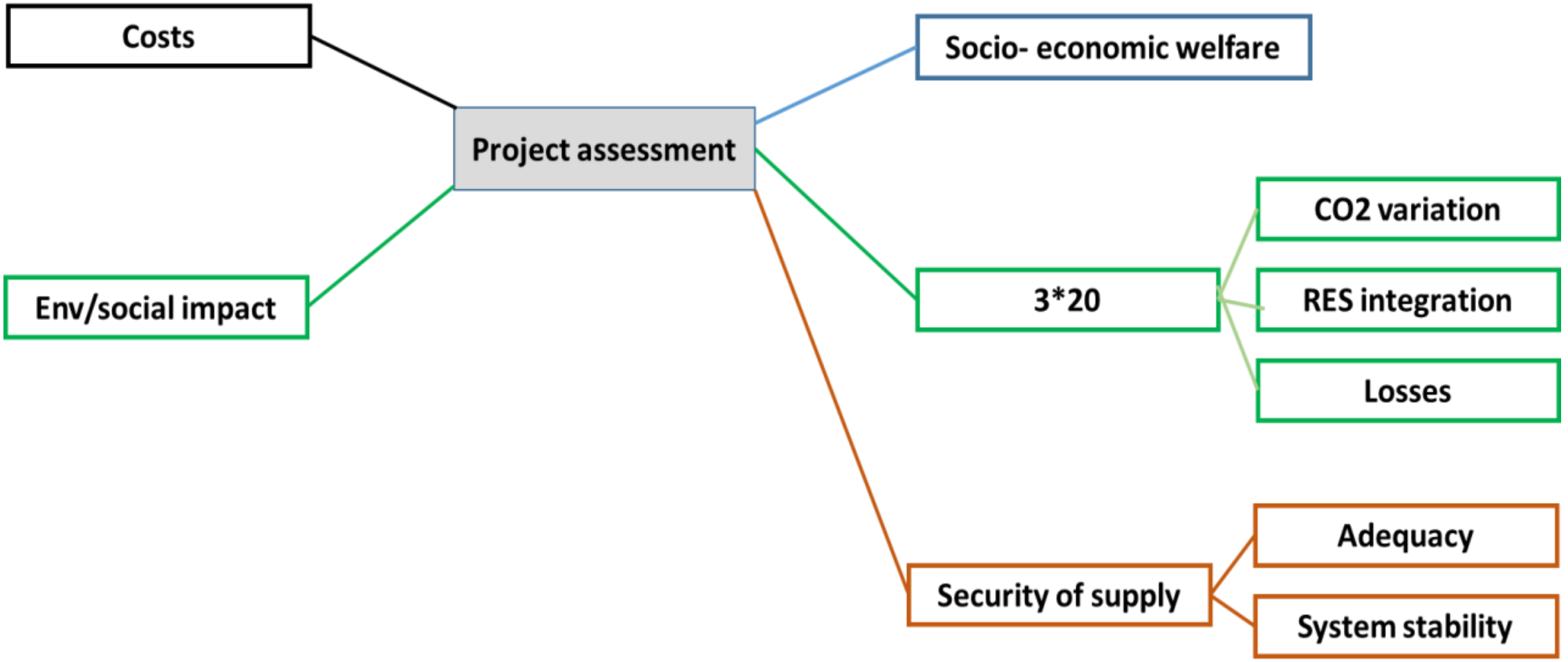
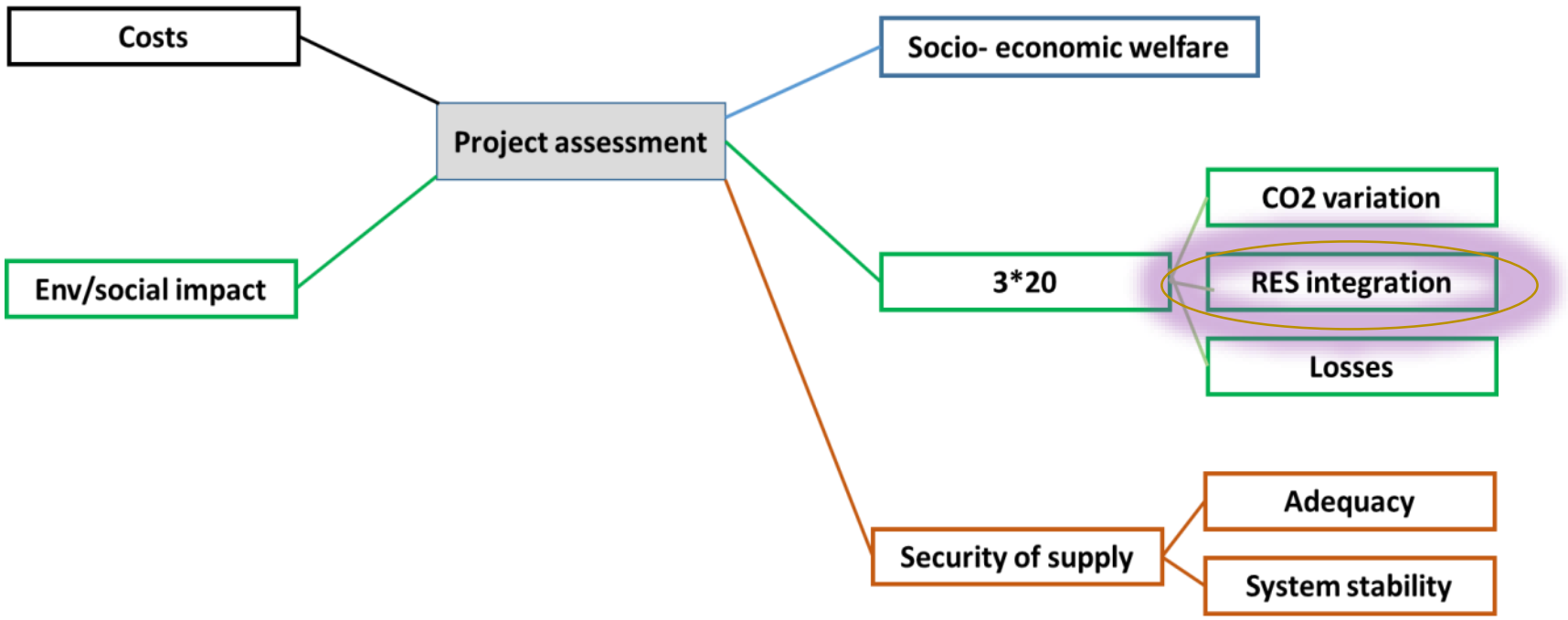

Costs
Env/social impact
Project assessment
Socio- economic welfare
3*20
CO2 variation
RES integration
Losses
Security of supply
Adequacy
System stability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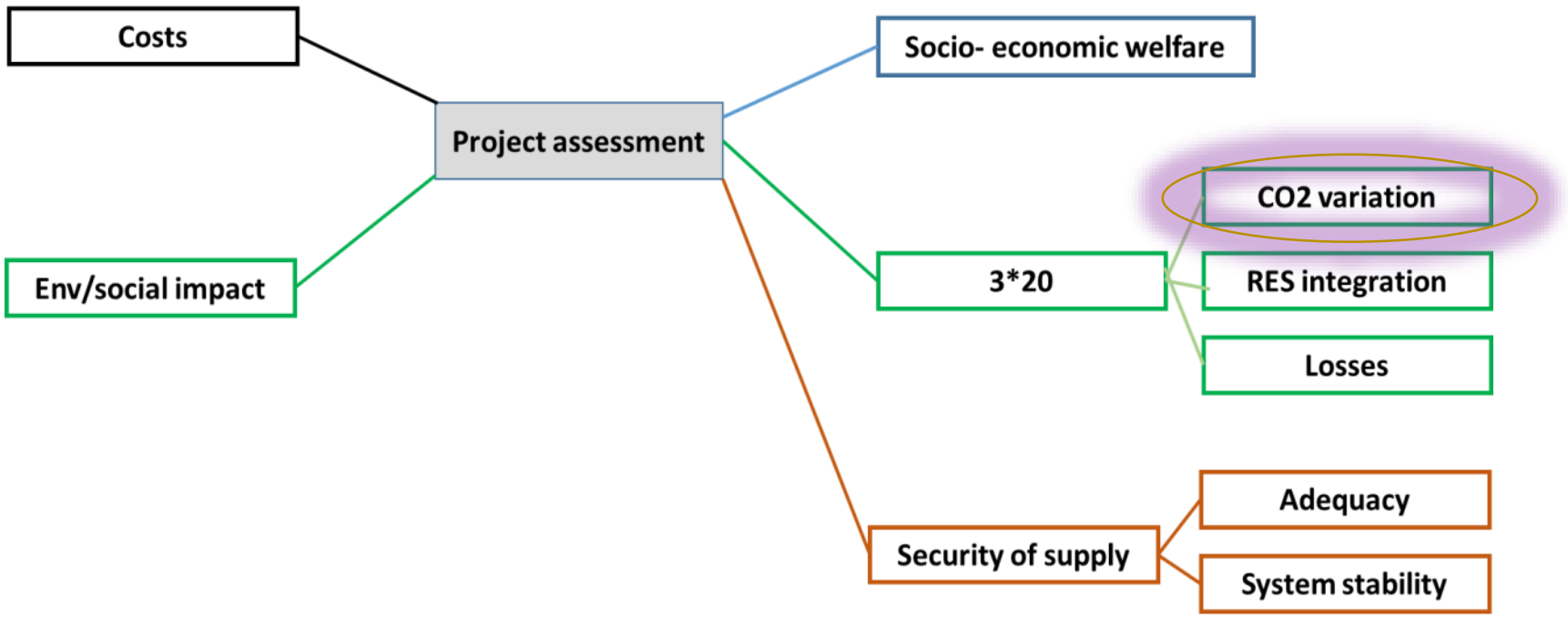
RES integration (B.4)

- **What is measured?**
  - Contribution of the project to the usage of RES generation
- **What is reported?**
  1. Connection of RES generation to the main system (in MW connected generation)
  2. Avoided curtailment by more use of RES generation (in MWh avoided curtailment)
- **Interdependency with other indicators**
  - SEW
  - Avoided CO_2



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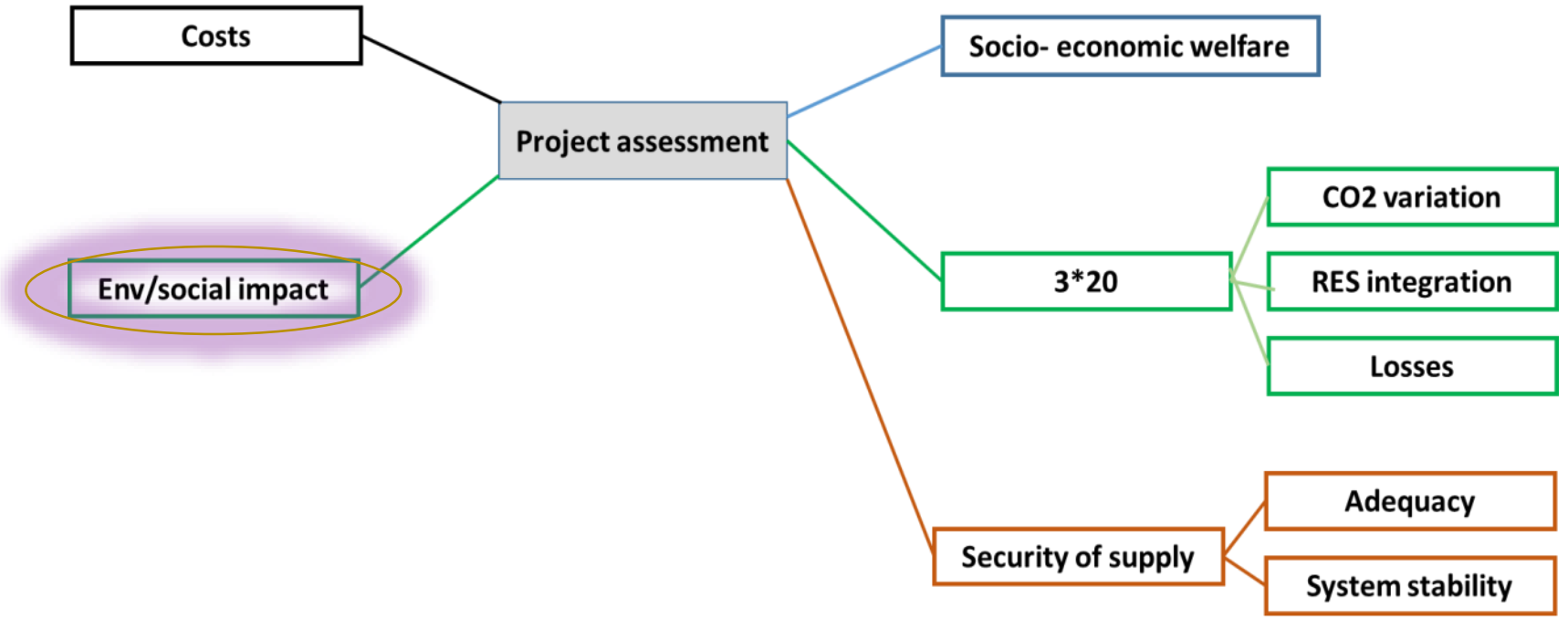
Variation in CO_2 emissions (B.6)

- **What is measured?**
  - Contribution of the project to reducing the total CO2 emissions of electricity generation
- **What is reported?**
  1. Reduction of total CO_2 emissions with and without the (transmission/storage) project
- **Interdependency with other indicators**
  - SEW
  - RES integration



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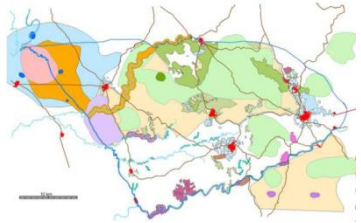
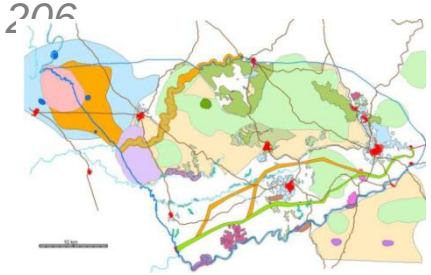
Environmental and Social impact (C.1 / C.2)

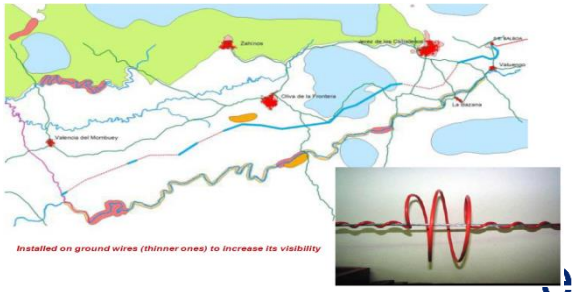
- **What is measured?**
  - Local project impact
    - Nature and biodiversity (Environmental impact – C.1)
    - Local population (Social impact – C.2)
- **What is reported?**
  1. Project stage
  2. Impact
     - Basic notion: ‘affected area’
     - Number of kilometers through ‘sensitive area’
  3. Type of sensitivity
- **Indicators capture ‘residual impact’**
  - Avoid double counting

Environmental and Social impact – Project stages

- Project status (TYNDP)
  - "Under consideration" (scoping stage) - *121*
    - General mapping of constraints or no mapping
  - "Planned"(feasibility stage): general study area - *101*
    - Mapping of constraints
  - "Design & permitting" (investment decision taken): - *206* corridor
    - Internal environmental studies
    - EIA under way or available
  - "Under construction": detailed route - *69*
    - EIA available
    - Mitigation measures decided







Source: REE, TYNDP

Environmental impact – Definition of sensitive areas

Sensitivity regarding nature and biodiversity:

- Land protected under the following Directives or International Laws:
  - Habitats Directive (92/43)
  - Birds Directive (2009/147)
  - RAMSAR site
  - IUCN key biodiversity areas
  - Other areas protected by national law

- Land within national parks and areas of outstanding natural beauty

- Land with cultural significance

Social impact – Definition of sensitive areas

Sensitivity regarding population density:

- Land that is close to densely populated areas (as defined by national legislation). As a general guidance, a dense area should an area where population density is superior to the national mean.
- Land that is near to schools, day-care centres, or similar facilities

Sensitivity regarding landscape: protected under the following Directives or International Laws:

- World heritage
- Other areas protected by national law

Environmental and Social impact – Reporting (example)

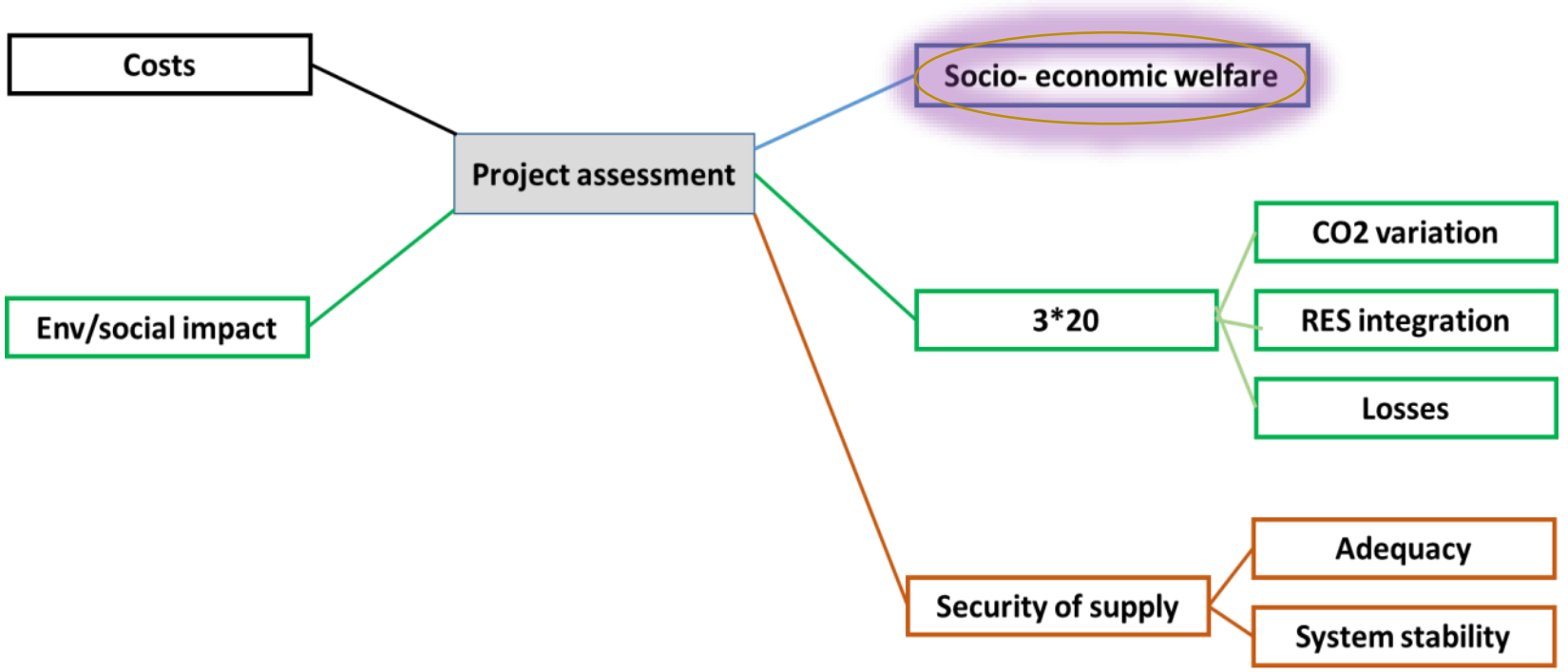
Environmental impact:

Project	Stage	Impact Potentially crosses environmentally sensitive area (nb of km)	Typology of sensitivity	Link to further information
A	Planned	Yes (a. 50 to 75 km; b. 30 to 40 km)	a. Birds Directive; b. Habitats Directive	e.g. Big Hill SPA www….
B	Design & permitting	No		www….
C	Planned	Yes (20 km)	Habitats Directive	www….
D	Under consideration	N.A	N.A	www….

Environmental and Social impact – Reporting (example)

Social impact:

Project	Stage	Impact Crosses dense area (nb of km)	Sensitivity Typology of sensitivity	Link to further information
A	Design & permitting	Yes (20 to 40km)	Dense area	www….
A	Planned	Yes (100 km)	European Landscape Convention:	www…
B	Planned	No	Submarine cable	www….
C	Under construction	Yes (50 km)	Dense area, OHL	www….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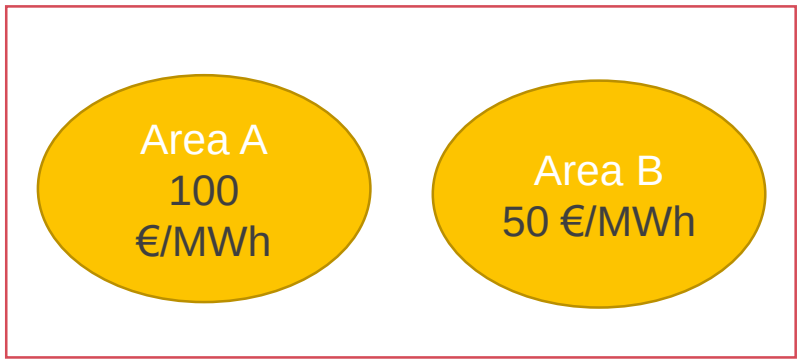
Socio-economic welfare indicator

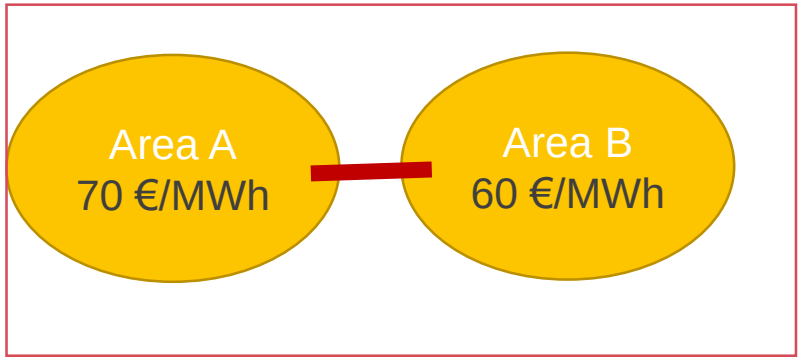
- is based on either:

- the generation costs, or
- on total surplus and congestion rents

- an increase in SEW can be achieved by an investment that increases the transmission capacity of the grid



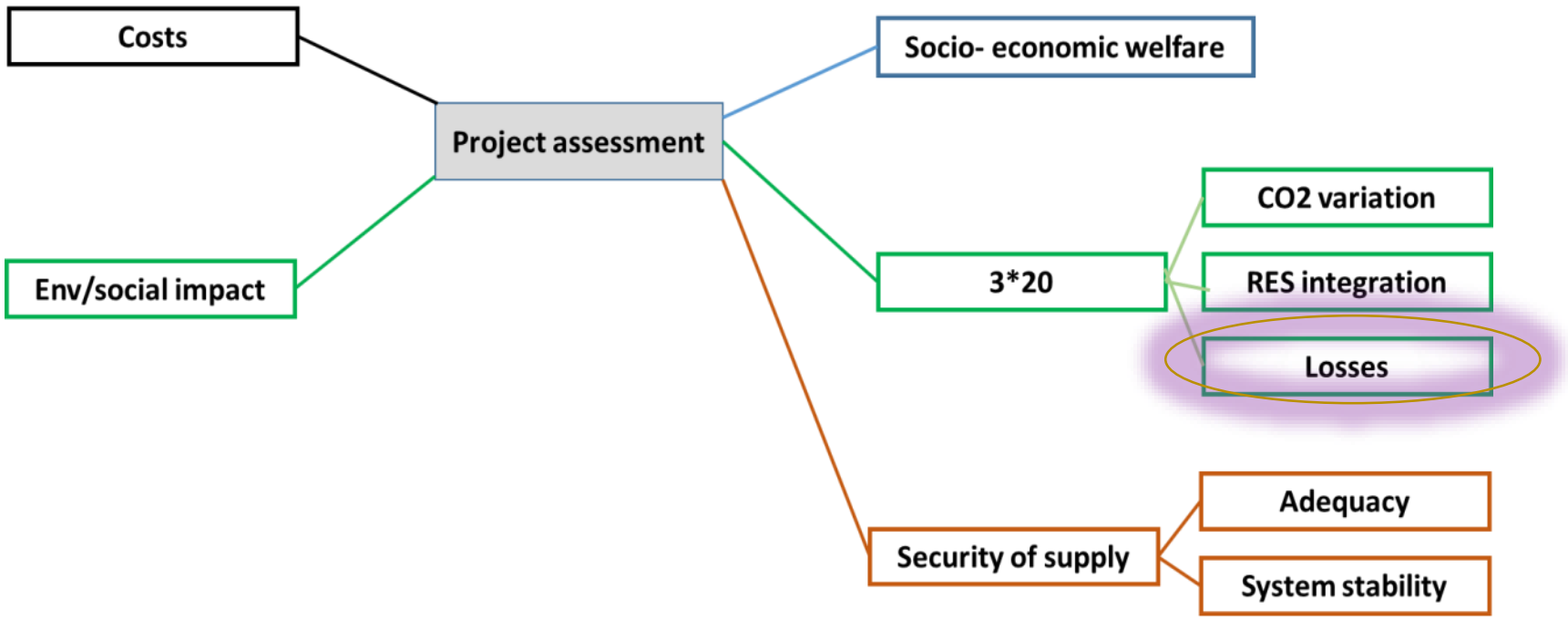
State without new infrastructure



State with new infrastructure

Socio-economic welfare indicator

	CBA 1.0	CBA 2.0
Reduced generation costs/ additional overall welfare	Market studies (optimisation of generation portfolios across boundaries)	idem
Redispatch costs for internal projects	Only network studies	Network and market studies (optimisation of generation dispatch within a boundary considering grid constraints)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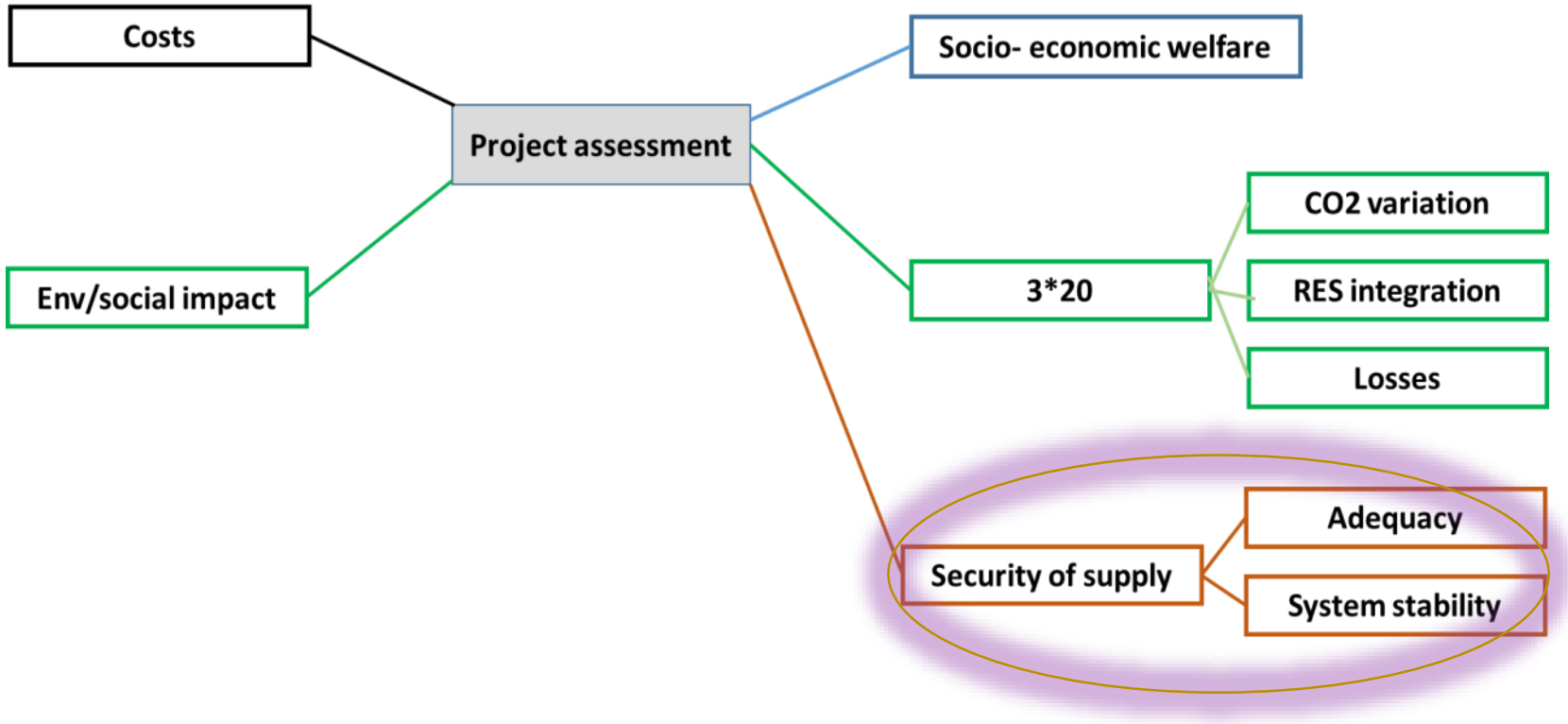
Losses

Methodology

- Report the change in losses over the total power system, before and after adding the project,
- Total benefit is then calculated as the difference of the sum of losses with and without the project

Monetisation

- Monetisation of losses is mandatory according to CBA 2.0
- Monetisation is based on forecasted market prices for electricity as given by the market studies
- The price reference here should be the average yearly spot price for each price area for which losses computation is performed



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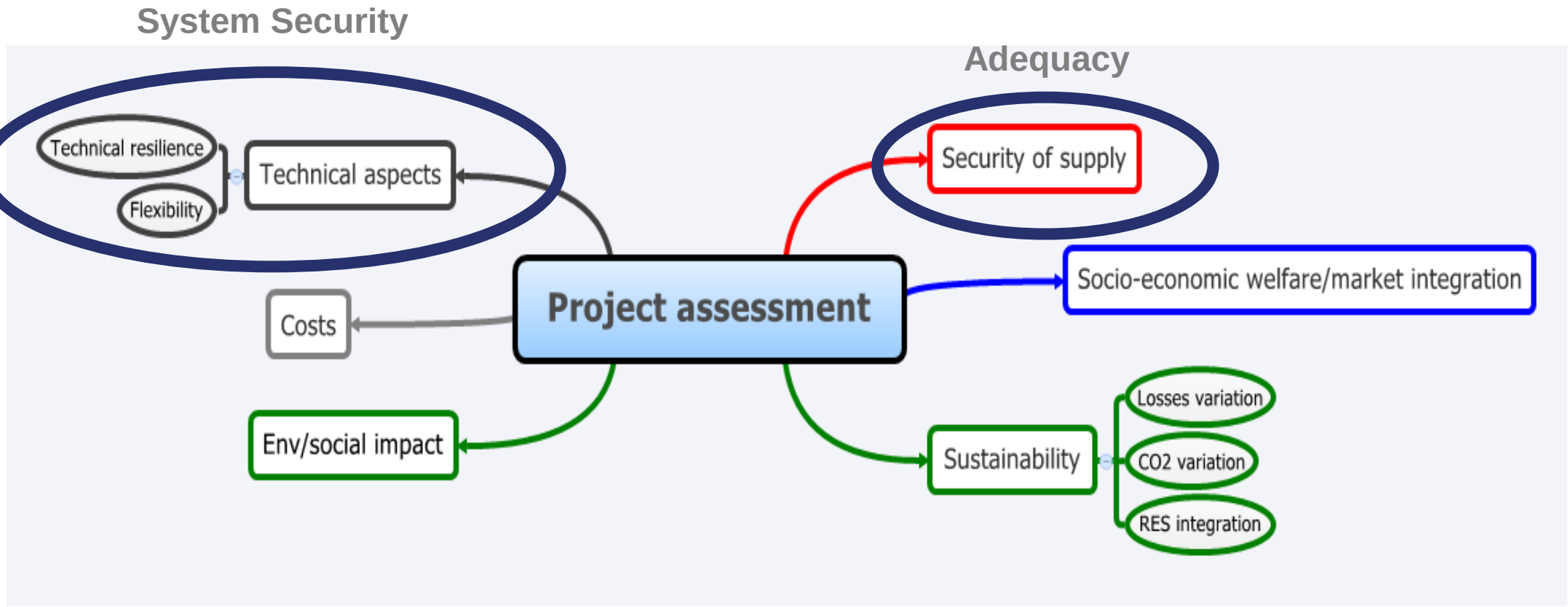
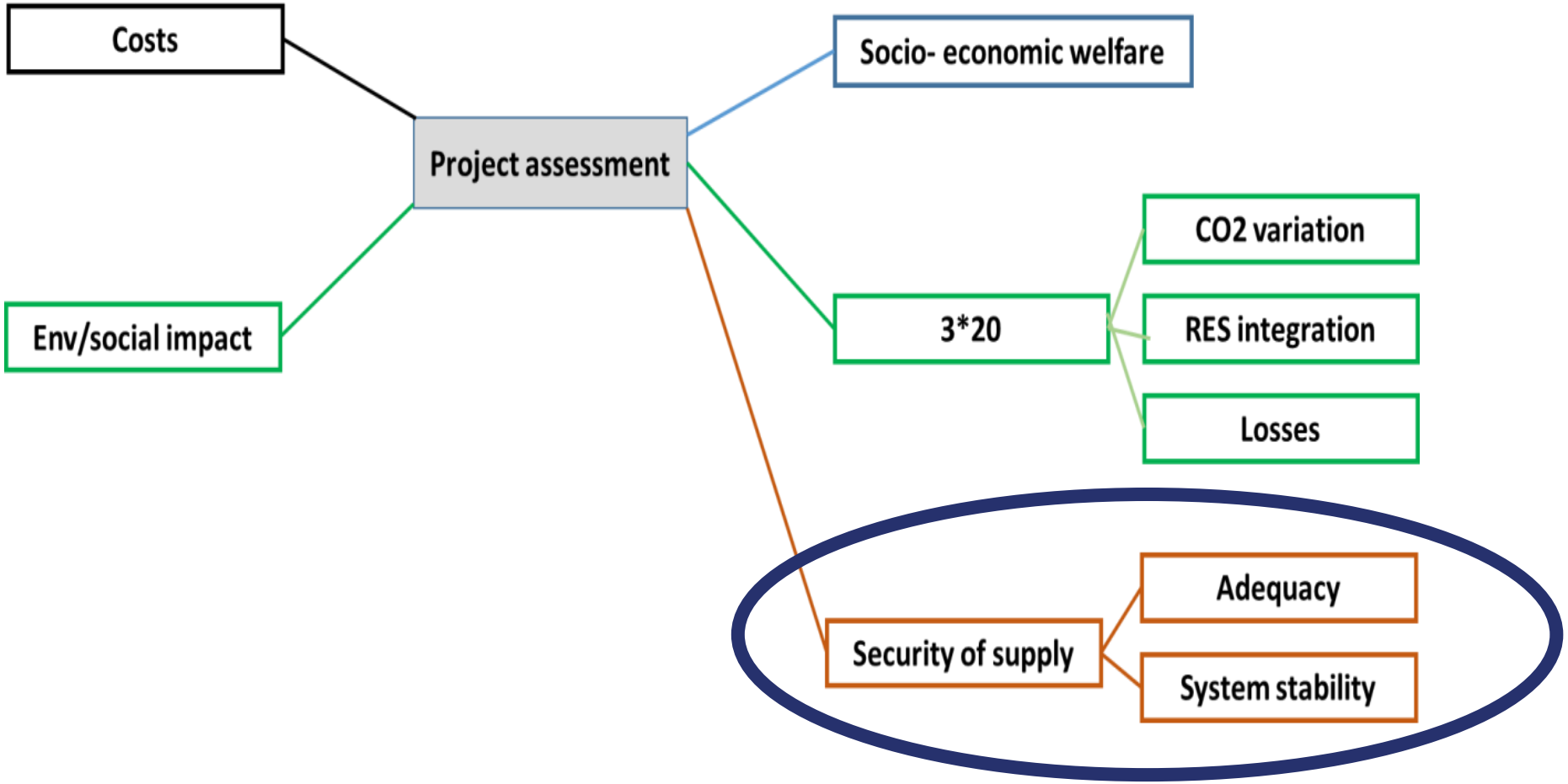
In CBA 1.0 the challenges of SoS were reported in two different indicators



Indicator overview of CBA 1.0

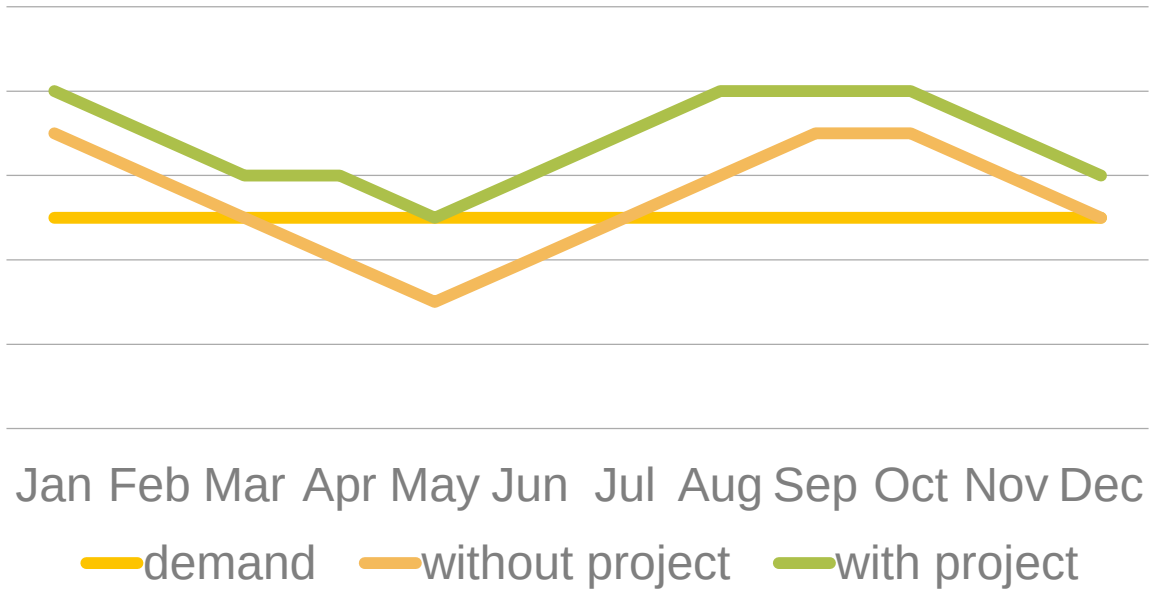
In CBA 2.0 the SoS indicator includes both elements – Adequacy and system stability



B1. SECURITY OF SUPPLY: ADEQUACY TO MEET DEMAND

Generation adequacy is expressed using two sub-indicators, to capture the contribution of transmission capacity to the efficiency of spare generation capacity:

1. **Expected Energy Not Served (EENS) [MWh]: to capture the benefit of the project in case there is an actual security of supply issue detected;**
2. **Avoided investment in spare capacity [MW]: to capture the benefit of the project if EENS equals 0 MWh.**



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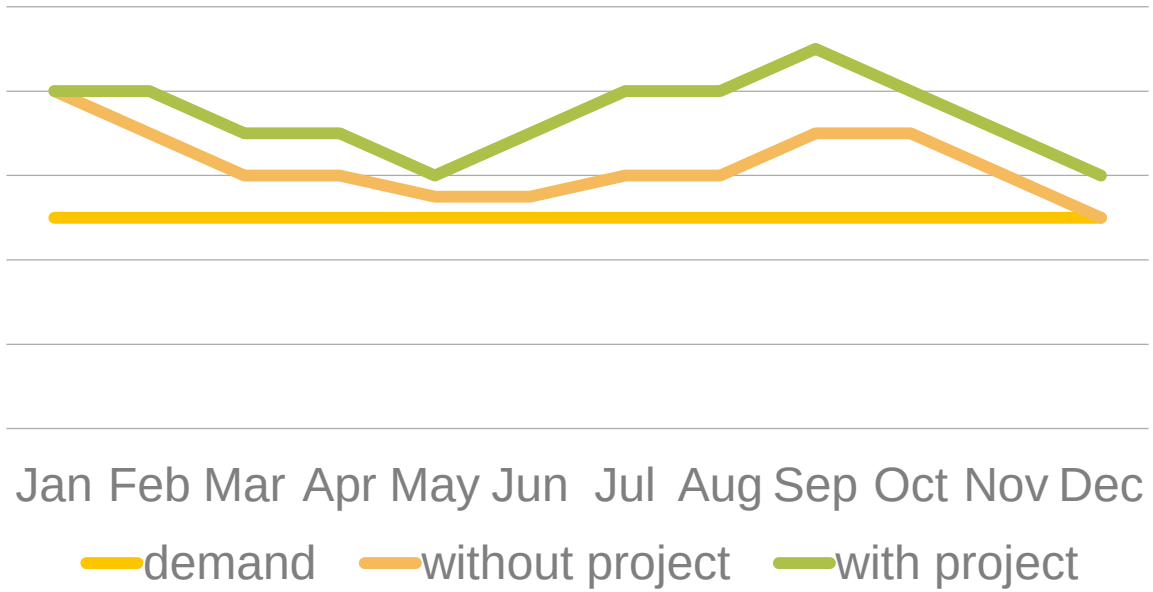
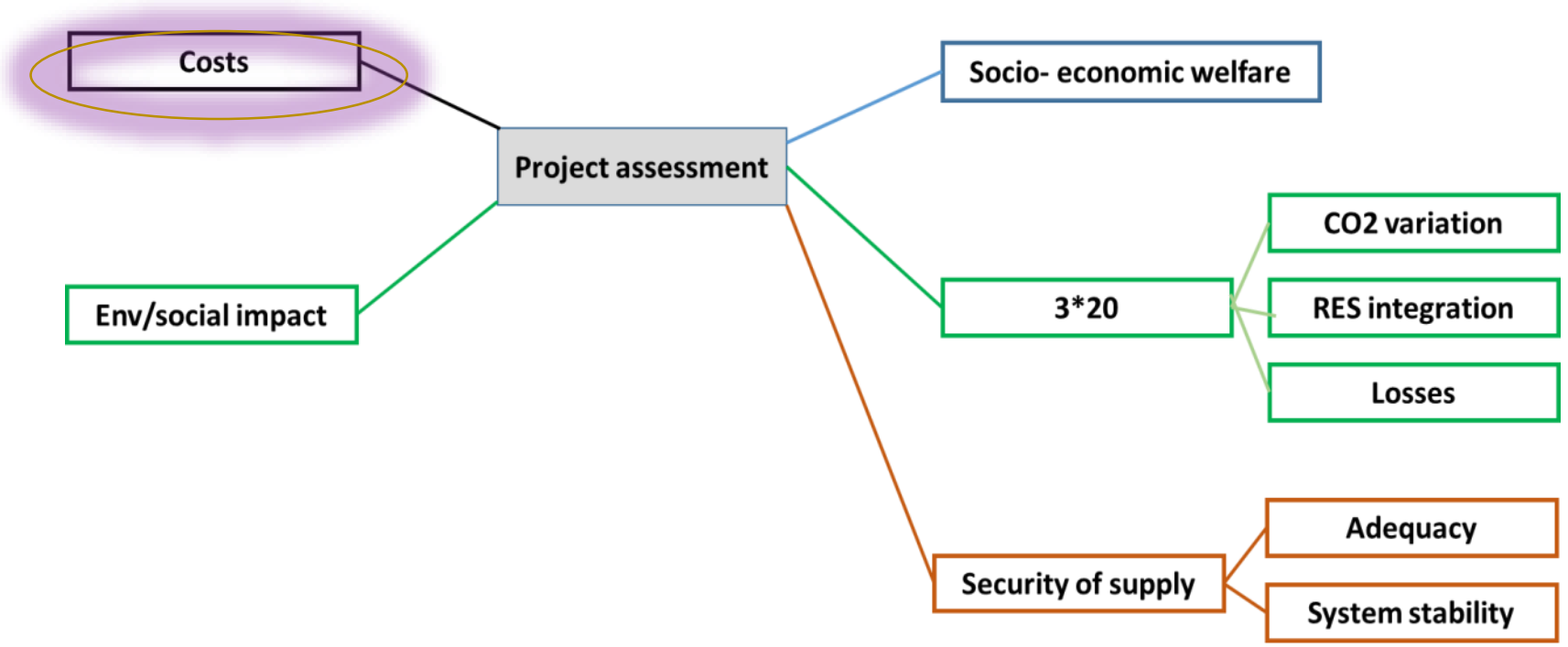


B2. SECURITY OF SUPPLY: SYSTEM STABILITY

System stability is the ability of a power system to provide a secure supply of electricity under extraordinary conditions and to withstand and recover from extreme system conditions (exceptional contingencies).

The assessment is performed on the basis of pre-defined extreme cases (e.g. extreme weather, n-x secure, …).



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Cost CBA 2.0 – now the cost consideres project's maturity

For projects in the planning phase or under consideration

the cost estimation is to be performed using the best information available, whilst ensuring consistency of assumptions and thus comparable cost figures.

For projects under construction or in the design and permitting phase

the costs should be reported based on the current data of project promoters.

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Promoter's figure

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default project costs x complexity factor(between 0,5 and 5)

Promoter sets the complexity facts and justifies the figure

Cost components

- Expected cost for materials and assembly costs
- Expected costs for temporary solutions which are necessary to realise a project
- Expected environmental and consenting costs
- Expected costs for devices that have to be replaced within the given period
- Dismantling costs at the end of the equipment life-cycle
- Maintenance and operation costs

Please participate in the consultation

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