Hydrogen as part of an integrated energy system

Key requirements for a social license to operate

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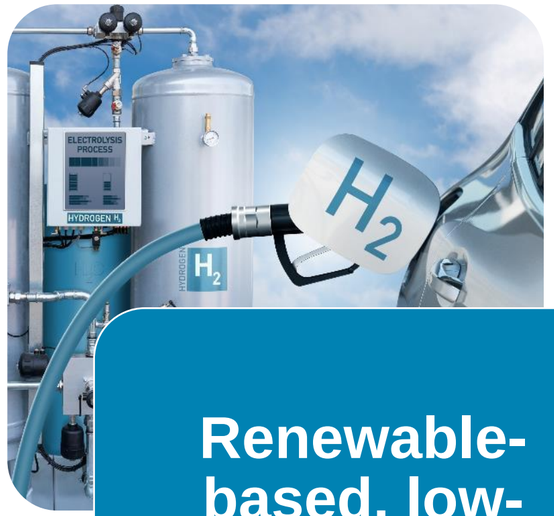
Energy system integration strategy – *Cascading priorities*

Energy efficiency and savings

Decarbonisation of end-uses through direct electrification



Renewable-based, low-carbon fuels for sectors with no other alternative

https://www.europarl.europa.eu/doceo/document/A-9-2021-0062_EN.html

Energy system integration strategy – *Key elements*

Optimizing and decarbonizing energy systems

Challenges: decarbonize heating & cooling; high consuming sectors (water, transport, ICT, …)	Opportunities: Trans-European Networks; Circularity; Renovation wave; **Low-carbon hydrogen**

Balancing energy systems

Challenges: Increased share of VRES; lack of active energy citizenship	Opportunities: Demand response, energy communities, **P2X**, V2G

Access to all citizens and business

Challenges: Low-income, vulnerable population, energy poverty	Opportunities: Help consumers to decarbonize the economy, energy efficient and cost-effective solutions

https://www.europarl.europa.eu/doceo/document/A-9-2021-0062_EN.html

Energy system integration strategy – *Key messages*

Create synergies between new infrastructures of electricity generation, conversion and storage

- ***Ensure network stability and resilience***
- ***Key opportunity for hydrogen***
- ***All the more important for remote areas***
- ***Need to revise regulation, remove barriers, support by EU funds***

Horizontal and decentralised links between final consumers of energy

- ***Reduce dependence on difficult to decarbonize centralized systems***
- ***More circularity: energy from waste, waste heat recovery***
- ***Consumers must become full actors of the energy system***
- ***Digital technologies as enablers***

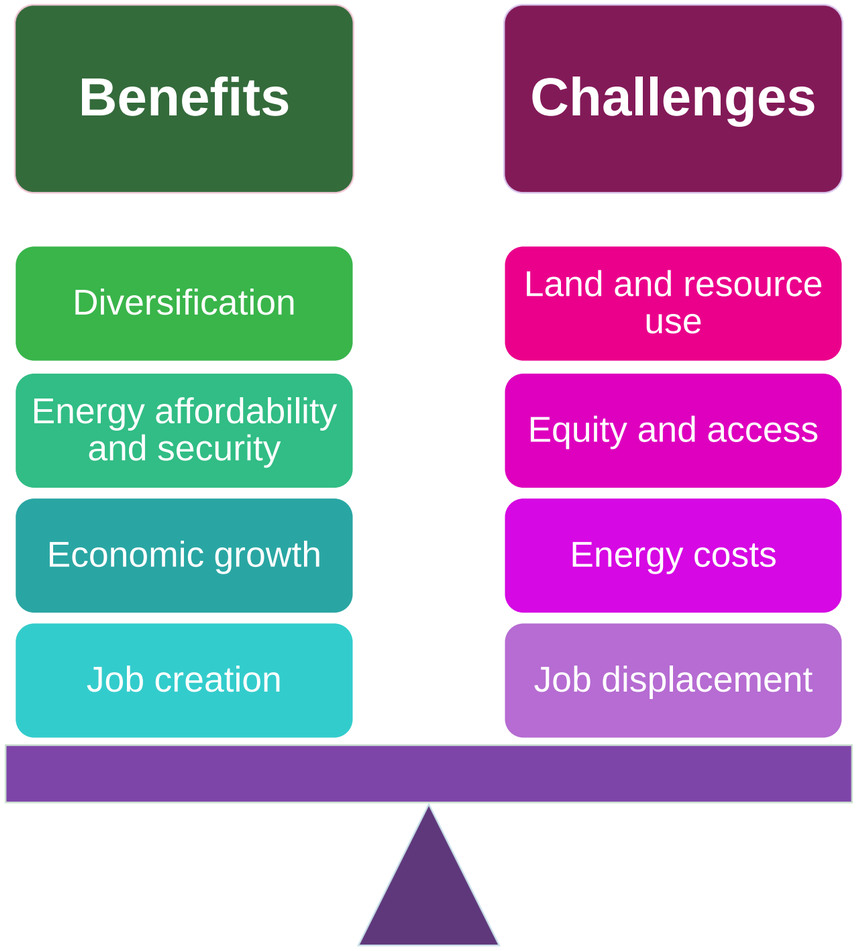
The road to net-zero is paved with social inequality

- **An NCM study on sustainable green transition analyzed inequality-creating effects**
- **Policy tools that affect inequality:**
- ***Carbon taxes on production***
  - Increases costs, leads to higher prices, lower wages
  - Job losses more likely in low-skilled jobs; more likely in rural areas
- ***Consumption taxes and subsidies***
  - The tax burden is higher in low-income families
  - Tax exemptions benefit the affluent
- ***Phasing out fossil fuels***
  - Impacts regions where jobs are in traditional industry sectors
  - Lower skilled and educated are less able to adapt
- ***Location of green infrastructure***
  - Windmills, solar or hydropower plants, road construction, etc. result in reduction of amenity value, noise and other nuisance
  - Rural areas pay a disproportionally larger share of burden
  - Sense of attachment to place, minority rights

➢ ***The challenge is to ensure that the green transition is socially sustainable***

A SOCIALLY SUSTAINABLE GREEN TRANSITION IN THE NORDIC REGION (diva-portal.org)

Hydrogen integration:
Benefits and challenges



- **The successful integration of hydrogen into the energy mix can contribute to the transition to a more sustainable, low-carbon, and resilient energy future**
- **But, could transition to hydrogen economy lead to further social inequality?**
  - ***The hydrogen sector needs to obtain the social licence to operate***

What is a social license to operate?

Image c/o polyp.org.uk, used with permission from the Artist

- **The social license to operate (SLO) refers to the level of acceptance, approval, and support that an organization receives from the local community to conduct its activities***
  - It goes beyond legal requirements and formal regulations
  - Needs to be acquired **before** legal permitting
- **SLO relates to the perception of a community about a company or a project**
  - It signifies that a company gained the trust and goodwill of the community in which it operates
  - This is crucial for the long-term success and sustainability of the company's operations
    - ***Without SLO, a company may face resistance, protests, negative publicity, and even legal challenges that can hinder its ability to carry out its activities effectively***

*Ref.: http://socialicense.com/definition.html

Acquiring the social license

https://socialicense.com/measure.html

- **The three key elements of the social license to operate are**
- **Legitimacy – engaging with the community, ensuring that diverse voices are heard**
- **Credibility – providing true, robust and clear information in transparent way and delivering on promises, and**
- **Trust – that the risks and problems are understood in similar way by experts and citizens)**
- These can be expressed as the Four Level /Three boundary Conditions Model for the Social License to Operate

Gaining trust

- **Gaining the trust is a complex process that requires genuine commitment, transparent communication, and responsible business practices**
- **Trust exposes the one who trusts to vulnerable position**
  - Emotional investment
  - Information asymmetry
  - Dependency
  - Lack of control
- **One key aspect of trust is a mutual understanding and building relationships with citizens and key stakeholders**
  - Trust creates bonds and makes communicating and working with the communities more effective
  - ***It is worth the effort!***

Recent debates on and attitudes toward hydrogen

- **The role that hydrogen can play in the everyday lives of people is not yet top of mind but there are some preconceptions that exist**
- Those who did have some knowledge were likely to be males, people with university degrees and/or technical background
- **Most discourses were positive about hydrogen, yet cautious**
- People do not know much about hydrogen's properties and its potential energy applications
- They want to know more about the safety of emerging hydrogen technologies
- **Recognize the environmental benefits**
- The strongest support for hydrogen for export and transport
- Less enthusiasm for household use for water heating and on-site electricity generation
- **The fair sharing of economic benefits is important**

https://arena.gov.au/assets/2018/12/the-australian-publics-perception-of-hydrogen-for-energy.pdf

Challenges ahead

- The legitimacy of hydrogen hinges on whether people think it will create more benefits than problems
- “Addressing community concerns and gain the social licence of the emerging hydrogen industry is a formidable task”
- Not getting a social license can be a costly mistake
- Each of us involved will have a role, but especially industry
- There will be concerns about how hydrogen is made, transported and used
- These will overlap with existing social licence concerns for related industries

https://h2council.com.au/wp-content/uploads/2022/10/220202-AHC-ART-H2View-2022-will-be-the-year-hydrogen-develops-social-licence.pdf

Recommendations from the Nordic inequality study

- Participatory processes in the planning phase
- Monitor economic inequality, plan for compensations
- Recognize groups that will be most affected
- Focus on those who risk losing their livelihood
- Paying particular attention to geographical inequality

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