

Energetika

Energetická politika

Dnes řeší zejména emise plynů → dříve především aerosoly, NO_x, SO_x, dnes hlavně CO₂ v souvislosti s klimatickou změnou. Nezajišťuje nápravu externalit - znečištění není zahrnuto do ceny zdrojů (výjimkou jsou emisní povolenky)

Ekonomické nástroje

- obchod s emisními povolenkami, uhlíkové daně.
- subvence energetickým sektorům - významné u výzkumu (např. vodík), produkce (jádru) i spotřeby ("Zelená úsporám")

Politické nástroje

- rezoluce - snížit emise zemí EU o 40 % mezi lety 1990 - 2030, zvýšit energetickou efektivitu o 32,5 % a zvýšit podíl obnovitelných zdrojů o 32 %
- vytváření podmínek pro potřebný energetický mix (např. Energiewende)

Energetická bezpečnost

Snaha zajistit nepřerušované dodávky energie (zejména elektřiny) bez výpadků a omezení

Příčiny obav - terorismus, politická nestabilita klíčových dodavatelských států, environmentální a sociální důsledky produkce a nepravidelnost obnovitelných zdrojů, přírodní katastrofy

Zdroje obecně

Je potřeba energie k získání energie - těžít, transportovat, zpracovat, distribuovat

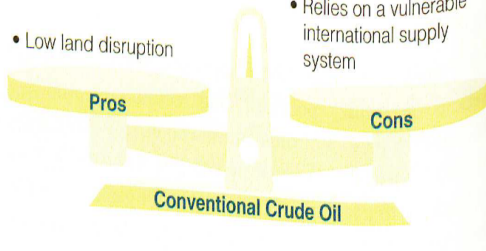
2. zákon termodynamiky - každá změna energie (např. chemická na pohybovou) vytváří teplo - degraduje se určité množství energie - např. obyčejná žárovka účinnost pouze 5-10% - zbytek až 95 % tepelné ztráty

Základní charakteristiky hlavních fosilních zdrojů

(MYERS, Norman a Scott SPOOLMAN. 2014. Environmental issues & solutions: a modular approach.

Konveční ropa

- Ample supply for several decades
- High net energy yield (but decreasing)
- Low land disruption
- Releases air pollutants and CO₂ when produced and burned
- Oil spills can severely pollute water
- Relies on a vulnerable international supply system



Ropné písky a ropné břidlice

- Large potential supplies in some countries (Canada and U.S.)
- Easily transported within and between countries
- Can provide domestic supplies for North American countries
- Low net energy yield
- Releases air pollutants and CO₂ when produced and burned
- Severe land disruption and high rates of water use



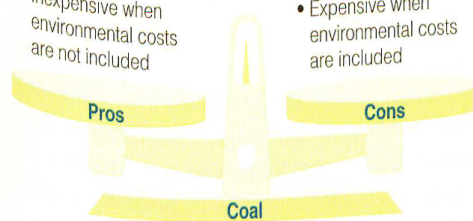
Zemní plyn

- High net energy yield
- Emits less air pollutants and CO₂ than other fossil fuels when burned
- Ample supplies in the U.S. and in some other countries
- Low net energy yield for liquefied natural gas (LNG)
- Releases air pollutants and CO₂ when produced and burned and extraction can pollute groundwater
- Difficult and costly to transport from country to country



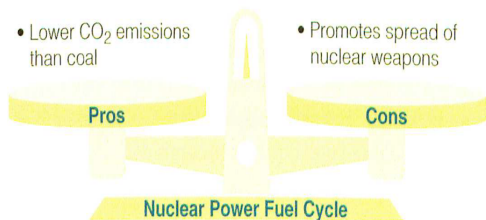
Uhlí

- High net energy yield
- Very large potential supplies in many countries
- Inexpensive when environmental costs are not included
- Mining it severely disturbs land and pollutes water
- Emits large amounts of air pollutants and CO₂ when produced and burned
- Expensive when environmental costs are included



Jádro

- Large fuel supply
- Low risk of accidents in modern plants
- Lower CO₂ emissions than coal
- Very low net energy yield and high overall cost
- Produces long-lived, intensely radioactive wastes
- Promotes spread of nuclear weapons

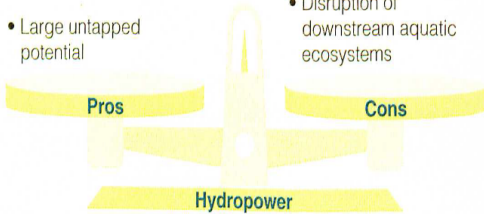


Základní charakteristiky hlavních obnovitelných zdrojů

(MYERS, Norman a Scott SPOOLMAN. 2014. Environmental issues & solutions: a modular approach.

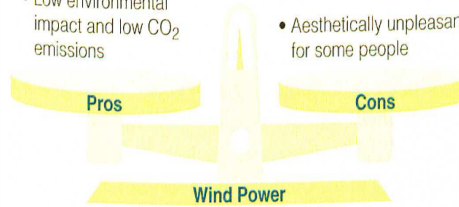
Vodní energie

- | | |
|---|---|
| <ul style="list-style-type: none"> • Low-cost electricity with high net energy yield • Low emissions of air pollutants and CO₂ • Large untapped potential | <ul style="list-style-type: none"> • Severe land disturbance and displacement of people • High greenhouse gas emissions of methane from reservoirs in tropical regions • Disruption of downstream aquatic ecosystems |
|---|---|



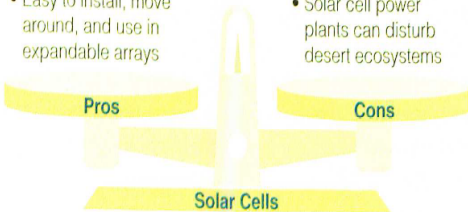
Větrná energie

- | | |
|---|--|
| <ul style="list-style-type: none"> • Low-cost electricity with high net energy yield • Widely available and relatively easy to harness • Low environmental impact and low CO₂ emissions | <ul style="list-style-type: none"> • Backup or storage system needed when winds die down • Can kill some birds and bats if not located carefully • Aesthetically unpleasant for some people |
|---|--|

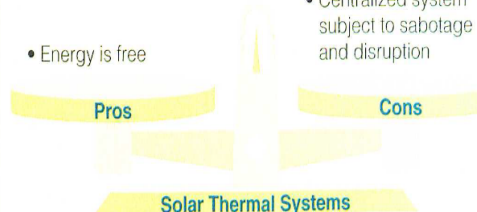


Solární energie

- | | |
|--|---|
| <ul style="list-style-type: none"> • Medium net energy yield for some systems • Little or no direct emissions of air pollutants and CO₂ • Easy to install, move around, and use in expandable arrays | <ul style="list-style-type: none"> • Expensive for the near term • Need a backup or storage system when sun does not shine • Solar cell power plants can disturb desert ecosystems |
|--|---|



- | | |
|---|--|
| <ul style="list-style-type: none"> • Little or no direct emissions of air pollutants and CO₂ • Moderate land disturbance • Energy is free | <ul style="list-style-type: none"> • Low net energy yield and high cost • Need a backup or storage system when sun does not shine • Centralized system subject to sabotage and disruption |
|---|--|



Biopaliva

- | | |
|--|---|
| <ul style="list-style-type: none"> • Moderate net energy yield (except for low net energy yield for corn and soybean biofuels) • Potentially renewable and sustainable • Can help reduce overall greenhouse gas emissions if produced sustainably | <ul style="list-style-type: none"> • Contributes to global climate change if produced unsustainably • Clearing natural areas to make biofuel crop plantations degrades biodiversity • Biofuel crops can compete with food production and raise food prices |
|--|---|

