Imagine change
Safer Substitution
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DRIVING THE TRANSITION

Starting from safe use of chemicals, Apeiron guides its clients to sustainable, future proof business operations.
Stepping up from "LINEAR-IN-A-CIRCLE" to "CIRCULAR"

Optimization of the parts
One party can be dominant
MY GAIN = YOUR LOSS

Linear-in-a-circle
= Bilateral system

OR

Optimization of the system
as result of trust & stability
WIN-WIN

Circular
= Ecosystem
CHALLENGES
large & versatile

RESOURCES
are not infinite
REACH Authorisation & Restriction drive substitution

But was it always for the better? in the bigger picture of the Green Deal

Or can we improve?
Chromium(VI)
Real life example: sum of 3 Cr(VI) authorisations

Investment (NPV)
ca. 161.500.000€

€ HH during review period
= ca. 225.000€

0.0056
total fatal cancers cases per year

3
GOOD HEALTH AND WELL-BEING
Is this 161 mio€ from the applicants, money well spent for SOCIETY?
161 mio€ Investment

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hectare trees</td>
<td>317,300</td>
<td></td>
</tr>
<tr>
<td>Ton CO₂/yr</td>
<td>1,073,500</td>
<td>= 107,350 Belgians (CO₂ emission)</td>
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<tr>
<td>Cash crops/yr</td>
<td>5,288,333€</td>
<td>Gum, balanites oil</td>
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<tr>
<td>Grass/yr</td>
<td>3,807,600€</td>
<td></td>
</tr>
<tr>
<td>Direct employment</td>
<td>380,000</td>
<td>= 1,331 villages</td>
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<tr>
<td>Indirect employment</td>
<td>380,000</td>
<td></td>
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</tbody>
</table>
161 mio€ Investment

Investment (NPV) ca. **161,500,000€**

**471,000,000€** *

*NPV (4%) 20yrs
incl. cash crop, grass, CO₂ capture
HH cost of Cr(VI) use deducted
INDIRECT IMPACTS

PLANET

PEOPLE

PROSPERITY

PARTNERSHIPS

PEACE (STOP MIGRATION)
Alternatives Assessment of Investment

Alternative A: Substitute SVHC

Alternative B: Make dessert green

Investment (NPV) ca. 161,500,000€

Investment (NPV) ca. 471,000,000€
Diglyme substitution
real life example

Use of diglyme as a solvent for the synthesis of the anti-HIV API
Diglyme substitution

Investment for substitution: 2-5 million€

€ HH during review period = 0€

Cases of male infertility
Adequate control of the use
2-5 million € Investment

Investment for substitution
2-5 million €

More vaginal rings = 300-750 women without HIV
Analysis of Alternatives of Investment

Alternative A: Substitute SVHC

Investment for substitution 2-5 million€

€ HH during review period
= 0€

Cases of male infertility
0,0

Adequate control of the use

Alternative B: Safe Women in Africa

Investment for substitution 2-5 million€

More vaginal rings = 300-750 women without HIV
Was it always for the better?

**Regrettable substitutions** in terms of overall risk (Cr(III) still leads to Cr(VI) exposure higher up in supply chain), societal benefits & waste of resources
Safer Substitution

Holistic Approach

Comparative Risk Assessment
- Hazard & Risk
- Climate
- Circularity (not just recyclability!)
- Resource depletion

over the life cycle of substance & product

Using resources smartly

= SUBSTITUTION PRIORITY SETTING

First S(VH)C with maximum positive impact for society

The rest later
Improved Authorisation Process

• Implement very low risk model → CSR first, then decide on need for AoA & SEA or compensation mechanism

• No exemptions (intermediates, manufacturer, ...)

• Involve the user of the S(VH)Cs!
  - Every user (or group), M/I makes authorisation CSR, incl. measurements → it’s a burden, but leads to safer use!
  - With information duty to the workers on yearly measurements
  - ECHA to extend its hazard database with monitoring data → important information for substitution priority setting

• If CSR demonstrates very low risk, then compensation to offset “remaining harm” = Clean Development Mechanism for S(VH)Cs

• Stop export of our EU’s risk! (e.g. chrome plating, solvents)
  → Import tax for articles made with S(VH)C but no longer containing it
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