



Integrating life cycle analytics into feed formulation for a more sustainable value chain

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The global challenge for sustainable protein is significant & pressure is increasing on feed to deliver

Investors

The inescapable truth for **the meat sector** is that it **must adapt to climate change or face ruin** in the years ahead. Conversely, **there is enormous upside** if the world's meat companies align with a **climate-friendly path**.



Policymakers



Retailers and consumers

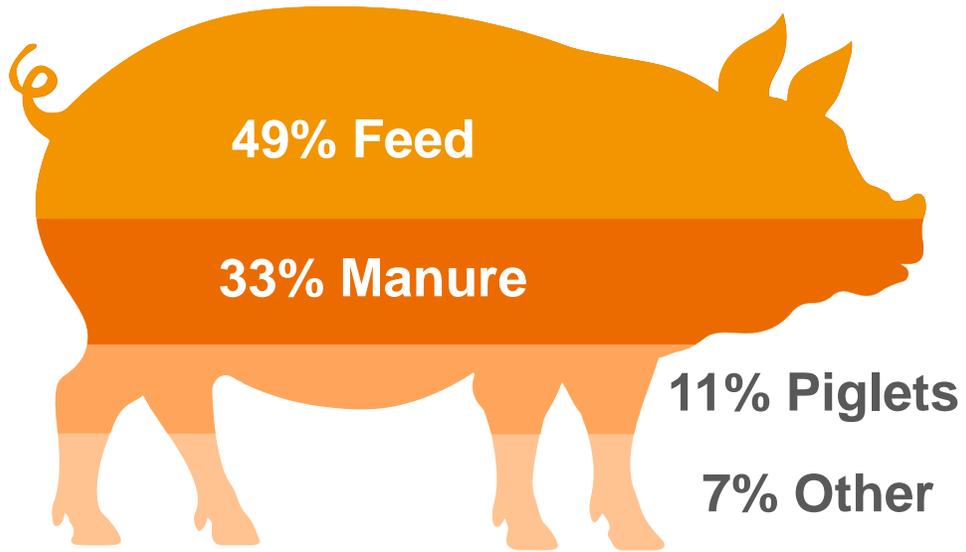


>60 retailers with SBTs, many with **Scope 3 targets**.

Feed production is the greatest contributor to environmental impact in livestock

- Other
- Manure
- LUC*
- Feed
- Enteric fermentation

Pork supply chain's contribution to aggregated environmental impact



Source: BASF & LfL (2018), German pork production (according to EEA 10 methodology),

Livestock supply chain's contribution to climate change

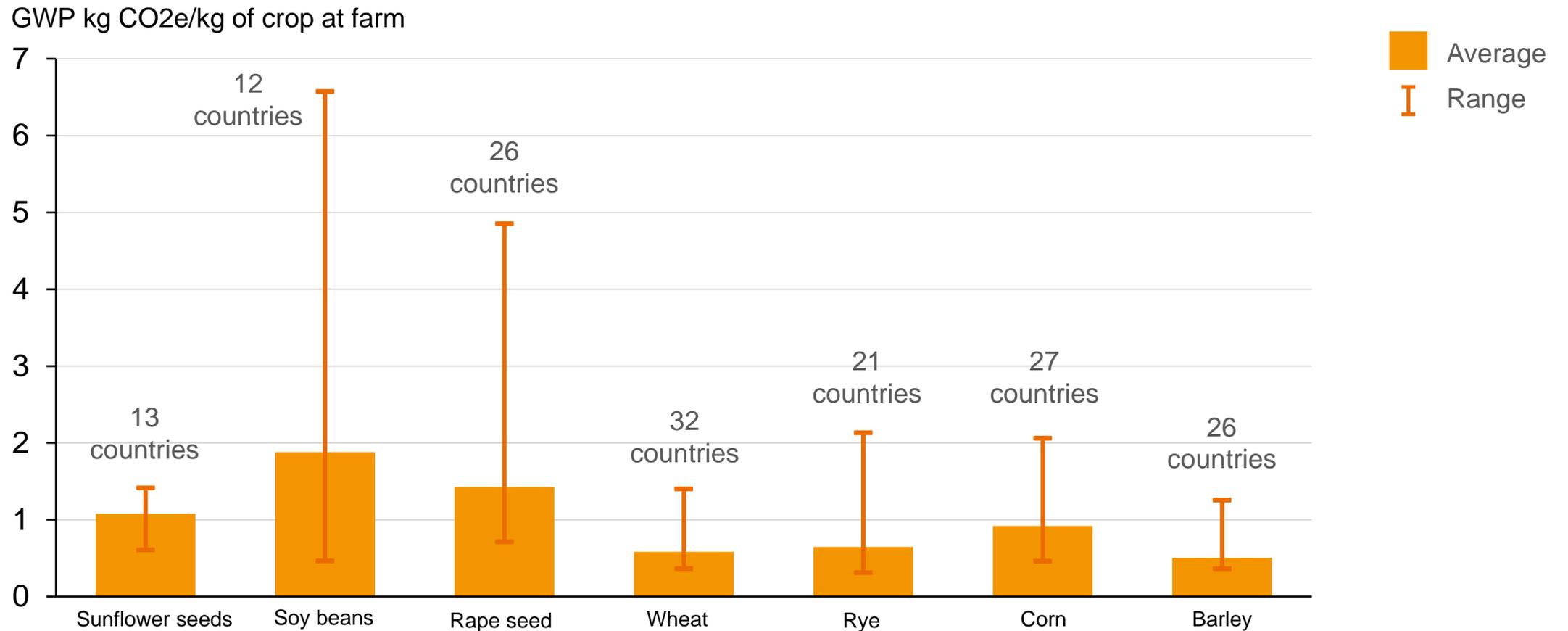


Source: Gerber et. al. (2013); Tackling climate change through livestock, FAO; global emissions from supply chains; *LUC: Land use change from pasture expansion or soybean expansion

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Environmental footprint of feed ingredients varies significantly by ingredient & by origin

Example: carbon footprint



Source GFLI 2020, GWP, incl LUC, economic allocation

How you design feed makes a difference for the **environment**



Standardized methodology & data enable a digital and sustainable value chain



Digitally integrated value chain Primary data flows



Interconnectivity Seamless integration into existing software solutions



Tools Dynamic LCA tools for nutritionists, formulators & farm advisors



Data Reliable & consistent regionalized feed ingredient data



Methodology Harmonized & accepted LCA guidelines & impact assessment methodology

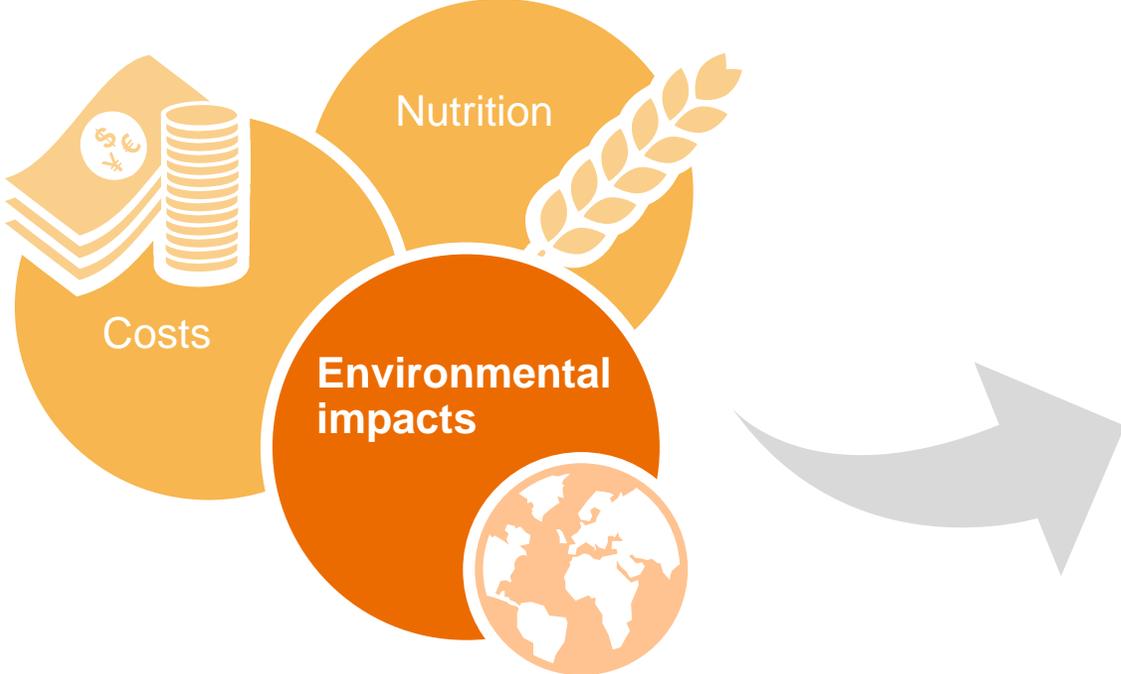


Animal protein value chain environmental metrics journey

Establishing interconnected tools

Minimizing environmental impact as the third pillar in feed formulation

Feed formulation software



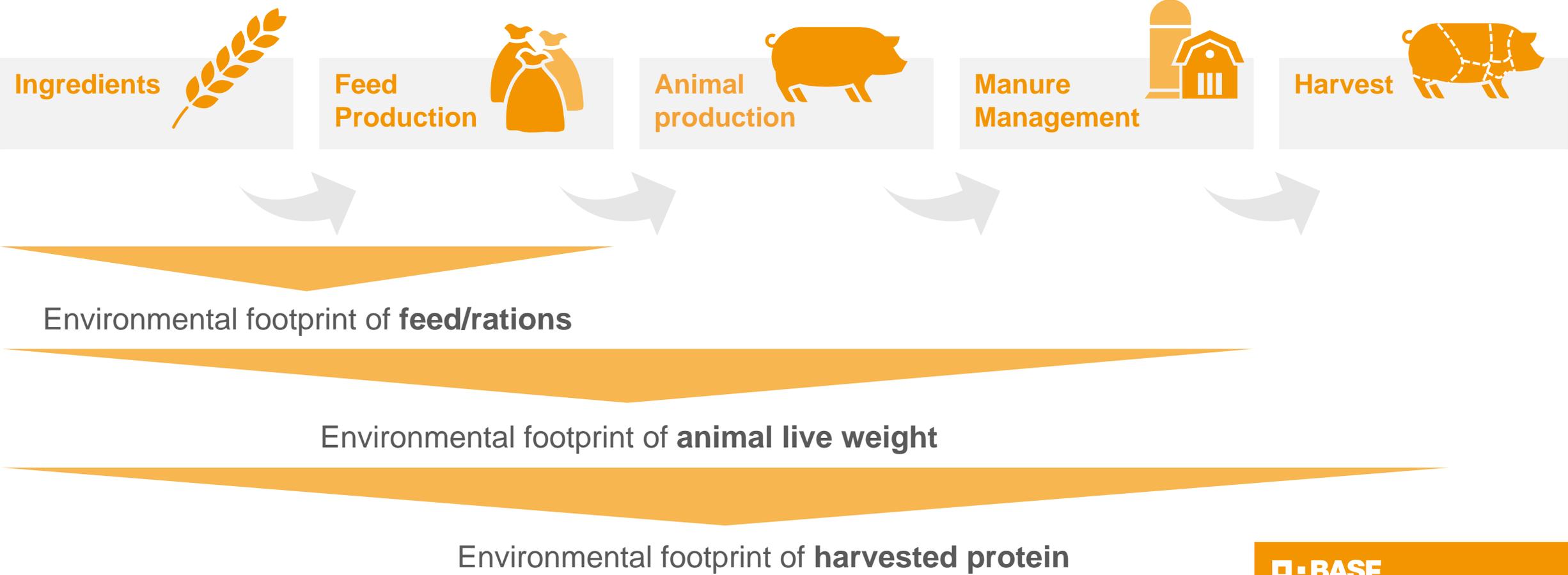
LCA tools at nutritionists' fingertip



New dimension in ration design

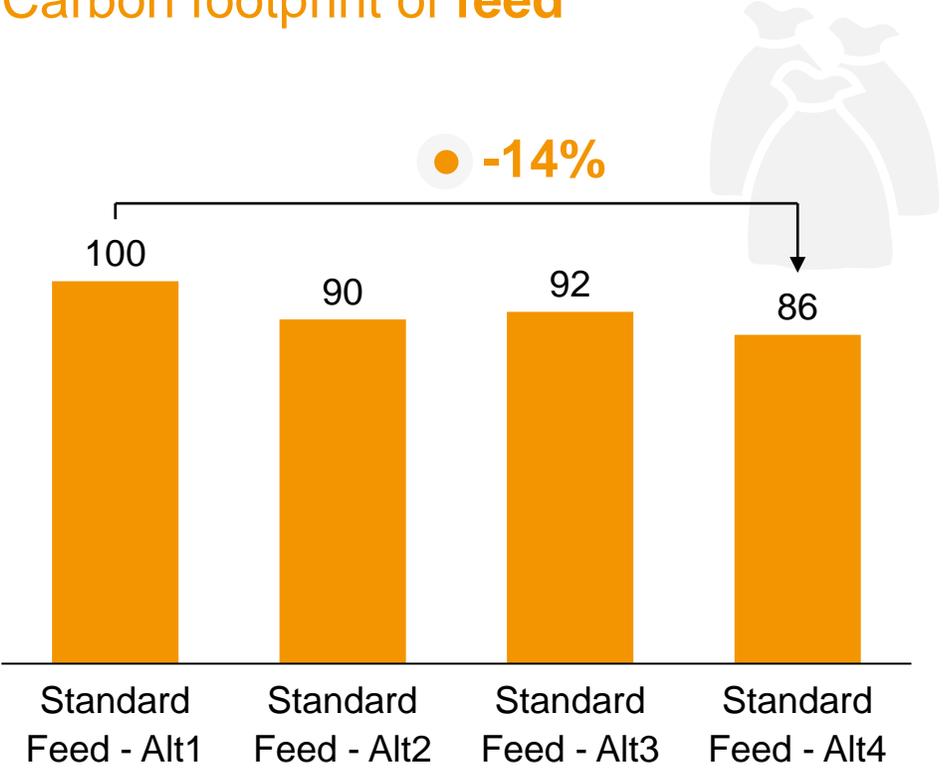
Assessment of feed impact should not stop at feedmill gate

Critical interconnected impacts with animal production & excretion



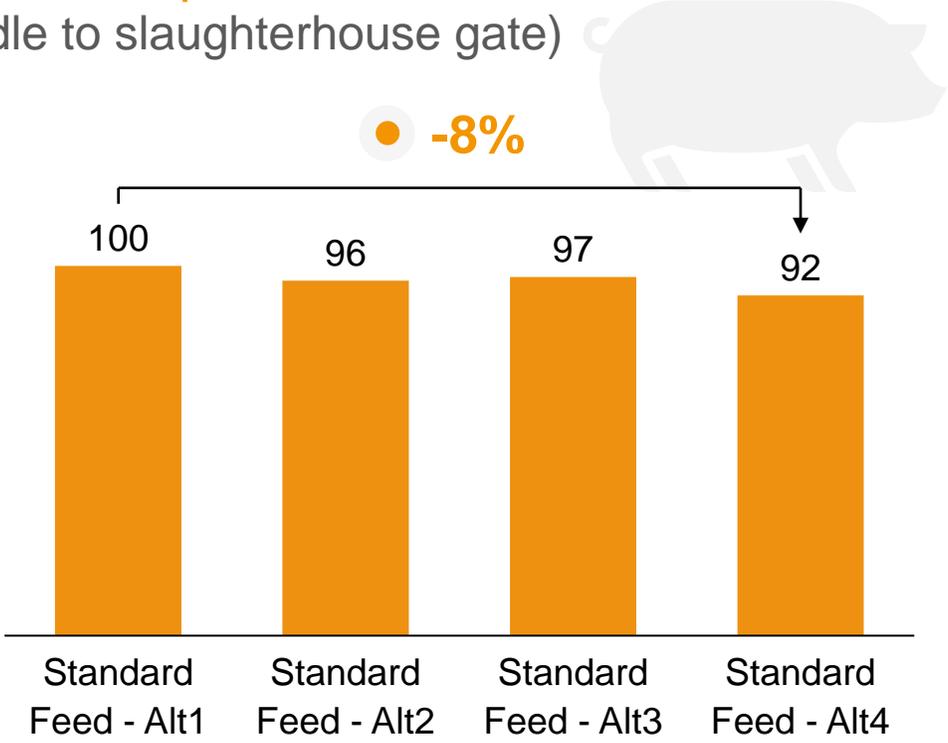
Least cost variants of same feeding can concept vary in footprint

Carbon footprint of feed



Carbon footprint of meat

(cradle to slaughterhouse gate)



Sustainable feed formulation is a cross-functional task

Nutritionists and formulators have a crucial role



Value chain

- Feedmills, integrators & animal producers
- Opportunities with brands & retailers

Roles

- **Shifting away** from sustainability roles as the single-point of accountability
- **Everyday application** by feed formulators, animal nutritionists, farm consultants
- **Together** with sustainability, strategy, & marketing

Integrating LCA into feed formulation

The user's benefits at a glance



Opteinics by BASF

Join our live webinar “How Feed Formulation Analytics can Reduce Animal Protein Footprint”

Scan me to
sign up!

March 23,
3PM CET / 10AM EDT

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basf.com/opteinics

Our launch webinar includes:

- Live Demo of the solution
- Real use cases
- Scientific background

Contact

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We create chemistry