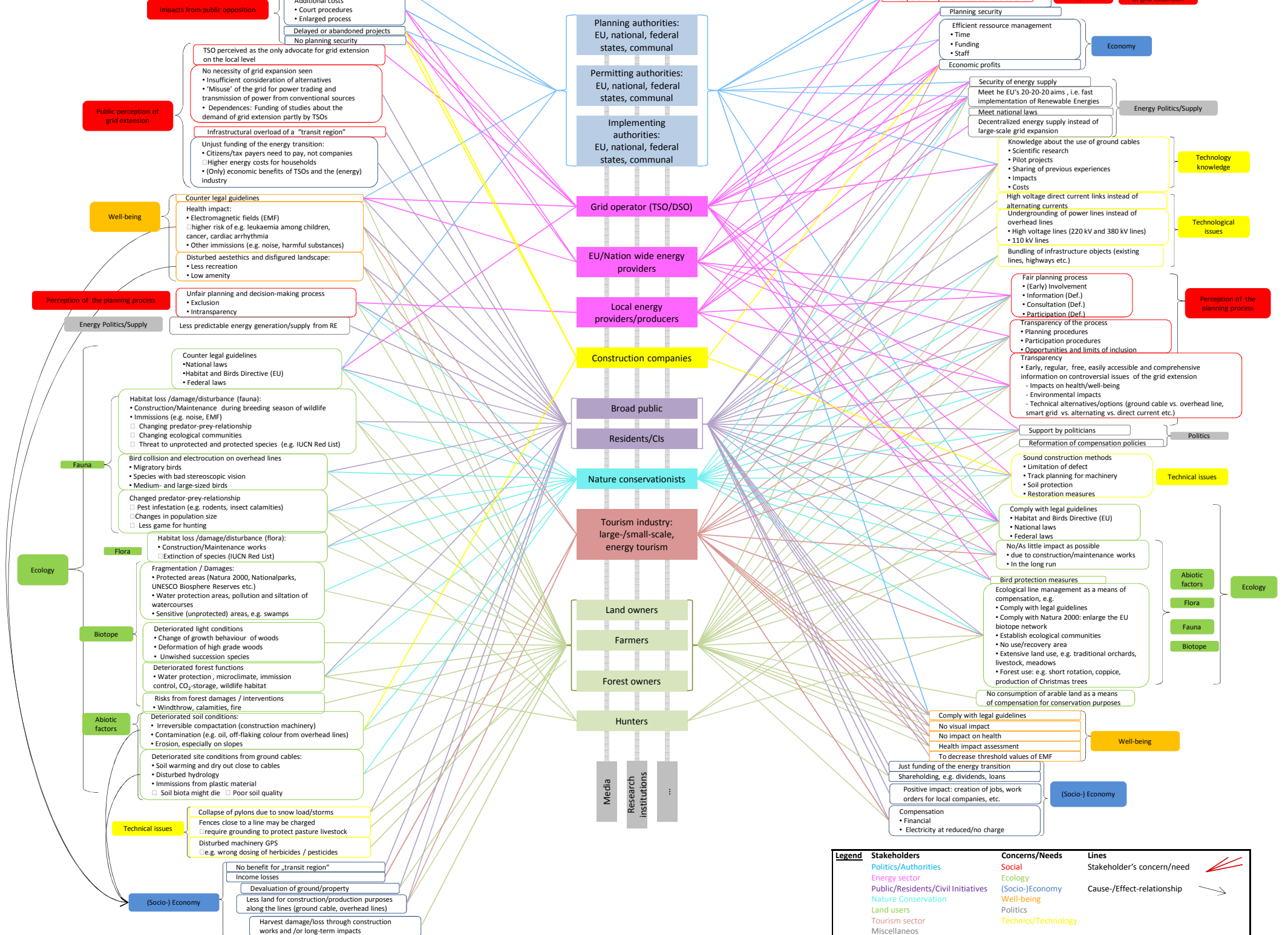


# Concerns

# Stakeholders

# Needs



**Impacts from public opposition**

- Lose votes
- Additional costs
  - Court procedures
  - Enlarged process
- Delayed or abandoned projects
- No planning security

**Public perception of grid extension**

- TSO perceived as the only advocate for grid extension on the local level
- No necessity of grid expansion seen
  - Insufficient consideration of alternatives
  - Misuse of the grid for power trading and transmission of power from conventional sources
  - Dependencies: Funding of studies about the demand of grid extension partly by TSOs
- Infrastructural overload of a "transit region"
- Unjust funding of the energy transition:
  - Citizens/tax payers need to pay, not companies
  - Higher energy costs for households
  - (Only) economic benefits of TSOs and the (energy) industry

**Well-being**

- Counter legal guidelines
- Health impact:
  - Electromagnetic fields (EMF)
    - higher risk of e.g. leukaemia among children, cancer, cardiac arrhythmia
  - Other immissions (e.g. noise, harmful substances)
- Disturbed aesthetics and disfigured landscape:
  - Less recreation
  - Low amenity

**Perception of the planning process**

- Unfair planning and decision-making process
  - Exclusion
  - Intransparency
- Less predictable energy generation/supply from RE

**Ecology**

- Fauna**
  - Habitat loss /damage/disturbance (fauna):
    - Construction/Maintenance during breeding season of wildlife
    - Immissions (e.g. noise, EMF)
      - Changing predator-prey-relationship
      - Changing ecological communities
      - Threat to unprotected and protected species (e.g. IUCN Red List)
  - Bird collision and electrocution on overhead lines
    - Migratory birds
    - Species with bad stereoscopic vision
    - Medium- and large-sized birds
  - Changed predator-prey-relationship
    - Pest infestation (e.g. rodents, insect calamities)
    - Changes in population size
    - Less game for hunting
- Flora**
  - Habitat loss /damage/disturbance (flora):
    - Construction/Maintenance works
      - Extinction of species (IUCN Red List)
  - Fragmentation / Damages:
    - Protected areas (Natura 2000, Nationalparks, UNESCO Biosphere Reserves etc.)
    - Water protection areas, pollution and siltation of watercourses
    - Sensitive (unprotected) areas, e.g. swamps
  - Deteriorated light conditions
    - Change of growth behaviour of woods
    - Deformation of high grade woods
    - Unwished succession species
  - Deteriorated forest functions
    - Water protection, microclimate, immission control, CO<sub>2</sub>-storage, wildlife habitat
  - Risks from forest damages / interventions
    - Windthrow, calamities, fire
- Abiotic factors**
  - Deteriorated soil conditions:
    - Irreversible compaction (construction machinery)
    - Contamination (e.g. oil, off-flaking colour from overhead lines)
    - Erosion, especially on slopes
  - Deteriorated site conditions from ground cables:
    - Soil warming and dry out close to cables
    - Disturbed hydrology
    - Immissions from plastic material
      - Soil biota might die
      - Poor soil quality

**Technical issues**

- Collapse of pylons due to snow load/storms
- Fences close to a line may be charged
  - require grounding to protect pasture livestock
- Disturbed machinery GPS
  - e.g. wrong dosing of herbicides / pesticides

**(Socio-) Economy**

- No benefit for "transit region"
- Income losses
- Devaluation of ground/property
- Less land for construction/production purposes along the lines (ground cable, overhead lines)
- Harvest damage/loss through construction works and/or long-term impacts

**Planning authorities:**  
EU, national, federal states, communal

**Permitting authorities:**  
EU, national, federal states, communal

**Implementing authorities:**  
EU, national, federal states, communal

**Grid operator (TSO/DSO)**

**EU/Nation wide energy providers**

**Local energy providers/producers**

**Construction companies**

**Broad public**

**Residents/CIs**

**Nature conservationists**

**Tourism industry: large-/small-scale, energy tourism**

**Land owners**

**Farmers**

**Forest owners**

**Hunters**

**Media**

**Research institutions**

**...**

**Win votes**

**Trust/Credibility of affected stakeholders**

**Public acceptance**

**Public perception of grid extension**

**Economy**

- Planning security
- Efficient resource management
  - Time
  - Funding
  - Staff
- Economic profits

**Energy Politics/Supply**

- Security of energy supply
  - Meet the EU's 20-20-20 aims, i.e. fast implementation of Renewable Energies
- Meet national laws
- Decentralized energy supply instead of large-scale grid expansion

**Technology knowledge**

- Knowledge about the use of ground cables
- Scientific research
- Pilot projects
- Sharing of previous experiences
- Impacts
- Costs

**Technological issues**

- High voltage direct current links instead of alternating currents
- Undergrounding of power lines instead of overhead lines
  - High voltage lines (220 kV and 380 kV lines)
  - 110 kV lines
- Bundling of infrastructure objects (existing lines, highways etc.)

**Perception of the planning process**

- Fair planning process
  - (Early) Involvement
  - Information (Def.)
  - Consultation (Def.)
  - Participation (Def.)
- Transparency of the process
  - Planning procedures
  - Participation procedures
  - Opportunities and limits of inclusion
- Transparency
  - Early, regular, free, easily accessible and comprehensive information on controversial issues of the grid extension
    - Impacts on health/well-being
    - Environmental impacts
    - Technical alternatives/options (ground cable vs. overhead line, smart grid vs. alternating vs. direct current etc.)

**Politics**

- Support by politicians
- Reformation of compensation policies

**Technical issues**

- Sound construction methods
  - Limitation of defect
  - Track planning for machinery
  - Soil protection
  - Restoration measures

**Abiotic factors**

- Comply with legal guidelines
- Habitat and Birds Directive (EU)
- National laws
- Federal laws
- No/As little impact as possible
  - due to construction/maintenance works
  - In the long run

**Flora**

**Fauna**

**Biotope**

**Well-being**

- Comply with legal guidelines
- No visual impact
- No impact on health
- Health impact assessment
- To decrease threshold values of EMF

**(Socio-) Economy**

- Just funding of the energy transition
- Shareholding, e.g. dividends, loans
- Positive impact: creation of jobs, work orders for local companies, etc.
- Compensation
  - Financial
  - Electricity at reduced/no charge

Legend	Stakeholders	Concerns/Needs	Lines
	Politics/Authorities	Social	Stakeholder's concern/need
	Energy sector	Ecology	
	Public/Residents/Civil Initiatives	(Socio-)Economy	Cause-/Effect-relationship
	Nature Conservation	Well-being	
	Land users	Politics	
	Tourism sector	Technics/Technology	
	Miscellaneous		

# Concerns

# Stakeholders

# Needs

## Social Aspects

Exclusion and intransparency of planning and decision-making process

Untrustworthy TSOs and authorities

## Well-being

Violation of legal guidelines (e.g. Recommendation of the Council 1999/519/EC)

Health impact:

- EMF (e.g. higher risk of leukaemia among children, cancer, cardiac arrhythmia)
- Other immissions (e.g. noise, harmful substances)

Intrusion of landscape:

- Impaired aesthetics (e.g. through bundling of infrastructure)
- Reduced recreation and amenity

## Ecology

Violation of legal guidelines (e.g. Council Directive 92/43/EEC and 2009/147/EC)

Disturbance or loss of habitat:

- Construction and maintenance of HVTLs during breeding season of wildlife
- Impairment through immissions (e.g. noise, EMF)
- Disturbance of predator-prey-relationship (e.g. pest infestation, changes in population size)
- Disturbance of ecological communities
- Threat to unprotected and protected species (e.g. IUCN Red List)

## Fauna

Bird collision with and electrocution on overhead lines (e.g. migratory birds, species with poor stereoscopic vision, medium- and large-sized birds)

## Flora

Disturbance or loss of habitat through construction and maintenance work (e.g. extinction of species)

Fragmentation or impairment of:

- Protected areas (e.g. Natura 2000, Nationalparks, UNESCO biosphere reserves)
- Water protection areas
- Watercourses (e.g. through pollution or siltation)
- Sensitive (unprotected) areas (e.g. swamps)

## Biotope

Change of light conditions:

- Change of growth behavior of woods
- Deformation of high grade woods
- Unwished succession species

Deterioration of forest functions:

- Water protection, microclimate, immission control, CO<sub>2</sub>-storage, wildlife habitat
- Risk of windthrow, calamities, fire

## Abiotic factors

Deterioration of soil conditions:

- Irreversible compaction (e.g. through construction machinery)
- Contamination (e.g. oil, flaking colour from pylons)
- Erosion, especially on slopes

Deterioration of soil conditions through ground cables:

- Soil warming and dry out
- Disturbed hydrology
- Immissions from plastic material
- Impairment of soil boita and quality

## Technology

Collapse of pylons due to snow load or storms

Disturbed of navigation systems (GPS) (e.g. wrong dosing of herbicides or pesticides)

Bundling of infrastructure objects (e.g. with existing lines, highways etc.)

## (Socio-) Economy

Requirement of grounding due to electric charging of fences (in order to protect livestock)

No benefits for „transit regions“

Devaluation of property

Restricted land use for construction or production purposes along the lines

# Land owners Forest owners Farmers

Fair planning process

- (Early) Involvement
- Information
- Consultation
- Cooperation

Transparency of planning process

- Planning procedures
- Participation procedures
- Opportunities and limits of participation

Transparency of information

- Early, regular, free, easily accessible and comprehensive information on controversial issues of the grid extension
- Impacts on health and well-being
- Environmental impacts
- Technical alternatives
  - ground cable, overhead line, smart grid, AC/DC.)
  - costs
  - pilot projects
  - scientific research

## Social Aspects

No health impact

Health impact assessment

No visual intrusion

## Well-being

Compliance with legal guidelines (e.g. Council Directive 2009/147/EC, Natura 2000)

As little impact as possible through construction and maintenance work of HVTLs regarding fauna, flora, biotope and abiotic factors

Ecological line management as means of compensation (e.g. enlarge the EU biotope network, establish ecological communities)

No consumption of arable land as means of compensation for conservation purposes

Soil protection and restoration measures

## Ecology

Limitation of error-proneness (e.g. underground cables)

Entrance and track planning for machinery

Bundling of infrastructure objects (e.g. with existing lines, highways etc.)

## Technology

Land use under HVTLs (e.g. traditional orchards, livestock, meadows)

Forest use under HVTLs (e.g. short rotation, coppice, production of Christmas trees)

Financial compensation:

- Shareholding (e.g. dividends, loans)
- Electricity at reduced or no charge

## (Socio-) Economy

Transition of energy systems (use of renewable energies)

Support by politicians within planning process and regarding compensation

## Politics

Reformation of compensation policies (e.g. regular loan)

