

## Challenges of a warming Climate

### Climate

- must not turn regions into life preventing zones
- must not destroy life perspectives and decent prosperity by fire, floods, storms, and drought
- must not endanger food supply
- must not jeopardize democracy due to catastrophes, which require immediate actions, without much time for allowing participation. This may lead to
  - + dissatisfaction
  - + political unrest and violence, and to an ousting of reality because reality is over-challenging
  - + conflicts between states in a bitter struggle for resources.

Climate change is a threat to survival, prosperity, freedom, independence, democracy, and security. This threat has to be avoided by any means.

Therefore, the decarbonization-path has to be taken, despite of facing intensive competition and system competition with autocratic states, and wars and a pandemic. There is no time for postponing means against the climate crisis. This would make us more vulnerable and lead us in even more over-challenging situations with stronger threats to decent prosperity, freedom, security, and democracy.

### The practical Challenges

The practical challenge is **to change out the technological infrastructure of the entire energy supply** for industry and for private and public consumption.

The goal is to use (only) **green primary energy**, notably sun, wind, and “green Hydrogen”

- for electricity and heating in industry, private households, and public buildings
- for transport and mobility in the streets on rails in the air and on water.

Emissions of greenhouse gases also must be stopped by agriculture business, by burning down woods, ...

Saving energy and material resources is not a virtue anymore but a strong necessity. The pollution of air, water, and soil by the litter of human production and consumption must be stopped.

A cyclic economy for materials is needed to maintain “green technologies” on the scale of mass production.

The ecological balance of this planet must be preserved. Human live depends on it. This also applies for the variety of species.

## The Implementation of a Green Energy Infrastructure

### Energy that we want

#### Energy

- must be affordable for a competitive economy, and for private and public consumption
- must be reliably available
- must not keep us dependent politically from other governments
- must be free of greenhouse gas emissions and harmless for our planet

### What is needed for the transformation of our livelihoods?

- A broad consensus in society to go the decarbonization-path and a good understanding on how to do it.
- A reliable government, trusted not to misuse this transformation for non-democratic purposes
- International cooperation and mutual support is a necessity. Wars are counterproductive.
- Green Technologies must be known, trusted and affordable and they need permanent improvement

## The technical Plan

- A nation-wide plan must be set up and coordinated in order to identify
- + how much green energy is needed, and where does it come from, how much can be produced in the own country, and how much has to be imported, ensured by which cooperation and contract,
- + which part of the old energy infrastructure can be reused, and which new elements are needed,
- + who provides (builds) which new element and by when, in order to see if the connectivity to industrial and other consumers is ready in time,
- + industrial companies have to invest into new technologies and procedures, to base their production on green energy. They need connectivity to green energy when they plan to start “green” production.

Plans are never perfect. Known and already installed transition technologies must be in place in order to keep the energy supply going until a switchover to new technologies is reliable. Smooth transitions must be planned without causing a temporary breakdown.

For this plan it must be assured for each new element of the infrastructure,

- if enough skilled workers are available
- if the needed material is available, and affordable
- if the needed cooperation with state administrations is reliable
- if supply chains are trustworthy and working
- if the financial base for the entire plan (all new elements) is solid

## Competition Risks due to Transformation Costs

Preparing a nationwide technology changeout and producing for the market at the same time, is more expensive than producing as usual with old fossil energy. A market knock out must be avoided. This would be a showstopper for the transition to green energy and at the same time a de-industrialization program for the entire country.

A political and financial strategy is needed to maintain competitiveness during the phase of technology transformation. Once working with green energy, an advantage for competitiveness is likely.

## International Cooperation is needed – as Climate has no Borders

The challenge of the threat by climate change is common to all countries in this world. And the countries causing the highest emission of greenhouse gases can do the most about it. This is China, USA, EU+UK, India, Japan, Russia, Brazil, and other industrialized countries.

They are in competition with each other, but also must have an interest on reduced “transition risks”. Nevertheless, the first one has the transition risk first, and may lose market shares, unless compensated otherwise.

A climate club of the G7&EU (a big market), ... is a diplomatic hope. The climate club members could synchronize in time, for the transformation, and agree on tariffs against other states that intend to move more slowly and would derive competitive advantages from it.

## Transformation needs Political Stability

Each project of the green transformation will have a balance of advantages and disadvantages, and hence objections against the project will be raised. These conflicts have to be settled in a way, that a broad consensus for the entire transformation is maintained. Political extremists, or self-centered movements, which would tolerate the transformation, unless they are disturbed, must remain a minority. Otherwise, the timeline for the transformation is at risk. Nature is not waiting for humans who do not conceive. It is important to reduce social tensions in times of rapid change and to strengthen trust in our democracy.