



# Clean Tech

made by

Group Lumikko

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# **WHO ARE WE?**

**WE ARE CHIEF EXECUTIVES, INVESTORS, POLICY EXPERTS, AND SCIENTISTS IN THE GROWING INDUSTRIES FOR RENEWABLE ENERGY, CLEAN TECH, AND TECHNOLOGICAL CARBON REMOVAL THAT ARE AIMED AT DECARBONIZING OUR WORLD.**

# Make fossil fuels pay their true costs through taxes and a high carbon price

- Fossil fuels still dominate the world energy system, and they are by far the biggest source of greenhouse gas emissions that contribute to climate change.
- Economists agree that a carbon price is the best way to reduce global greenhouse gas emissions.
- The tax revenues can help offset the costs for the world's energy transition and aid vulnerable populations as they adapt to climate impacts that are already happening

# Subsidize renewable energy

- Renewable energy is energy that is generated from natural processes, it's sustainable and always available
- The renewable energy industry provides less than 5% of the world
- It's important for the countries to support renewable energy for the industry to grow and to develop new technologies that are needed to replace fossil fuels.
- Storages are needed for renewable energy sources like wind and solar to always have access to the energy
- Examples: solar, wind, geothermal, hydropower, and storage



# Promote energy efficiency and electrification of buildings and industry

## Energy efficiency

- using less energy to provide the same service (ex. cooling and manufacturing)
- reduces energy costs and emissions for buildings such as huge factories and buildings who need a lot of energy

## Electrification

- replacing converting heating and cooling systems powerd by fossil fuels to much more efficient ways using renewable energy like electric air and ground-source heat pumps



# Promote energy efficiency and electrification of transportation

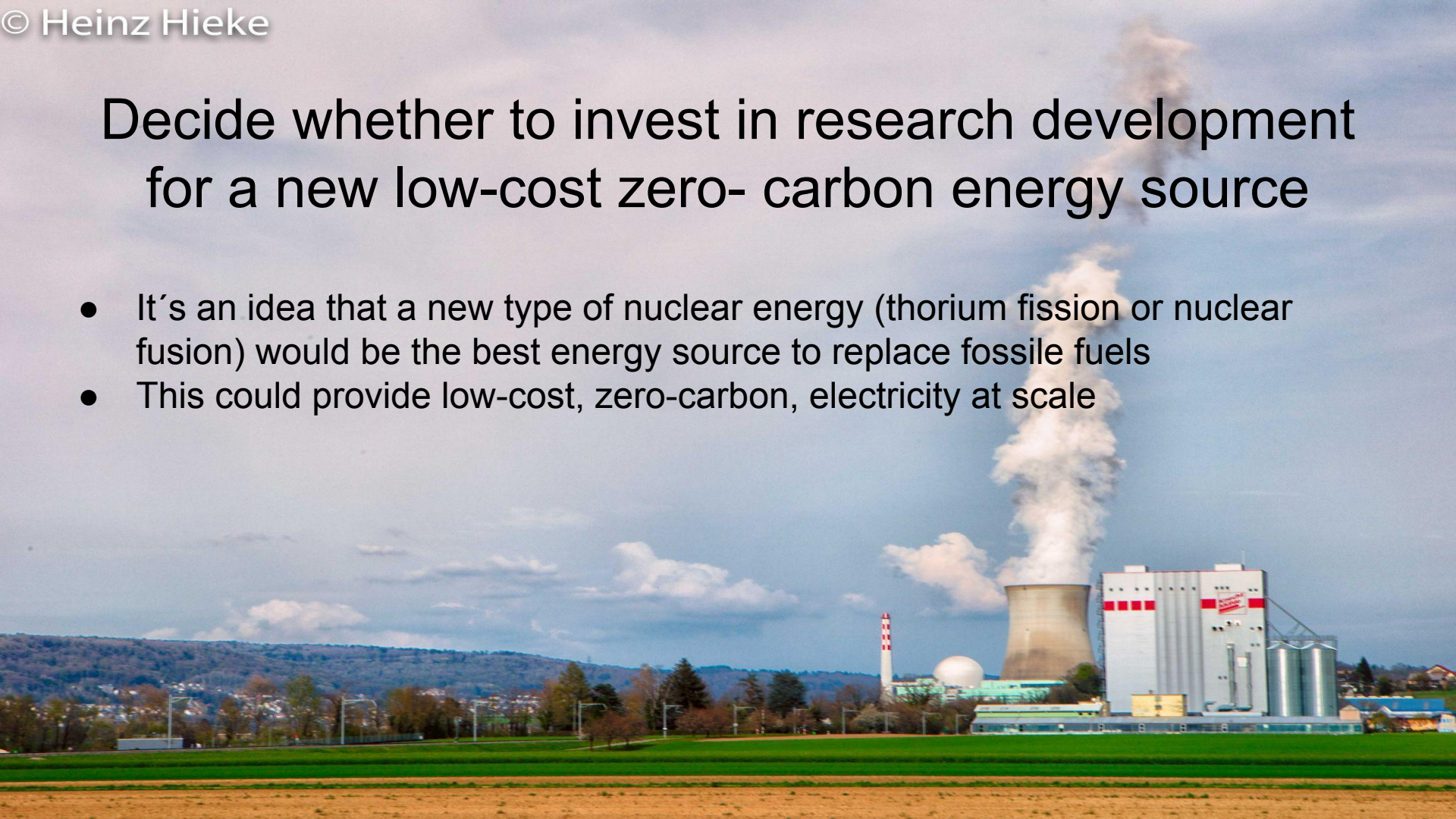


- About 15% of the world's greenhouse gas emissions come from transportation.
- Transportation demand is growing fast and has a great affect in our world. the important thing to do is to change from oil to renewably-powered energy.



# Decide whether to invest in research development for a new low-cost zero- carbon energy source

- It's an idea that a new type of nuclear energy (thorium fission or nuclear fusion) would be the best energy source to replace fossil fuels
- This could provide low-cost, zero-carbon, electricity at scale



# Decide whether significant developments can be made in carbon removal technology

- Carbon dioxide removal technology is a way to remove CO<sub>2</sub> out of the atmosphere by changing agricultural practices



# Carbon capture technologies.

- Carbon Capture and Storage is a technology that can capture up to 90% of the carbon dioxide. They are produced from the use of fossil fuels and prevent the carbon dioxide from entering the atmosphere.
- Also, the use of CCS with renewable biomass is one of the few carbon abatement technologies that can be used in taking carbon dioxide out of the atmosphere.

# Smart grid

## Smart Grid include:

- More efficient transmission of electricity
- Quicker restoration of electricity after power disturbances
- Reduced operations and management costs for utilities, and ultimately lower power costs for consumers
- Reduced peak demand, which will also help lower electricity rates
- Increased integration of large-scale renewable energy systems
- Better integration of customer-owner power generation systems, including renewable energy systems
- Improved security

# Sustainable materials and manufacturing

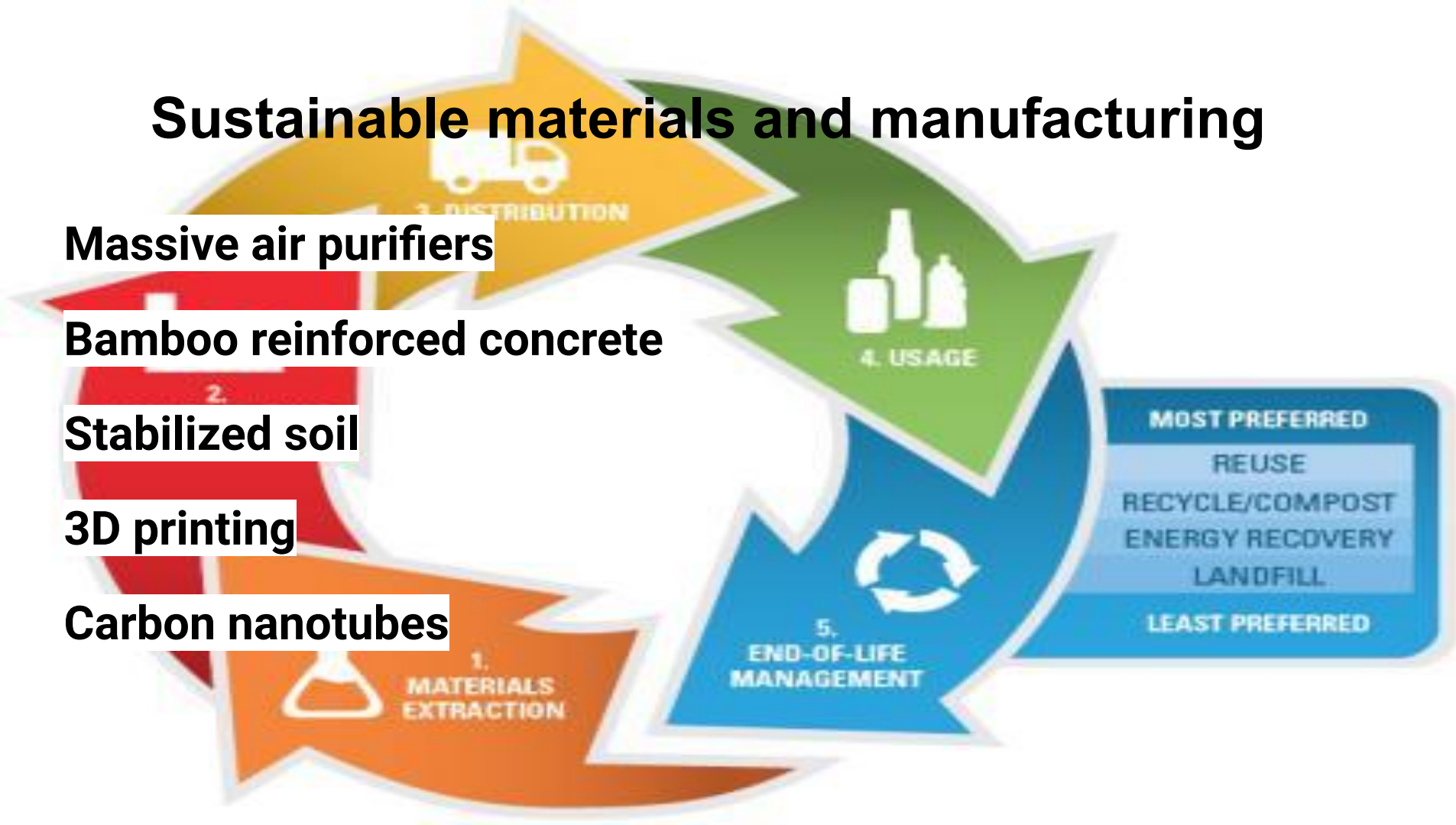
Massive air purifiers

Bamboo reinforced concrete

Stabilized soil

3D printing

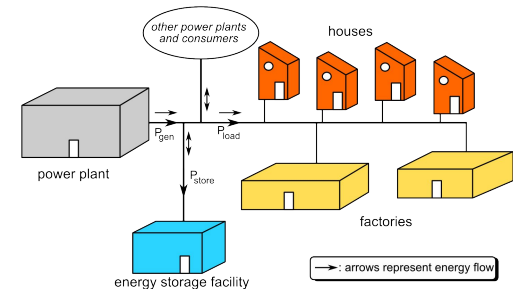
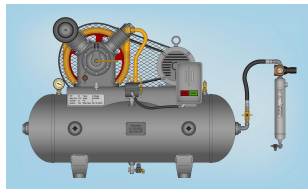
Carbon nanotubes





# Energy storage

- Energy storage systems are technology or systems, in which electric energy is loaded in and, by necessity, can be discharged
- It involves converting energy from forms that are difficult to store to more conveniently or economically storable forms
- Some technologies provide short- term energy storage , while others can endure much longer
- Fossil fuel storage, Mechanical (compressed air), Biological, Electrochemical storage (batteries), Thermal- and Chemical storage



# Carbon price

- The carbon price (or a carbon tax) is a price applied to carbon pollution to get polluters to reduce their amount of greenhouse gases
- It's said it is the most efficient way to reduce the greenhouse gases
- The carbon price today (06.02.2020) is 23.33€
- In the last ten years the carbon price was the highest on June 30, 2008 with a price of 30.52€ and the lowest on April 22, 2013 with a price of 2.97€
- In principle all sources of CO<sub>2</sub> emissions should be taxed at the same rate per ton of CO<sub>2</sub> emitted but that can only be accomplished by taxing all fossil fuels in proportion to their carbon content

# sources

- <http://www.ccsassociation.org/what-is-ccs/>
- [https://en.wikipedia.org/wiki/Energy\\_storage](https://en.wikipedia.org/wiki/Energy_storage)
- <https://extension.psu.edu/what-is-renewable-energy>
- <https://pxhere.com/en/photo/423732>
- [https://www.google.com/search?q=carbon&tbm=isch&ved=2ahUKEwisz8efrbznAhWI04UKHcdDBJUQ2-cCegQIABAA&oq=carbon&gs\\_l=img.3..0j0i67j0l8.227044.231149..231720...0.0..1.120.2460.21j7.....0....1..gws-wiz-img.....0..0i19j0i5i30i19.1sdDjKqC UzU&ei=i7k7XuzdIoinlwTHh5GoCQ&bih=641&biw=1366&rlz=1CAOWOB\\_enFI887#imgrc=fLkU35suLtDcmM](https://www.google.com/search?q=carbon&tbm=isch&ved=2ahUKEwisz8efrbznAhWI04UKHcdDBJUQ2-cCegQIABAA&oq=carbon&gs_l=img.3..0j0i67j0l8.227044.231149..231720...0.0..1.120.2460.21j7.....0....1..gws-wiz-img.....0..0i19j0i5i30i19.1sdDjKqC UzU&ei=i7k7XuzdIoinlwTHh5GoCQ&bih=641&biw=1366&rlz=1CAOWOB_enFI887#imgrc=fLkU35suLtDcmM)
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