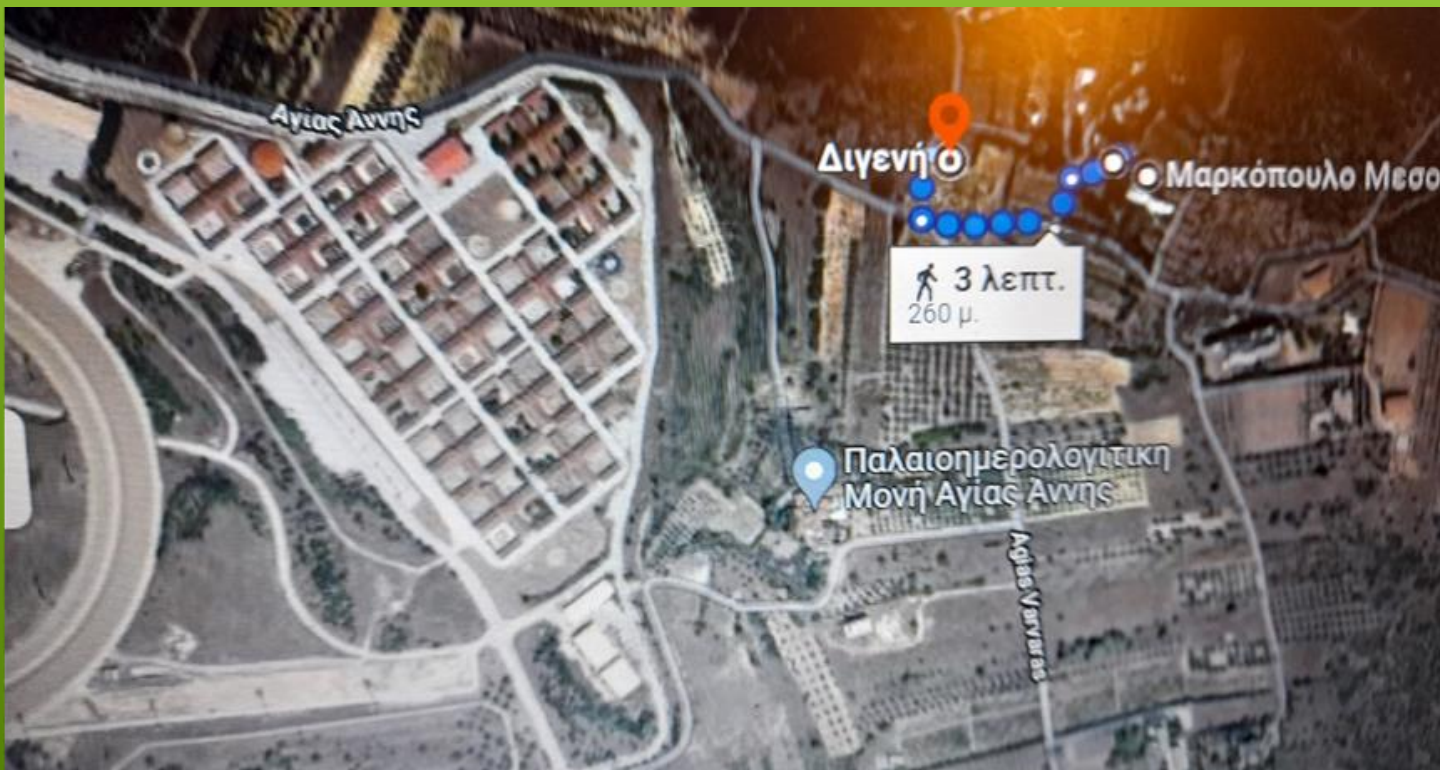




Sai Prema Farm: The Tripartite Transferred Utilities (TTU) in a win-win-win (Natural Health-Soil Health-Agriculture Sustainability, (NSA) equilibrium

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The Sai Prema Farm is a green paradise in Zone 6 of the SSIO in Markopoulo Mesogaia, Greece, and focusses on the need for a holistic agro-ecosystem – the Regenerative Natural Farming. This approach “improves the resources it uses, rather than destroying or depleting them” – according to the Rodale Institute.





**Masanobu
Fukuoka**



“The soil is the basis of all transformations and developments. Soil is the substance of the food out of which man is born, through which man is sustained and nourished.”

Sai Prema Farm adopts agricultural principles and practices to rehabilitate and enhance the entire ecosystem of the farm by increasing soil organic matter. Soil together with water and air make life possible on Earth.



the win-win-win papakonstantinidis model





No synthetic pesticides

No synthetic herbicides

Conservation tillage

Cover crops

Crop rotation

- No synthetic fertilisers



- No synthetic pesticides
 - low infections and so plants are less susceptible to plant pathogens. Beneficial and predator insects keep the pests in control.
- No synthetic herbicides – green manure helps to suppress weeds. Weeds are cut down with a mower or uprooted by hands.
- Conservation tillage –switching from deep, regular tillage to reduced tillage methods improves soil structure, reduces carbon dioxide emissions and increases soil organic carbon.
- Cover crops such as buckwheat, hairy vetch, clover, oats etc.
- Crop rotation – growing different crops in the farm over several seasons can break pest cycles and add extra nutrients to soil.
- - No synthetic fertilisers – substituted by mulching, organic compost and green manure



Regenerative agriculture includes 4 main practices:

(1) Maximum ground coverage

(2) Minimal plowing and soil disturbance

(3) Differentiation of crop rotation

(4) Seedballs





 Sathya Sai Universe
saiuniverse.sathyasai.org

Sai Prema



the win-win-win papakonstantinidis model

PART III : PROPOSAL

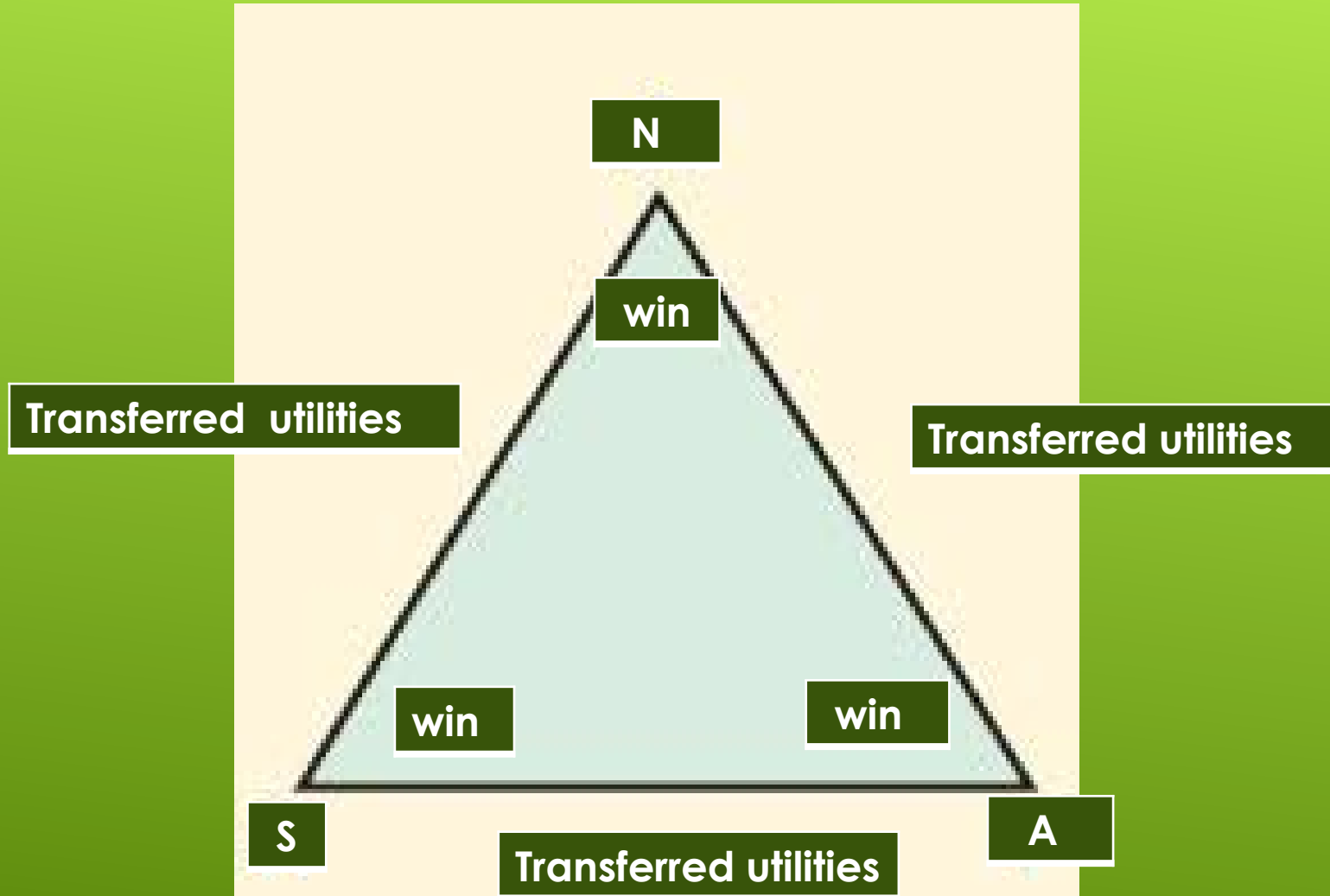
the win-win-win proposal based on transferable utility

Tripartite Transferable Utility (TTU) is a concept in cooperative game theory and in economics. Utility is transferable if one player can losslessly transfer part of its utility to another player. Such transfers are possible if the “players” (N-S-A) have a common currency that is valued equally by all:

Our proposal is based on the “TTU win-win-win papakonstantinidis model” especially on the 3rd player’s decision making

Methodological, the three players are substituted by “positions” and from then by the triple aim (1) Natural (Human) Health, (2) Soil Health-and (3) Agriculture Sustainability]

From “N” to “S” From “N” to “A” From “A” to “N” etc.: A triangular relation of the “bargain”



Suppose N, S, A are the functions of x, y, z

$$F(N, S, A) = \max$$

Standard form:

$$N_p + S_q = A \quad (1)$$

Also

$$p = \frac{\partial z}{\partial x}, q = \frac{\partial z}{\partial y}$$

Working rule: we find auxiliary equation for (1)

$$\frac{\partial x}{N} = \frac{\partial y}{S} = \frac{\partial z}{A} \quad (2)$$

functions x, y, z

(3) suppose $u = a \quad v = b \dots$ are 2 solutions of (1) which obtained by (2)

(4) Complete solution of (1)

$$f(a, b) = 0 \dots \text{or } f(u, v) = 0$$

From the above, it is resulted that Regenerative Agriculture leads the three “players” or “situations”, or “components” i.e Natural Health, Soil Health and Agricultural Sustainability, to the equilibrium in their maximum level, taking the Pareto Efficiency into consideration