CHANGING THE GAME FACILITATION TIPS

GENERAL

1. Keep in mind that you are only facilitating the smooth flow and the progress of game.
2. Your duty as facilitators is only to guide them. You may warn them but do not try to rectify their mistakes after warning unless it's against the rules of the game. E.g., It's okay if they mess up their budget and end up not meeting demand.
3. Encourage participants to be visionary and open-minded in their discussion
4. Facilitate discussion but do not take active part in it. Let the 4 members argue it out.
5. Ensure that the team is clear on their region capabilities.
6. Make sure that everyone has their stakeholders' objectives and ensure that there is no sharing of their objectives.
7. Ensure that they participants understand the meaning of the Change Card as a policy decision that they have to debate over whether to accept or reject.
8. Let them know that they can implement as many policies possible that they want and explain them how to implement in the Lego Game by adjusting their towers (Government role task)
9. Explain them how to record the undertaken change cards /policies by taking note of their price and bricks' effects using the accounting sheet as a banker (Business role task)
10. Let them know that the budget is not a constrain in the game. They should focus on achieve their **"Energy Consumption", "% Share of Renewables", "Greenhouse Emissions" and "Oil & Gas" GOALS.**
11. Ensure that the towers are adjusted accordingly & everything is calculated correctly.
12. Let them know the list of sources resources they have in their region.
13. Explain them the different between uncontrollable and controllable sources; peak and base demand in the electricity consumption tower; and flexible and inflexible power plant capacity.
14. Most importantly, remind them to have fun

CHANGING THE GAME FACILITATION TIPS

CONCEPT

Changing the game is a simplistic model of the energy system. It shows and reflects the most typical options and limitations in planning energy systems. We are convinced that the boundaries we created reflect the right tendency of what will be feasible for an energy system in 2035. Please note that we kept the number and kinds of possible changes you can make based on technologies that are currently feasible or likely to be so in 2035.

Energy system planning is about finding ways to map the various energy resources found in nature to the energy services we require for our society. Energy Planning deals with changing both how we use energy and how we provide it?

SCOPE

CtG deals exclusively with energy. Consideration has to be taken to the economy, the safety of supply and the environment. It's not a climate game as such but because energy consumption is one of the main causes of greenhouse gas emissions (CO_2), a discussion about energy cannot avoid also becoming a discussion on climate.

ASSUMPTIONS IN CtG

1. **Costs and effects of different initiatives are independent of each other.**

   This means that the effect of increased public transport or car free Sundays is going to be independent of the whether a big part of the car fleet has been exchanged with electric cars. This is a very rough approximation.

2. **Only technical costs are included**

   General externalities such as pollution costs, social costs, redistribution costs, the value of the freedom of choice, etc. are not included in CtG. It is up to the participants to valuate these and include this in the discussion

3. **Only the most important technical and behavioural solutions are included.**

   We use energy almost no matter what we chose to do and therefore there is no energy model that can give a description of all the initiatives that could change our energy consumption. The most important technical and behavioural solutions up to the year 2035 are included.

4. **Only the most important energy resources are included**

   There are a lot of primary energy resources and technologies to transform them into electricity and usable fuel. CtG only includes 8 of them (coal, oil, natural gas, biomass, nuclear power, hydro power, wind energy and solar energy. Other potentially important energy sources and technologies up to 2035 that are not dealt with in CtG are: Wave energy, biogas (e.g., agricultural waste and manure) and waste.

5. **Prices of fuels are constant**

   Prices of (coal, oil, nature gas and biomass) is constant in CtG. In reality it depends on the demand. A strategy leading to large savings in oil consumption will lead to even greater fuel cost savings because of the following two effects:

   a. A lower amount needs to be bought
   b. A lower price per barrel (due to generally low demand)

   The opposite of course applies in case of increased demand.

6. Constant prices for different power plant technologies

The cost of using a specific technology would most likely change with the degree of implementation. To a certain limit the cost would drop (due to economics of scale), but following this it would start to rise (due to industry's limitations in delivering vast quantities).

In CtG it is assumed that the first wind turbine one puts up will have the same cost as the last. And just as important, that the power output of both turbines is of similar value. Since the wind turbines will often produce simultaneously (if they are not severally geographically dispersed) it will become more and more difficult to utilize the produced power.

7. Everything is calculated in whole bricks

CtG uses LEGO bricks to visualize the energy consumption. This implies that everything needs to be integers. It is not possible to use half bricks.

Therefore, the basis-unit in CtG is 125 PJ (Peta joules) for fuels or 17.5 TWh electricity (corresponding to 50 % power plant efficiency[1]).

8. District heating from combined heat and power is not shown.

The combined heat and power plants of Denmark produce both electricity and district heating for the households in cities. We have chosen not to show district heating with bricks in CtG, as it would entail a couple of problems.

Since district heating does not show up in the heating tower when replacing oil or gas for heating it will seem to be equivalent to insulation (which also saves energy without adding new bricks).

It is assumed that waste heat from power plants is abundant. In electricity system, which is almost solely based on wind, hydro, solar and nuclear power this will not be the case. In such systems solar heating with seasonal storage of vast amounts of hot water would be needed in order to satisfy heat demand.

[1] Power plant efficiency denotes the ratio of electric output to primary energy input.