



More with Less

Welcome to the Precision Economy

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Why this book?

...because miracles still happen
...because precision will change the world
...because sustainability will be the driving force of a new economic wave
...and because energy will become cheap again
What do we mean by 'precision'?
Suggested further reading

Chapter 1. Precision in energy use and generation: living more comfortably with less CO₂

1.1. Peak global energy consumption, and 50% renewables in 2040
1.2. The silent miracles of energy efficiency
1.3. A transition ready for take-off
1.4. Couldn't we just capture CO₂?
1.5. Infrastructure, the decisive factor in the energy transition
1.6. The potential of renewable energy
1.7. How far the wind might blow
1.8. The sun is (not) always shining
1.9. Ever moving water
1.10. Biomass, yes or no?
1.11. What about new energy technologies?
1.13. Geopolitical impacts
Suggested further reading

Chapter 2. Better nutrition with precision agriculture

2.1. Horticulture as the testing ground for precision agriculture
2.2. Some history: the Green Revolution
2.3. Feeding 10 billion people, the ingredients
2.4. Precision agricultural technology and biological control
2.5. Do we need genetic engineering?
2.6. Precision animal husbandry

- 2.7. Precision in the food chain
 - 2.8. Proteins, the critical food ingredient
 - 2.9. Synthetic food?
 - 2.10. World food supply and the biobased economy
 - 2.11. Conclusion: will precision agriculture meet the timeline?
- Suggested further reading

Chapter 3. Ultimate precision: chemical and biological catalysis

- 3.1. What is catalysis?
 - 3.2. Catalysis in petrochemical industry
 - 3.3. Classical catalysis in fine chemicals and medicine
 - 3.4. Enzymes, catalysts from nature
 - 3.5. Enzymes in chemical industry
 - 3.6. The biological cell as an integrated reactor
 - 3.7. Precision and genetic engineering
- Suggested further reading

Chapter 4. Precision by learning from nature

- 4.1. What we most certainly did not learn from nature: waste production
 - 4.2. Precision materials
 - 4.3. Precision engineering: biomimicry
- Suggested further reading

Chapter 5. Green materials: building blocks of the future

- 5.1. Precision by complexity
 - 5.2. From vegetal oils and fats to bioplastics
 - 5.3. Sugars, starch, cellulose and chitin
 - 5.4. Vegetal proteins
 - 5.5. Natural fibres and lignin
 - 5.6. Vegetal specialties
 - 5.7. CH₄, CO and CO₂ as building blocks
- Suggested further reading

Chapter 6. The precision society

- 6.1. Precision manufacture: the world of Lean
 - 6.2. Commitment, the social side of precision
 - 6.3. Removing waste from transport systems
 - 6.4. Precision health care
 - 6.5. The sharing economy
 - 6.6. The circular economy
 - 6.7. Government policy and the dynamics of innovation
 - 6.8. Rethinking economic growth
 - 6.9. Precision, a new social ethos
- Suggested further reading

Epilogue