POLISH WAY TO NET ZERO DECARBONIZATION THROUGH AGROENERGY

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MOTTO

„Green is good for you”

Stephen and Rachel Kaplan, PhD

I DECARBONIZATION

1. We all breath oxygen - O_2 and emit CO_2 – living organisms, industry and services.
2. Too much CO_2 in the atmosphere is not good for out planet.
3. Therefore, people in so called “Kioto Protocol” agreed to limit the amount of CO_2 in the air. During the first accounting period Poland reduced CO_2 emissions by 32 %.
4. CO_2 is a gas heavier than air, so it mostly stays close to the ground. Green plants absorb CO_2 and emit O_2. This is called fast (small) oxygen cycle.
5. NET ZERO can be reached by limiting emissions and rising absorption.
6. What we need is a stable balance in oxygen cycle. In Poland we have means to increase CO_2 absorption through biomass.

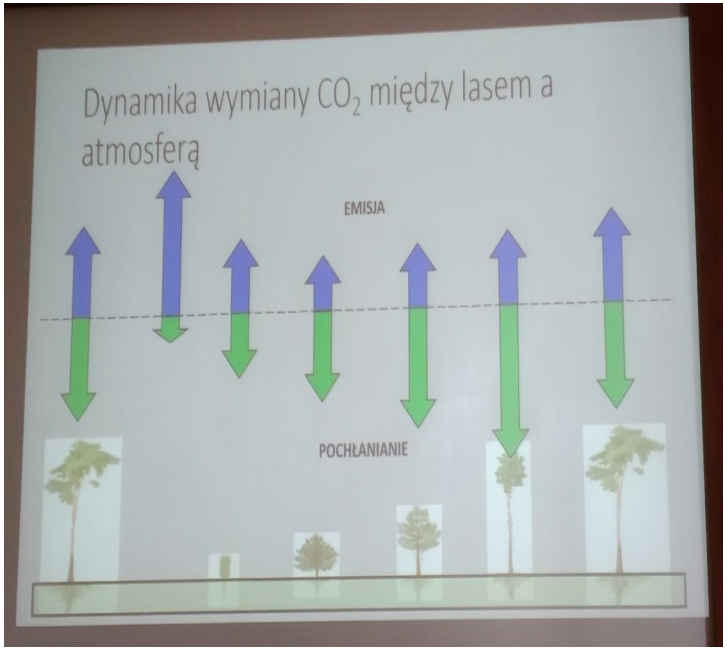
II HOW TO REPLACE FOSSIL FUELS

1. We still have a lot of fossil fuels, but in some areas they are finished of the cost is prohibitive.
2. Therefore, an answer to a question how to replace them is necessary.
3. We need to integrate locally produced “Carbon Credits” with EU ETS.
4. In Poland we do a lot of research on using biomass to generate energy.
5. There is still a lot of biomass wasted, which can be used to produce heat, electric energy of mobility.
6. Polish biogas sector can be 10 times bigger then is now, but we need to build small installation because of carbon footprint in transportation.
7. We need to increase production of agro biomass and develop installation for gasification.

The trees are what really counts.

The initiative of European Commission was started in Poland, but it stopped now.

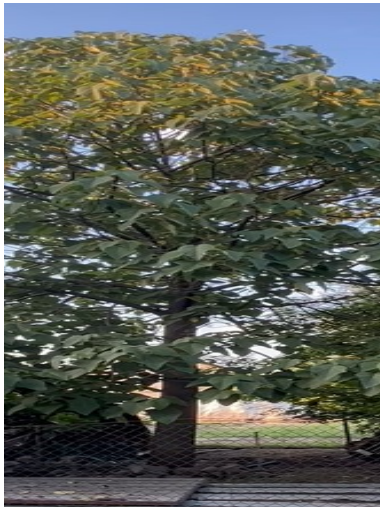
https://mapmytree.eea.europa.eu/#/home



The trees are the most important, the game changer in CO_2 absorption is tree of C_4 photosynthesis

III THE OFFER TO AGRO SECTOR

Paulownia Shang Tong 1 year old, 3 years and 6 years old

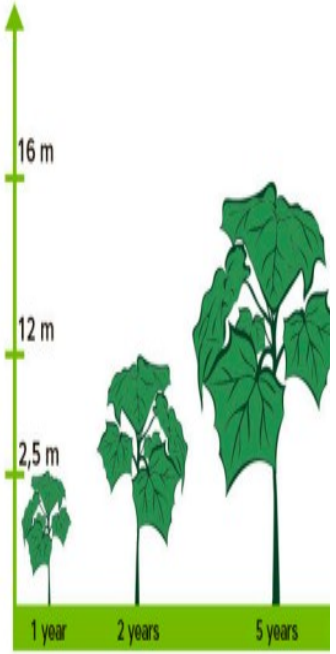


THE OFFER

Paulownia Shang Tong best suits Polish climate, soil quality and industrial needs. It’s enough to plant no more than 2 - 2,2 % of total area of Poland to reach NET ZERO by year 2040.

Table: Fast growing trees

Species	Annual growth	Height of a tree of 3 years	Maximum height of an adult tree
Paulownia	3-5 m	10,5-15,5 m	15-28 m
Salix sepulcrali	1,5-4 m	7,5-12 m	15-25 m
Populus nigra	1,5-2,5 m	4,5-9 m	15-20 m
Populus deltoides	2,5-3,5 m	9-12 m	20-25 m
Quercus falcata	2,5-3,5 m	9-12 m	20-30 m
Eucalyptus tereticornis	2 -2,5 m	7,5 -9 m	15-20 m
Salix babylonica	2-2,5 m	6-9 m	10-15 m



The soil should be rich in carbon.

The more carbon in soil, the less CO_2 in the air.

Biochar is necessary.

IV HOW TO REACH NET ZERO BY 2040

1. In Poland in 2023 we emitted 148,8 mm Mg CO_2.
2. Polish forests absorbed 34,6 mm Mg CO_2.
3. Full implementation Forest Carbon Farming will give extra 25 mm Mg CO_2.
4. Balance 148,8 – 34.6 – 25 = 89,2 mm Mg CO_2 (90 mm Mg).
5. We can reduce industrial emissions by maximum 40 mm Mg CO_2.
6. We fulfilled our reduction obligations resulting from “Kioto Protocol” in 34 %.
7. Remaining 50 mm Mg CO_2 we can absorb in fast rotation groves (agro).
8. By offsetting CO_2 emissions with “Carbon Credits” we can reach the goal.
9. In 3- year rotation, Paulownia Shang Tong can absorb 75 Mg CO_2 / ha / year.
10. We can get carbon footprint free energy – heat, electricity and mobility.
11. We can get up to 65 % permanent carbon sink through biochar – BioCCS.
12. We need to plant these trees on approx. 2 % of territory – now 5 % lies in waste.

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Thank you very much for your attention

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