

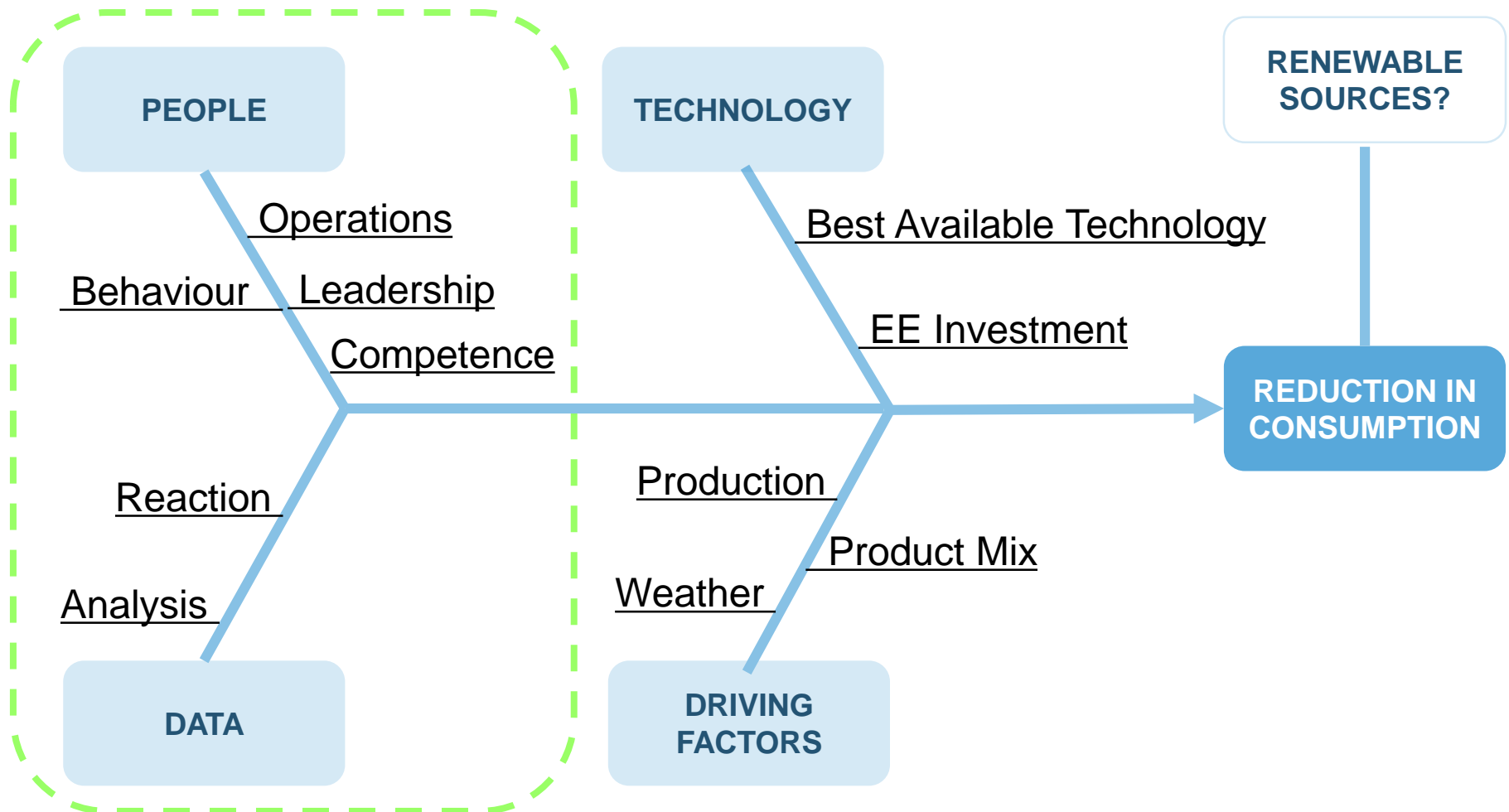
Energy efficient design and energy management systems – the start to finish solution

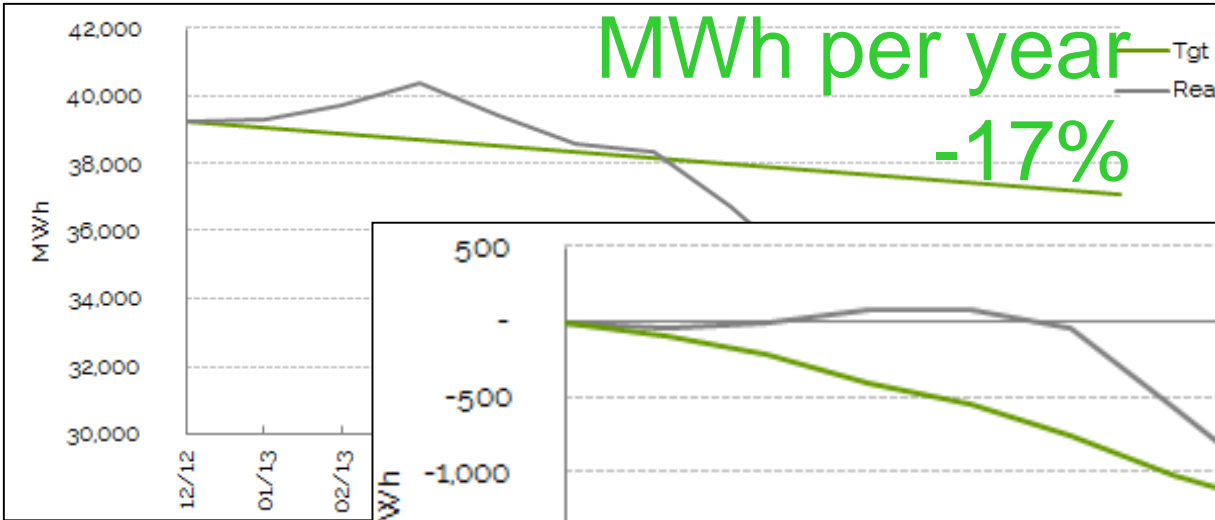
**Creating the Business Case for Energy Efficiency:
Engaging Governments with Industry**

Astana, 13 June 2017

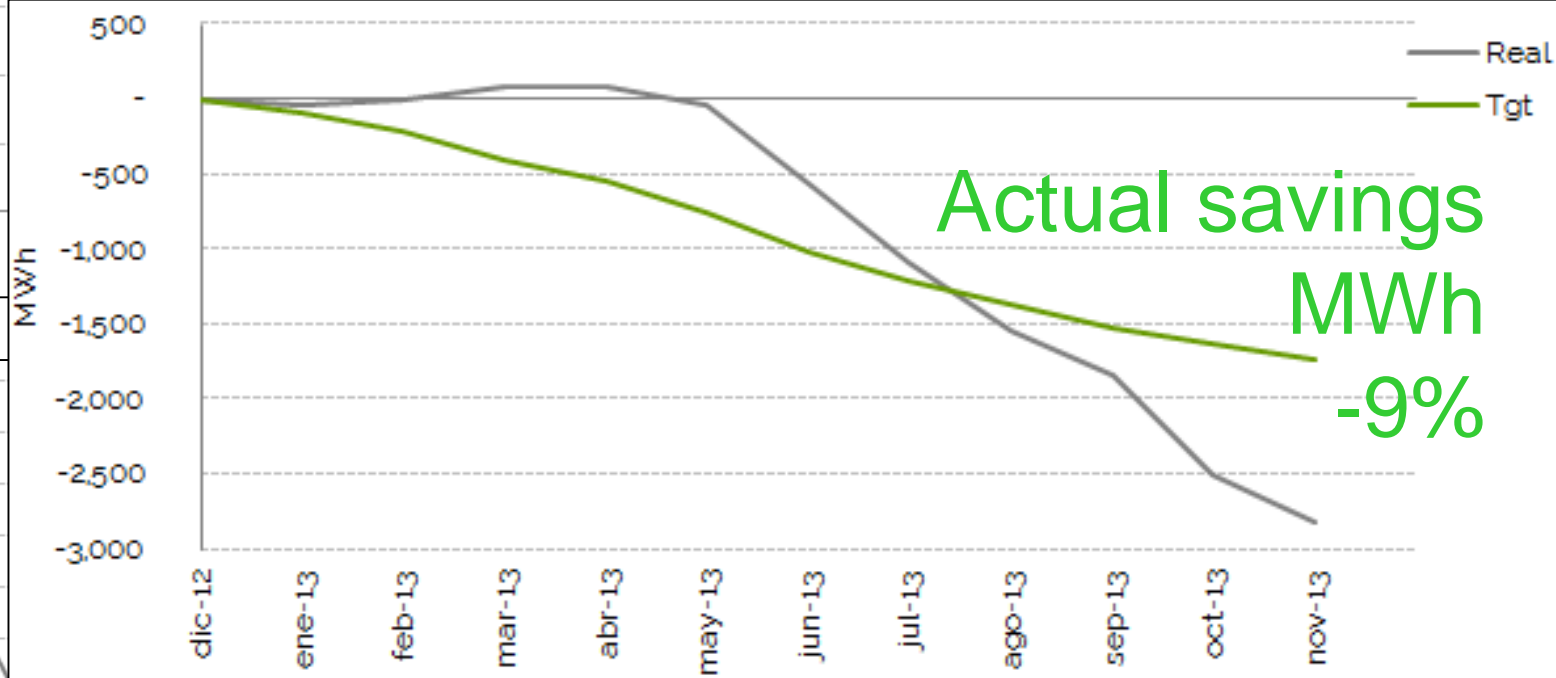
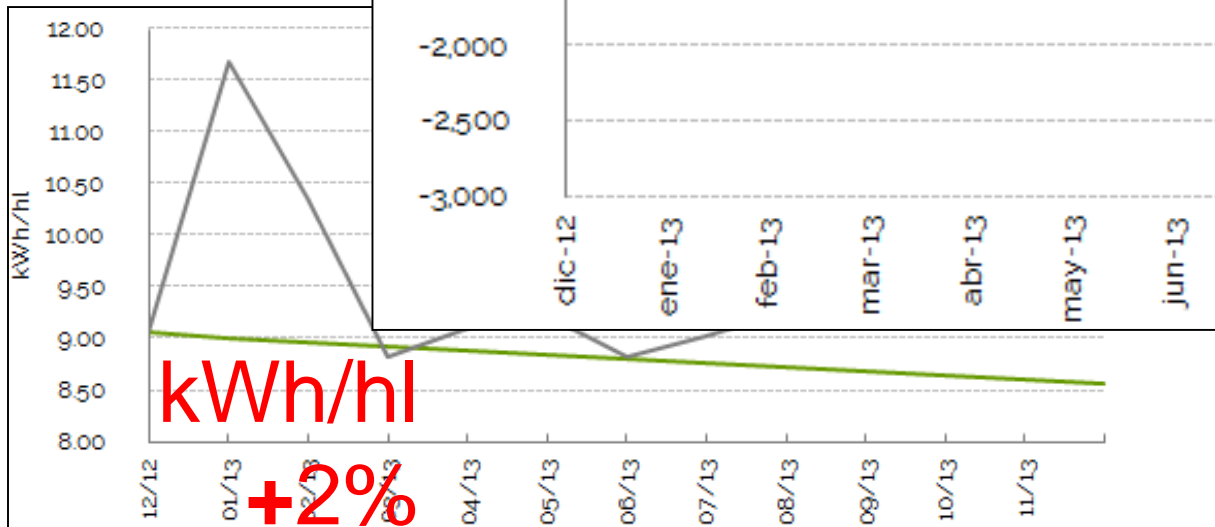
Liam Mc Laughlin

How to reduce energy consumption





Measuring savings



Drinks industry

Impact of People

- Leadership, support and energy knowledge of top management
 - Rational decision making
- Roles and responsibilities
 - Resources
- Operational control
 - Training and behaviour change
- Understanding of energy performance measurement
 - Education and training
- Change management
 - Reduction of barriers especially at middle levels

Technology – Energy Efficient Design

- **Bioclimatic design principles**

Application of the concept to industry

- Renewables
- Alternatives

Challenge energy service

Use/Distribution/Control

Generation

- Is BAT enough?
- Total cost of ownership
- Solution
 - Capacity building of designer competence

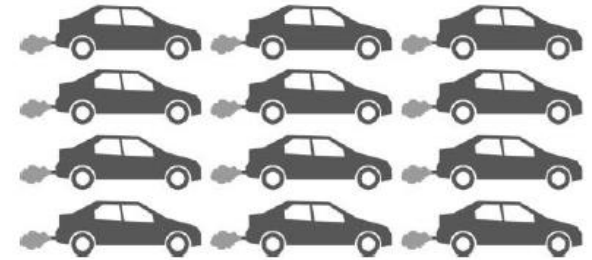
7,000 GWh saved in UNIDO program



Annual energy consumption of 1,150,000 EU households



Annual energy production of 700 X 3 MW wind turbines



CO2 emissions of 1,750,000 middle class cars (running 12,500 km per year)

- ✓ Annual cost savings of **USD 80,000,000** (2015) **without considering non-energy benefits**
- ✓ Cumulative CO2 emission reductions of about **4.3 million tCO2**