



How to link efficiency and sustainability, meanings and opportunities

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A common terminology background

How is efficiency defined

There is a definition of **efficiency** for every scope we are considering



ECONOMIC efficiency

optimization of resources to best serve each person in that economic state



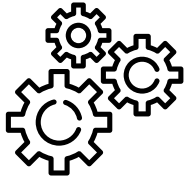
CODE efficiency

reliability, speed and programming methodology used in developing codes for an application



SOCIAL efficiency

takes into account all of the private and social costs and benefits of a decision/policy



MECHANICAL efficiency

ratio of the power delivered by a mechanical system to the power supplied to it



BEER efficiency

total potential gravity to be obtained from all grain in the recipe

A common terminology background

How is efficiency defined

Efficiency signifies a level of performance that describes using the least amount of input to achieve the highest amount of output



HOW WE CALCULATE THE EFFICIENCY

$$\eta = \text{energy output/energy input}$$

A common terminology background

How is efficiency defined

The human nature is to strive for increasing the efficiency. But, there are physical laws against us

SECOND LAW OF THERMODYNAMICS

Efficiency is never 100%

$$\eta \leq 1$$

We can strive to reach the upper limit of the system,
whichever it is (economic, social, mechanic and so forth)

But the efficiency will be always < 1



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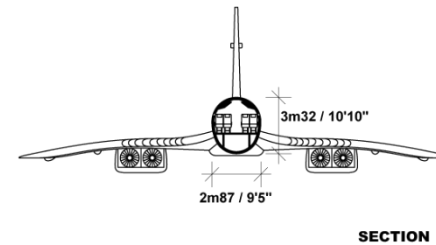
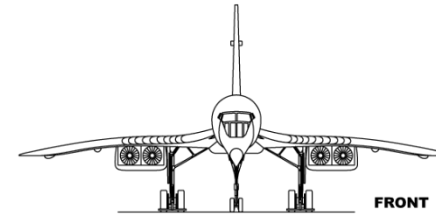
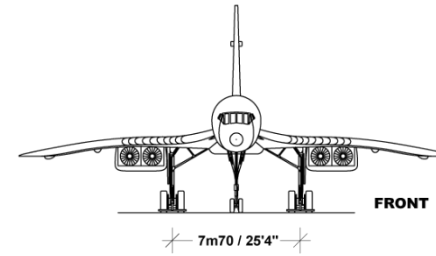
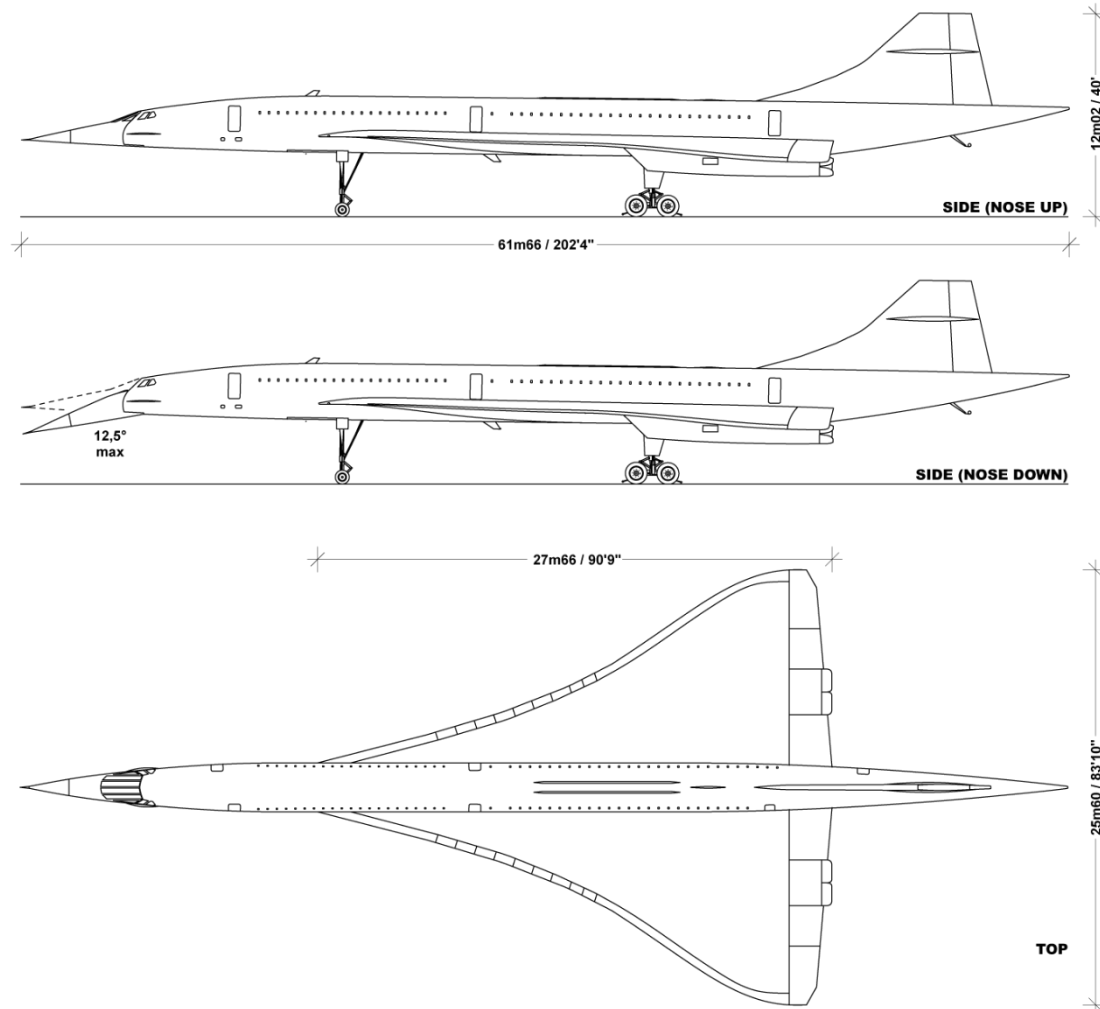
**Efficacy^{or}
Efficiency?**

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 **Valagro**[®]
Where science serves nature

Efficacy vs Efficiency

a common mis-understanding



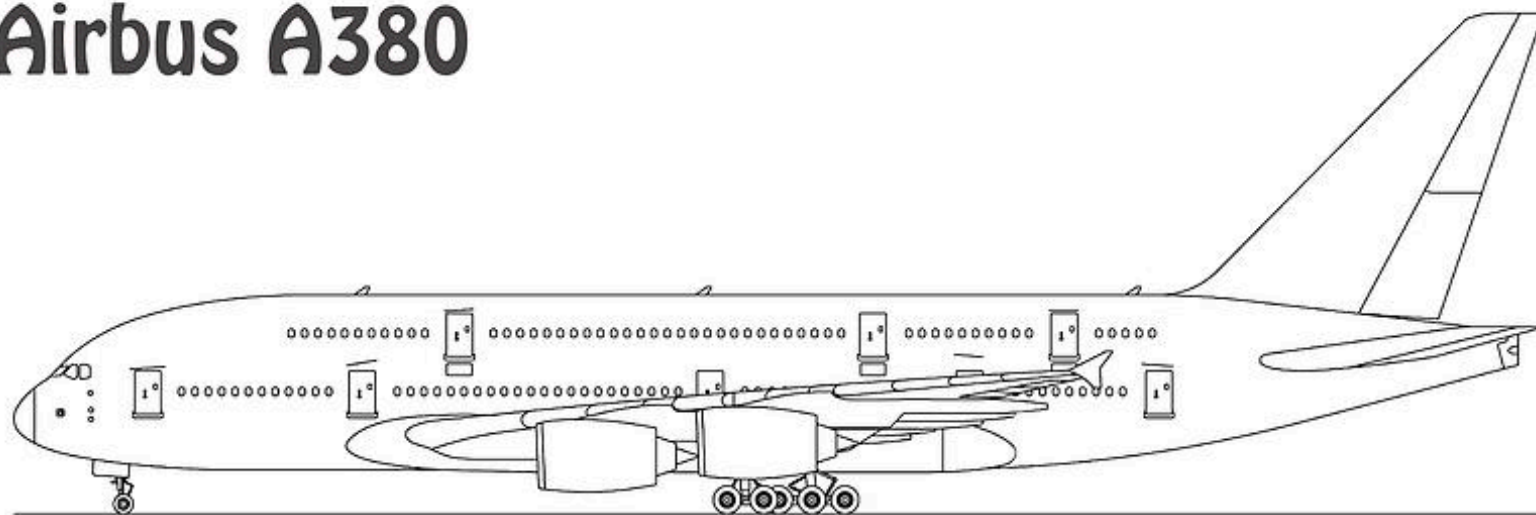
AEROSPATIALE / BAC
CONCORDE

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Efficacy vs Efficiency

a common mis-understanding

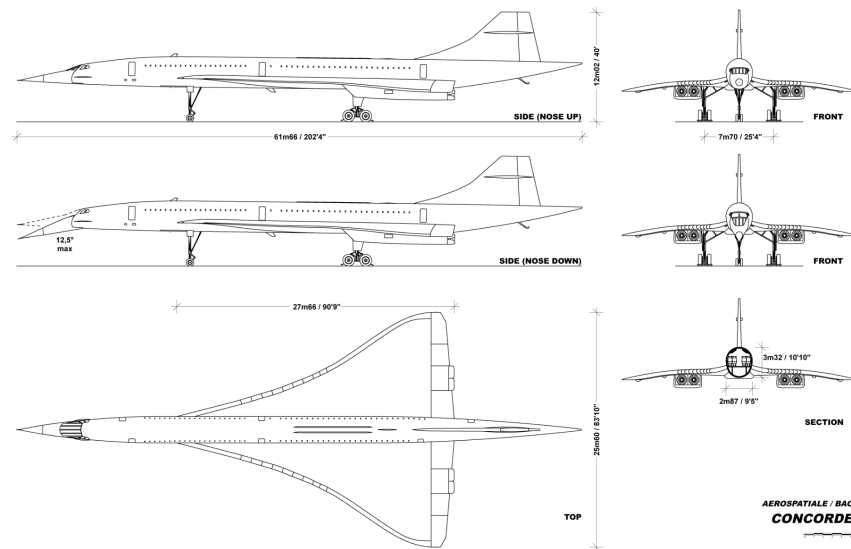
Airbus A380



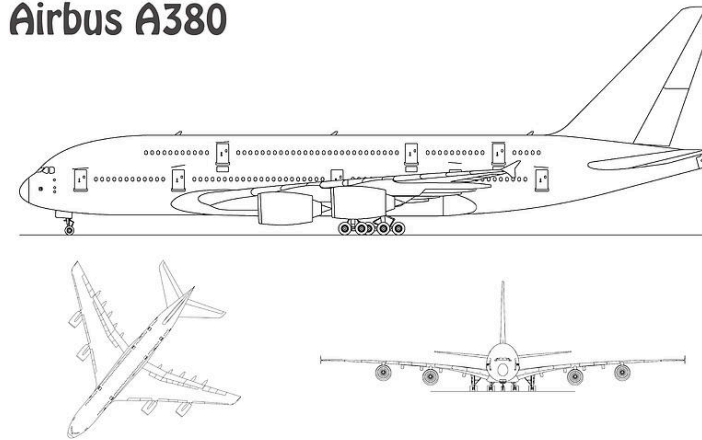
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Efficacy vs Efficiency

a common mis-understanding



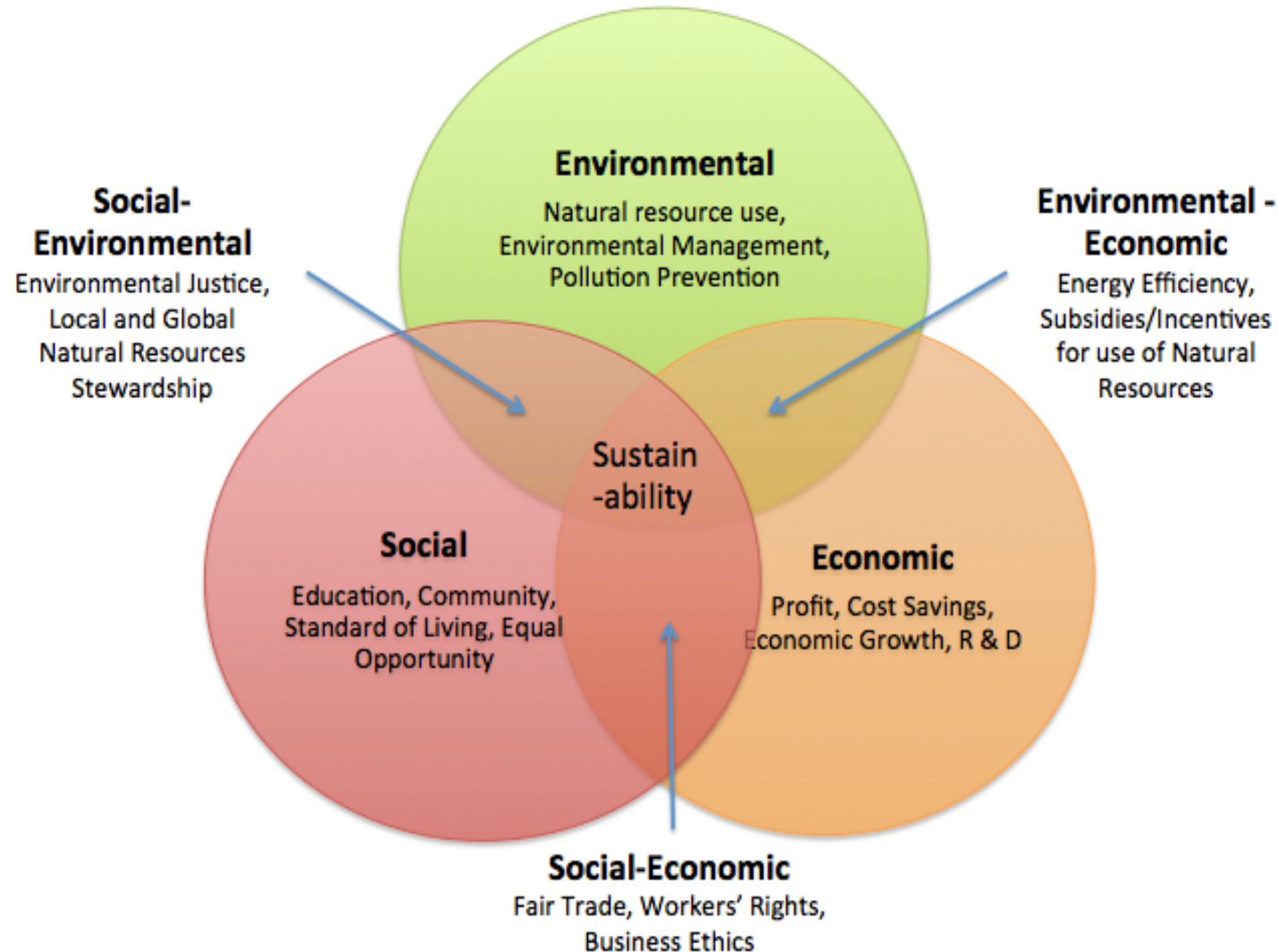
Airbus A380



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A common terminology background

How is sustainability defined



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Efficiency

Nowadays we are asked to be Efficient and Sustainable

Today the best option is the fastest and the biggest sustainable option

**-25%
LOWEST
FUEL
BURN**



LIGHTER

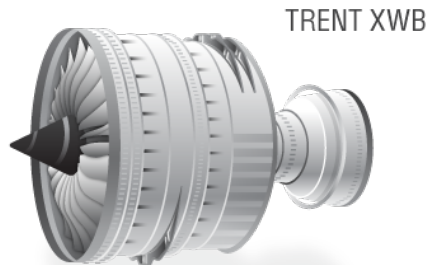


AERODYNAMICS



- VARIABLE CAMBER / DIFFERENTIAL FLAP SETTING
- OPTIMISED FUSELAGE CROSS SECTION

ENGINES

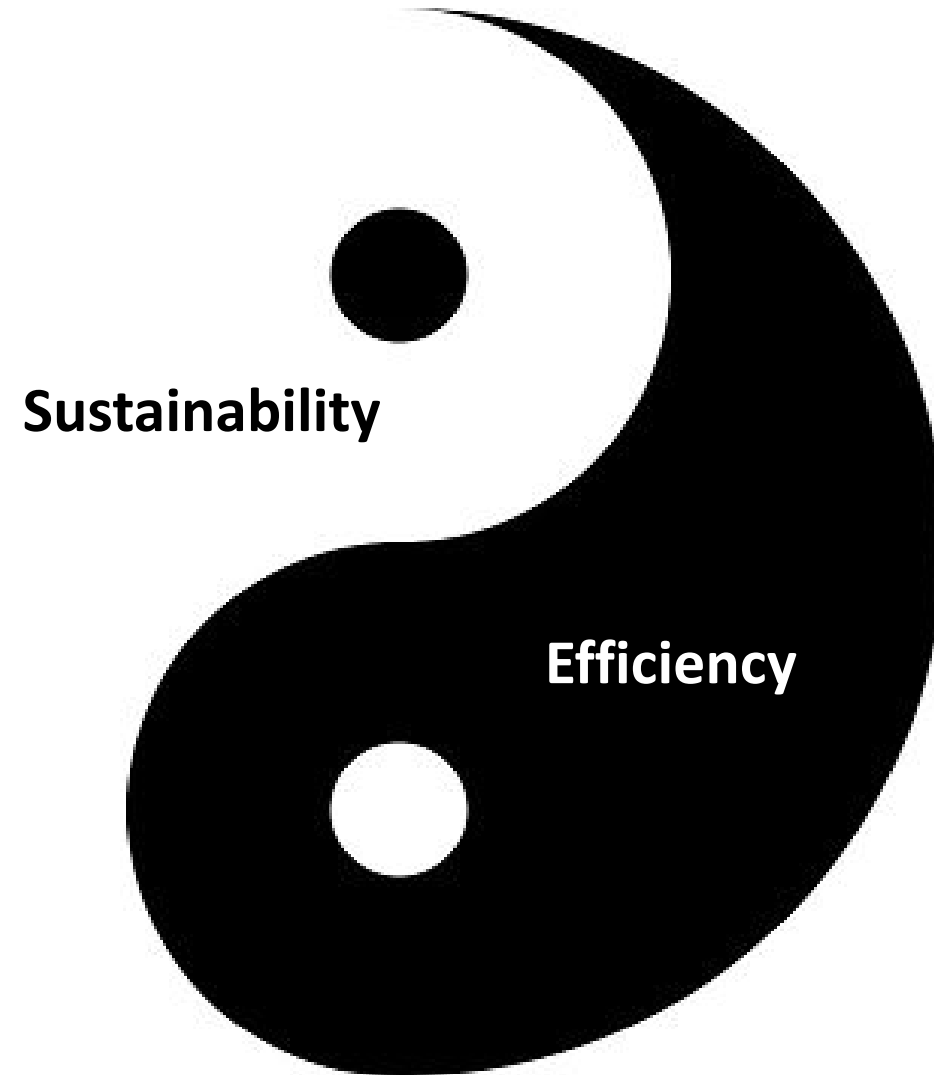


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Yin Yang

There is no Efficiency without Sustainability

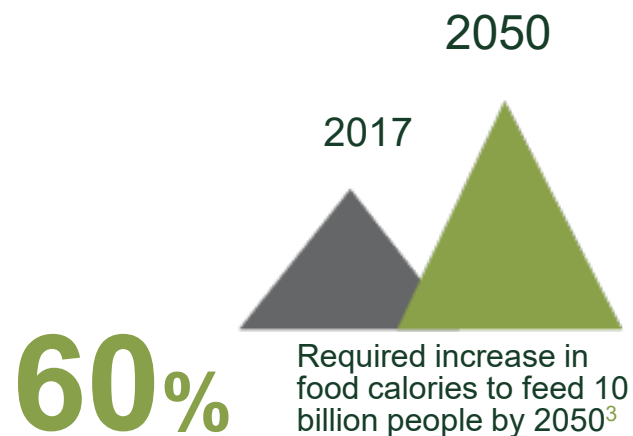


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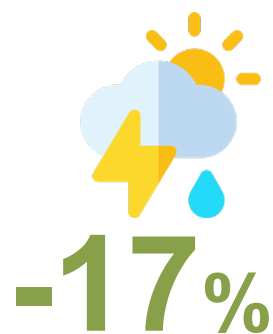
What about the agriculture

The Global food challenge – Efficiency and Sustainability are crucials

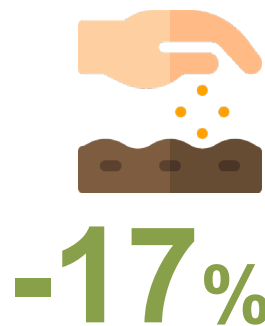
CLOSING THE FOOD GAP



FACING SCARCITY OF RESOURCES



Biophysical effect of climate change shocks on yields by 2050²



Declining hectares of farmland per capita by 2050²



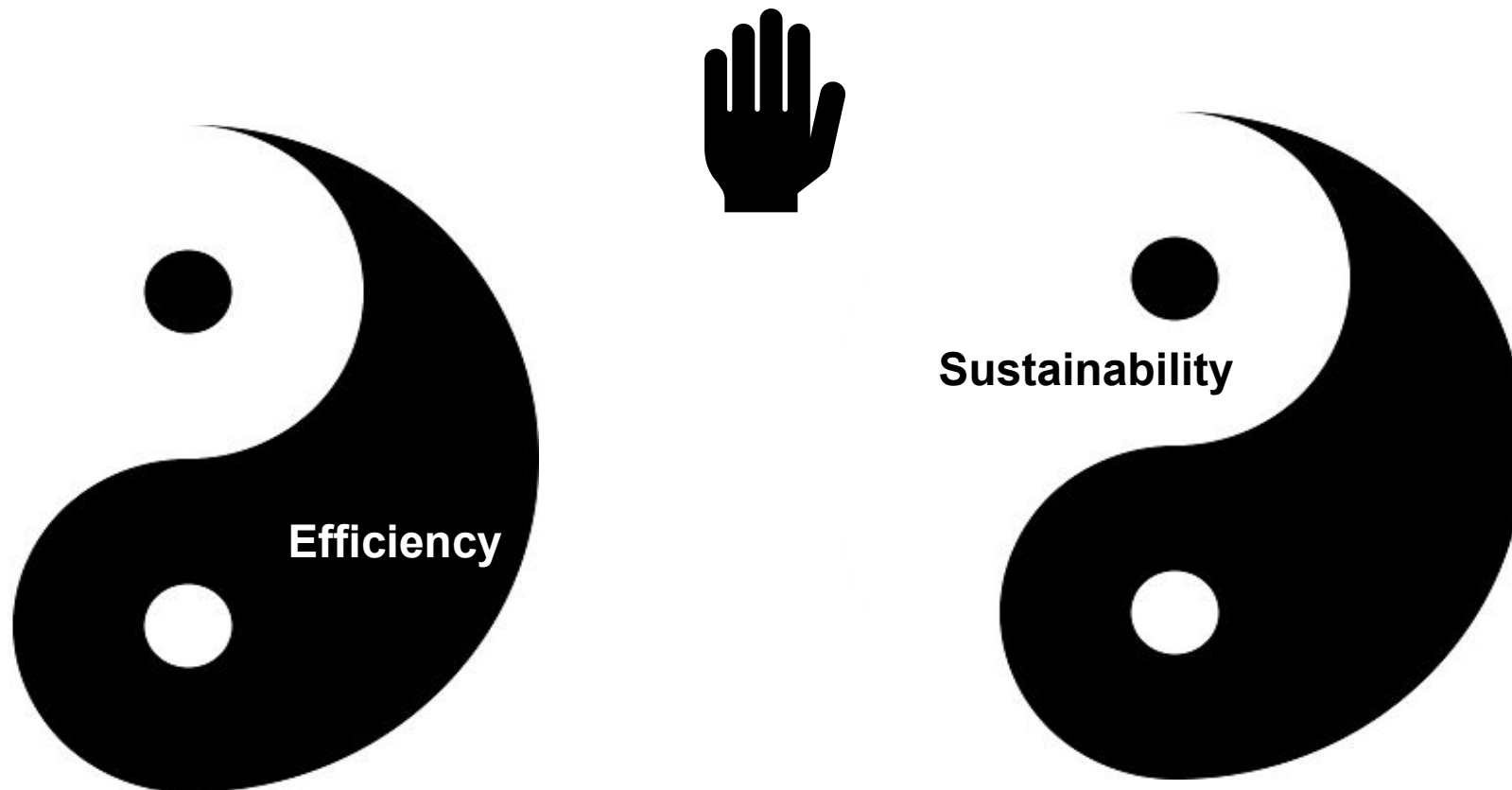
Global greenhouse gas emissions from agriculture³

1:United Nation2015 2:FAO2016 «Climate change and food security» 3:World Resources Institute

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Efficacy and Sustainability, How?

The today dilemma

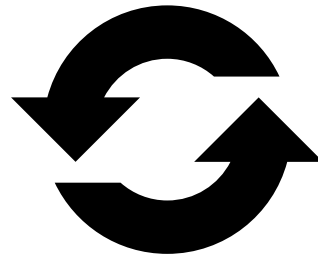


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What's the way forward?

Different ways – the conflict between organic and conventional farming

Bucolic (100% organic)



No vision (100% chemicals)



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What's the way forward?

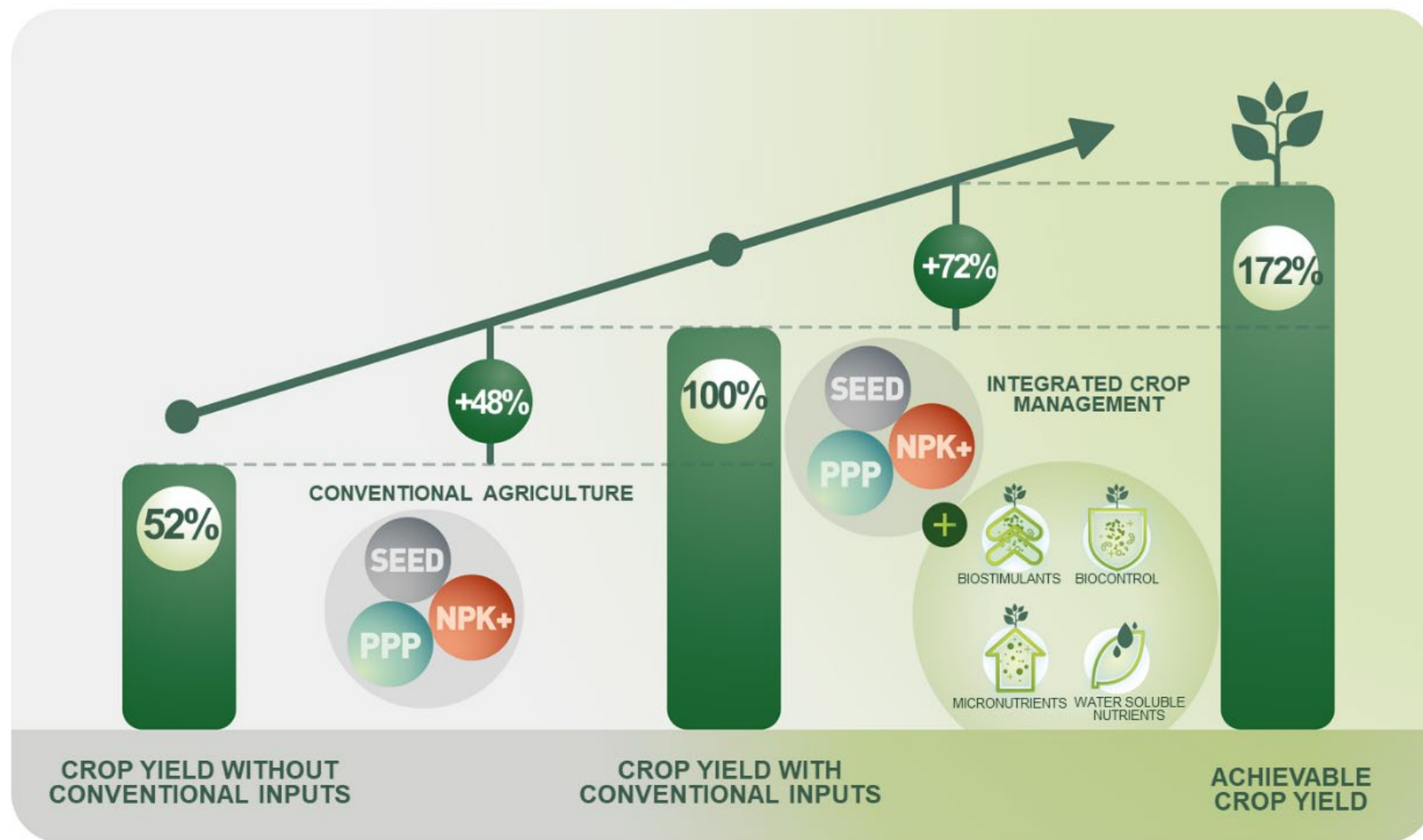
A third way – The Valagro Yin Yang



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The AG paradigm change

From conventional inputs towards the ICM – The Valagro offer to move from effectiveness towards sustainable efficiency



Source: UBS Expert Conference call on BioAgriculture presentation slide, 16 May 2014

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FOR YOUR ATTENTION!**

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