Workshop Report

Defining the path to a non-toxic Circular Economy
A "Theory of Change" workshop enabling the EU Green Deal

Workshop co-organised and co-hosted by BEF Germany and the research group sofia, supported by the EU LIFE project AskREACH.

Held in two online sessions (11 and 12 November 2021)
as part of the ISC3 Global Sustainable Chemistry Week.

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Contents

1 The European Green Deal and its subsequent strategies and policies

The European Green Deal aims at "transforming the EU's economy for a sustainable future".[1] A resource-saving "clean and circular economy"[2] capable of avoiding risk cycles of (legacy) substances of concern is a key component of this transformation. The European Green Deal and subsequent strategies and policies comprise various mechanisms and instruments tackling, inter alia, product design and information in the supply chain (e.g. the Sustainable Product Initiative), legal requirements on chemicals in products (e.g. the Chemicals Strategy for Sustainability[3]), consumer empowerment towards informed choices based on trustworthy information on the environmental performance of products (e.g. measures to prevent "green washing", or the "right to repair" in the Circular Economy Action Plan[4]), and finance (e.g. the EU Taxonomy Regulation[5]) to facilitate this transformation.

Nevertheless, the complexity of the different European Green Deal components currently hampers a clear understanding of how the long list of measures envisaged in the various policies and strategies create impact – from short-term to long-term – and which actors along the multiple supply chains need to provide which behavioural (change) contributions in this respect. Against this backdrop, the EU-LIFE project "AskREACH",[6] represented by the Society for Institutional Analysis (sofia) and the Baltic Environmental Forum in Germany (BEF), conducted a "Theory of Change" workshop as part of the ISC3 Global Sustainable Chemistry Week in November 2021.[7] The workshop aimed to explore how Green Deal policies influence each other to gain a better understanding of necessary steps towards the vision of a non-toxic circular and climate-neutral economy by 2050 as foreseen in the Green Deal.[8]

This contribution summarizes main outcomes of the workshop. First, it describes the methodology underlying the workshop (chapter 2) and then presents the main findings from the participants' deliberations (chapter 3). Chapter 4 highlights the conclusions. The aim of this contribution is to show decision-makers the need to critically examine the interactions of policy instruments in a comprehensive approach. In this respect, the report also provides first findings. Another conclusion is that a similar workshop set-up can attain more relevant results under modified methodical conditions.

2 Methodology

The "Theory of Change" concept combined with elements from scenario building constitutes the key methodological foundation for the workshop. "Theory of Change" (ToC) describes the idea of how actors relevant in a certain context specifically interact to bring about a desired change. This includes identifying key influencing factors relevant for these contexts and their interactions. At the same this is methodologically consistent with the procedure in a scenario process.[9]

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[1]   European Commission, 2019, p. 4.

[2]   European Commission, 2019, p. 7.

[3]   European Commission, 2020b.

[4]   European Commission, 2020a, p. 5.

[5]   Regulation (EU) 2020/852.

[6]   See www.askreach.eu.

[7]   See https://www.isc3.org/en/event/global-sustainable-chemistry-week-2021.html.

[8]   In the introduction to the Green Deal, the Commission describes it as "a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use. It also aims to protect, conserve and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts", (European Commission 2019, p.1).

[9]   Geschka et al., 2008. See Schenten / Rehn 2021 for the methodological integration.

Ultimately, contributions from various actors are necessary to initiate the transition towards the vision of a non-toxic circular economy. The entire range of actors (inter alia industry, consumers (associations), policy makers, NGOs and research) should participate in the ToC process. This gives the discussion the required plurality since the actors approach the topic with different experiences, professional backgrounds, thinking styles and resulting perceptions.[10] In the workshop presented here the participants assigned themselves mostly to the fields academia, administration and government, with minor representation of industry and NGOs.

2.1   Adaptation of the "Theory of Change" course of action

Usually, developing a ToC is a lengthy process.[11] The workshop was part of the ISC3 Global Sustainable Chemistry Week and took place separated in two parts on the 11th and 12th of November 2021. About 20 participants from different European countries joined the three hour (digital) sessions. The facilitating team therefore had to focus the methodological approach mainly on analysing the effects of several EU Green Deal policy areas on each other using cross-impact analysis.

In preparation of the workshop, the team selected six policy areas relevant for the ToC: *climate change policies*, *chemicals policies*, *product and waste policies*, *value chain interaction policies*, *consumer empowerment policies* and *green finance policies.* The first three policy areas can be described as providing the goal and rule sets for the vision of a non-toxic (*chemicals policies*), circular (*product and waste policies*), and carbon-neutral (*climate change policies*) economy by 2050 and the path to get there. The following three policy areas, *value chain interaction, consumer empowerment,* and *green finance policies*, rather facilitate and accelerate the realisation of this vision. As the vision derives from the objectives of the EU Green Deal, the EU Green Deal also forms the basis for the definitions of the individual policy areas. The planned measures, proposals and strategies of the EU Green Deal allocate to the six policy areas. This results in a description and explanatory examples of measures for each policy area.[12] All workshop participants received a document defining the influencing factors some time before the sessions.

Table 1 Impact Matrix applied for the cross-impact analysis of Green Deal policy areas

	Climate change policies	Chemicals policies	Product & waste policies	Value chain interaction policies	Consumer empowerment policies	Green Finance policies
Climate change policies		?	?	?	?	?
Chemicals policies	?		?	?	?	?
Product & waste policies	?	?		?	?	?
Value chain interaction policies	?	?	?		?	?
Consumer empowerment policies	?	?	?	?		?
Green Finance policies	?	?	?	?	?	

During the workshop, the participants discussed the interactions of the six policy areas in a *cross-impact-analysis*. An *impact matrix* helps to structure the discussion and to show the impact of one

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10   Belcher and Claus, 2020.

11   Belcher et al, 2020.

12   See chapter 3 for the description of the policy areas.

influencing factor (i.e. one of the policy areas) in a row on the subject matter of other influencing factors (i.e. the other five policy areas) listed in the columns. *Table 1* shows the applied impact matrix. The impact is then described in four gradations: no influence at all (0), weak influence (1), moderate influence (2) and strong influence (3).

In the end, the matrix identifies driving factors, with a high influence on the other factors, and driven factors, which are strongly influenced by the other factors. In addition, the matrix shows the degree of connection between all the influencing factors. This approach derives from the "Szenariotechnik" method by Horst Geschka.[13] In that process, there have been evaluations for which participants could not reach consensus on a single value. In this case, a range of two values was assigned, thus resulting in two scenarios (see section 3.7) for the analysis.

2.2 Completion of the impact matrix as a common learning process

There are two benefits to working with the impact matrix: the actual outcome – a completed matrix – and the process to get there. Ranking the extensive and diverse linkages of the policy areas on a simple scale of values reduces the complexity to a level that allows for a structured discussion. The values therefore support the qualitative reasoning in deriving trends of the mechanisms of impact, rather than providing quantitative significance. In the end, this process can result in a common understanding among the participants of how the factors (i.e. the policy areas of the European Green Deal) influence each other with regard to the vision of a non-toxic circular economy and climate neutrality by 2050.

3 Results with regard to the six policy areas

The findings of the discussion regarding can be structure along the six policy areas, climate change policies (section 3.1), chemicals policies (3.2), product and waste policies (3.3), value chain interaction policies (3.4), consumer empowerment policies (3.5) and green finance policies (3.6), on the subject matter of the other five policy areas. Subsequently to the discussion of the influence of these policy areas, the chapter looks at driving and driven factors as a result of the impact matrix (section 3.7).

3.1 Climate change policies

Climate change policies create incentives for actors to reduce their GHG emissions, set targets for greenhouse gas (GHG) emission and climate-neutrality paths.[14] This policy area includes inter alia establishing a GHG emission allowance system for relevant sectors to integrate emissions into economic calculations,[15] creating border-adjustments to prevent avoidance strategies[16] or structuring the phase-out of climate-harmful technologies,[17] thus allowing actors to align their strategies.

The first impression was that this policy area has a high priority at the moment and thus must have a strong impact on other policy aspects. Nevertheless, participants rated the influence of climate policy on less harmful chemicals as weak to moderate, as the idea that rising energy prices limit the use of certain chemicals is not sufficient. Moreover, the climate-neutral economy has only a few instruments so far, which do not yet take into account the external costs of chemicals and

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[13] Geschka et al., 2008.

[14] E.g. Regulation (EU) 2021/1119 and European Commission, 2021f.

[15] E.g. European Commission, 2021b and European Commission, 2021c as part of the Fit for 55-package (European Commission 2021a).

[16] European Commission, 2021h.

[17] European Commission, 2021d, e, g.

the difference between material and chemicals production and problems related to the toxicity of chemicals. With respect to the influence of climate change policy to better products and less waste, the participants agreed on a moderate influence. The impact of climate change policies on value chain interactions was identified as weak notwithstanding the pressure coming from climate change policies incentivises industries to communicate greenhouse gas emissions along the supply chain to better understand their environmental impacts. Concerning the influence of climate change policies on the empowerment of consumers, the participants agreed on "no influence at all". Although consumers and the public are very concerned about the state of the climate, their actions often look quite different. The question came up whether it is just "wishful thinking" that particular climate change policies have an impact on consumer's empowerment. The participants argued that there is a moderate to strong influence of climate change policies on green investments because of the certificate trading system for example which directs money flows towards green finance.

3.2   Chemicals policies

Chemical policies combine measures to better protect human health and the environment against adverse or otherwise unwanted effects of chemicals whilst at the same time boosting innovation for safe and sustainable chemicals and thus enhancing competitiveness (Article 1(1) REACH). This can include, inter alia, banning the most harmful chemicals in consumer products, develop EU safe and sustainable-by-design criteria for chemicals[18] or data requirements such as mixture assessment factor(s).[19]

Participants rated the influence of chemicals policies on climate change action as low, although they felt it should be stronger. In contrast, the impact of chemicals policies on better products and less waste is strong, because chemical policies influence the design of products by imposing bans or restrictions. Concerning the influence of chemicals policies on value chain interaction, the participants estimated it to be moderate to strong. This is because requirements in REACH[20] are an important element of value chain interaction and communication, and organisations increasingly tend to contact their suppliers to get the information relevant about used substances. The participants agreed on a weak influence of chemicals policies on the empowerment of consumers, because only about 70 substances have been restricted since REACH came into force and consumer empowerment does not seem efficient yet. The participants estimated the impact of chemicals policies on green investments to be low. They argued that the EU taxonomy contains the objective "pollution prevention and control",[21] thus there is at least a weak influence.

3.3   Product and waste policies

Product and waste policies ultimately aim at reducing the environmental and health impact of production and use of products on the environment (consumption and production patterns, SDG 12 and others). To this end, the design of the products offers the greatest leverage, often in combination with service oriented business models.[22] By these means it is also possible to prevent or reduce the generation of waste. Related measures include inter alia eco-design (e.g. durability or reparability requirements, (mono-) material composition, specifications on recycling content,

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[18]   European Commission, 2020b, p. 5.

[19]   European Commission, 2020b, p. 12.

[20]   Regulation (EC) 1907/2006.

[21]   Regulation (EU) 2020/852, Art. 14.

[22]   In the following the term product includes (related) services (cf. Art. 2 a) General Product Safety Directive 2001/95/EC; however, products in this sense are of not only offered to private consumers but also to organisations (legal entities).

provision of spare parts and related repair manuals), extended (individual) producer responsibility (EPR) or policies regarding waste (e.g. requirements for separate collection, collection rate.).[23] Ultimately, the actors should be enabled to develop product innovations and new business models that make products in a resource-saving way. This means to design long-lasting products and to keep products and resources in the cycle for as long as possible.

For this influencing factor, the impact on climate change was rated moderate, because more sustainable and durable products that do not create waste can lead to a decrease of GHG emissions. Workshop participants also agreed on a moderate influence on safe chemicals as product policies set impulses for product designs without harmful chemicals. Moreover, if companies are required to produce and sell more sustainable products, they have to prove those products' performance. This creates an incentive to communicate in the supply chain and compile relevant information. The influence of product and waste policies on value chain interaction was therefore assessed as moderate. Participants however established that product and waste policies only weakly influence the empowerment of consumers. Although product and waste policies influence consumers' choices by setting rules for new products or by implementing product labels, information on how certain products are designed are difficult to communicate. It was agreed that the impact of product and waste policies on green finance is moderate. This can be attributed to the assumption that product and waste policies such as eco-design requirements have an effect on whether actors are willing to shift investments towards green finance.

The impact of this policies packet is the result of the expected production models transformation, so as inclusion of sustainability requirements and new business models. They require and drive at the same time, changes in the chemical, value chain, financing and environmental impacts (i.e. GHG emissions) subjects. Nevertheless, although this transformation should be a strong incentive for other policies, they rely not just in product systems, but also on other fundamental changes and paradigms that still must be addressed at the individual policies subject matters.

3.4 Value chain interaction policies

Value chain interaction policies foster the information, communication and cooperation (ICC) along value chains. Thus, this influencing factor includes inter alia Art. 33(1) REACH requirements for the dissemination of information and traceability of products and/or materials (e.g. digital product passport),[24] standardisation or networks and alliances. This shall facilitate that all actors have the information relevant for them to keep resources in the cycles for as long as possible and to keep toxic substances out of the cycles.

During the workshop, the influence of value chain interaction policies on climate change was estimated to be weak, because effective communication within the supply chain (as it is the case for food and cosmetics) does not necessarily lead to improvements in greenhouse gas emissions. Regarding more sustainable and less harmful chemicals, value chain interaction policies such as the digital product passport could be a positive driver if implemented thoroughly. This influence was however not seen as high as the influence of product legislation on the subject, resulting thus in a moderate rating. In contrast, participants estimated the influence of value chain interaction policies on better products and less waste to be higher than on chemicals. Thus, they agreed on a strong influence. Looking at previous policies, the impact of value chain interaction policies on consumer empowerment seems to be weak. However, one has to distinguish between the consumer organised as a group (e.g. NGO) and the individual consumer. NGOs have used value interaction policies to gain information about products and thereby informing consumers. For this

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[23] E.g. European Commission, 2020c.

[24] European Commission, 2020a, p. 17.

reason and because value chain interaction is a prerequisite for consumer empowerment the influence was seen as moderate. Although information flows are needed in order to show investors that a business model or product is actually green, this influence can barely be seen in reality. Thus, the participants estimated the impact of value chain interaction policies on green investments to be weak.

3.5 Consumer empowerment policies

Consumer empowerment policies equip the private or organisational customer[25] of a product with the skills and tools to maximise their welfare while reducing environmental (and social) impact[26]. Therefore, making markets deliver for them and ensuring effective protection from the risks and threats they cannot tackle as individuals – and provide them the means to contribute to more sustainable purchasing and use patterns. Those policies comprise measures such as requirements on mandatory sustainability labelling[27] and the "right-to-know" included in Art. 33(2) REACH. In addition, it involves the amendments to the Sale of Goods Directive, including the extension of the legal guarantee period and the right to repair. It also refers to policies which require manufacturers or sellers to repair products once the legal warranty has expired or if the products break down for reasons not covered by the guarantee (e.g. due to improper use).[28]

Regarding the impact of consumer empowerment policies such as the "right to know" laid down in Art. 33 REACH on climate change, participants agreed on a weak influence, even though the "Fridays For Future"-Movement started to put pressure on politicians. With respect to the influence of consumer empowerment policies to less hazardous chemicals, one has to keep in mind that the influence depends on how much capacity the consumers have to absorb and process information to make choices. That is why a moderate or strong influence seems again only "wishful thinking" rather a weak influence can be found in reality. Thinking about the impact of consumer empower policies on better products and less waste, on the one hand one the consumer power is much lower than the power of certain industries such as the recycling industry. On the other hand, consumers' power should not be underestimated. In the end, the impact was estimated to be weak to moderate. The participants agreed that the influence of consumer empowerment policies on value chain interaction could not be higher than on the previous issue (better products and less waste). Thus, they assessed the influence as weak to moderate. Regarding the influence of consumer empowerment policies on Green Finance there seems to be only a weak influence or even "no influence at all", taking note of some consumers who might care about certain labels to buy more sustainable products, which does however not affect large investments.

3.6 Green finance policies

Green Finance policies aims to incentivise investors to direct their funds towards such "green" investments, and to influence economic actors to change their strategies in order to be eligible for such investments. It includes the EU Taxonomy Regulation[29] which establishes six environmental objectives (1. climate change mitigation, 2. climate change adaptation, 3. the sustainable use and protection of water and marine resources, 4. the transition to a circular

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[25] Cf. the definition in ISO 9.000:2015 under 3.2.4.

[26] European Commission, 2011,p.2

[27] Including concepts, such as the Product Environmental Footprint, for which a regulation is currently under development, see European Commission 2020a, p. 4, European Commission, 2020d, p. 1 and European Commission, 2021i, p.1.

[28] European Commission, 2020a, p. 5; Directive (EU) 2019/771 ; European Commission, 2022, p. 3.

[29] Regulation (EU) 2020/852.

economy, 5. pollution prevention and control, 6. the protection and restoration of biodiversity and ecosystems). Green finance policies can also set additional benchmark criteria as well as disclosure requirements for financial institutions and corporations. Green Finance also includes public funds directed towards such green investments, e.g. the Just Transition Mechanism.[30]

When looking at the influence of green finance on climate change on the one hand it was discussed that green finance policies give "green" companies (according to the taxonomy) the opportunity to innovate more towards a sustainable economy. This would ultimately lead to a huge change on climate change issues. On the other hand, this would require a massive reduction in the overall consumption. Ultimately, the participants valued the influence as weak to moderate. Given that the participants assessed the previous influence as weak to moderate, they agreed that the influence of green finance policies on greener chemicals must be lower. Thus, they estimated it to be weak. Because Green Chemistry and sustainable design are linked in a certain matter, the influence of green finance policies on the subject matter of product and waste policies was estimated to be weak. In the logical conclusion, the influence of green finance policies on value chain interaction is weak as well. Regarding the influence of green finance policies on consumer empowerments, the participants agreed on a moderate influence, because if green finance policies will invest in and thus support more companies investing in certification, green labels are much more widespread. Accordingly, prices might get lower and more consumers can make more "sustainable" choices because it is affordable.

3.7 Driving and driven factors

During the workshop, there were several policy areas for which participants could not reach consensus. To manage these uncertainties not only one value was assigned to an influencing factor dependency, but instead a range of two values. This resulted in two scenarios for the impact matrix. Scenario 1 is the more cautious scenario with regard to the impact of policies on different policy subject-mattes, whereas scenario 2 is more optimistic, reflecting participants' views of greater impact.

Table 2: Scenario 1 of the Cross-impact-analysis (lower scores)

Scenario 1: Impact analysis (low scores)	1 Climate Change Policies	2 Chemicals Policies	3 Product and Waste policies	4 Value chain interaction policies	5 Consumer empowerment policies	6 Green Finance Policies	Row sum	Driver / driven (Row sum / Column sum)	Strongly / weakly interconnected factors (Row sum * Column)
1 Climate Change Policies		1	2	1	1	2	7	1,17	42,00
2 Chemicals Policies	1		3	2	1	1	8	1,14	56,00
3 Product and Waste policies	2	2		2	1	2	9	0,90	90,00
4 Value chain interaction policies	1	2	3		2	1	9	1,29	63,00
5 Consumer empowerment policies	1	1	1	1		0	4	0,57	28,00
6 Green Finance Policies	1	1	1	1	2		6	1,00	36,00
Column sum	6	7	10	7	7	6			

Table 3 Scenario 2 of the Cross-impact-analysis (higher scores)

Scenario 2: Impact analysis (high scores)	1 Climate Change Policies	2 Chemicals Policies	3 Product and Waste policies	4 Value chain interaction policies	5 Consumer empowerment policies	6 Green Finance Policies	Row sum	Driver / driven (Row sum / Column sum)	Strongly / weakly interconnected factors (Row sum * Column)
1 Climate Change Policies		2	2	1	1	3	9	1,29	63,00
2 Chemicals Policies	1		3	3	1	1	9	1,13	72,00
3 Product and Waste policies	2	2		2	1	2	9	0,82	99,00
4 Value chain interaction policies	1	2	3		2	1	9	1,00	81,00
5 Consumer empowerment policies	1	1	2	2		1	7	1,00	49,00
6 Green Finance Policies	2	1	1	1	2		7	0,88	56,00
Column sum	7	8	11	9	7	8			

Table 2 shows the results of the cross-impact analysis for the more cautious scenario 1. The values in the column "Driver/driven" are an indication to assess the importance of the different factors. Higher numbers indicate a driver and lower numbers a factor that is rather driven by others. The

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[30] European Commission, 2019, p. 16.

values in the last column show how strong factors are connected to others factors. In this scenario, value chain interaction policies, climate change policies and chemicals policies are driving factors and consumer empowerment policies are driven factors. Green finance policies and product & waste policies can be described as interacting factors. Additionally, product & waste policies and value chain interaction policies are most strongly interconnected.

This picture changes when looking at scenario 2 (shown in *Table 3*). Climate change policies and chemicals policies are still drivers, Value chain interaction policies however is no longer a driver, but appears to be an interacting factor. The interacting factors of scenario 1, product & waste policies and green finance policies, become driven factors in scenario 2. Consumer empowerment policies turns from a driven to an interacting factors. Similar to scenario 1, product and waste policies and value chain interaction policies are strongly interconnected. Yet, in both scenarios climate change policies and chemicals policies are drivers.

4 Conclusions and next steps

The workshop provided relevant insights into the mutual influences of *climate change policies*, *chemicals policies*, *product and waste policies*, *value chain interaction policies*, *consumer empowerment policies* and *green finance policies*. The two scenarios of the cross-impact analysis reveal that even slightly different ratings of the influence of policy areas can paint a different picture of the important factors to achieve the vision of a non-toxic circular and climate-neutral economy by 2050.

The substantive findings of this workshop can therefore show tendencies which require further and more thorough analysis and discussion. Notably, it is to be assumed that chemicals policies and climate change policies are indeed driving forces in the transition towards non-toxic and resource-preserving circular economy. In contrast, the roles of consumer empowerment and green finance shall not be overestimated.

In the perspective of deliberative formats, the participants welcomed this opportunity to analyse the interplay and interdependencies of the various Green Deal policies. In particular, the feedback to the methodical approach was positive. Whereas the timeframe of a single workshop must always be too narrow for such a complex discussion. Thus, the findings may serve as a starting point for a more intense and detailed ToC-process.

With this in mind, LIFE AskREACH project will host a follow-up event in Paris in April 2022. The event will deepen the discussion by thematically focusing on one particular enabler for a non-toxic, resource-efficient and climate-neutral circular economy, namely the traceability of chemicals in products. The event will also invite actors who are expected to play a role in the eventual "real world transformation". In a more generous two-day setting, participants will self-select the tools (e.g. eco-design requirements, extended producer responsibility, sustainable procurement, "taxonomy" and digital product passport) that they consider most relevant in terms of traceability and that will be subject to cross-impact-analysis in the next step. The aim is to motivate the participants to take the findings further in their area of responsibility and to initiate concrete change processes towards a common understanding of the challenges. The mere process itself therefore already creates an impact. Another outcome of the workshop will be a concept paper on the interplay of the analysed instruments, which the LIFE AskREACH project will introduce into the current political discussion on the implementation of the Green Deal.[31]

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[31] For more information, please get in contact.

5 References

Belcher, B.; Claus, R. (2020). *Theory of Change*. td-net toolbox profile (5). Swiss Academies of Arts and Sciences: td-net toolbox for co-producing knowledge. DOI: 10.5281/zenodo.3717451.

Belcher, B.; Davel, R.; Claus, R. (2020). *A refined method for theory-based evaluation of the societal impacts of research*, MethodsX, Volume 7, 2020, 100788, DOI: 10.1016/j.mex.2020.100788.

Directive (EU) 2019/771 of the European Parliament and of the Council of 20 May 2019 on certain aspects concerning contracts for the sale of goods, amending Regulation (EU) 2017/2394 and Directive 2009/22/EC, and repealing Directive 1999/44/EC. OJ L 136/28. 22.5.2019, pp. 28-50.

European Commission (2019). *The European Green Deal*, Communication from the Commission COM(2019) 640 final.

European Commission (2020a). *A new Circular Economy Action Plan. For a cleaner and more competitive Europe*, Communication from the Commission COM(2020) 98 final.

European Commission (2020b). *Chemicals Strategy for Sustainability: Towards a Toxic-Free Environment*, Communication from the Commission COM(2020) 667 final.

European Commission (2020c). *Proposal for a Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020*, Communication from the Commission COM(2020) 798 final.

European Commission (2020d). *Inception Impact Assessment regarding a legislative proposal on substantiating green claims*, Ref. Ares(2020)3820384.

European Commission (2021a). *'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality*, Communication from the Commission COM(2021) 550 final.

European Commission (2021b). *Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757*, Communication from the Commission COM(2021) 551 final.

European Commission (2021c). *Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC as regards aviation's contribution to the Union's economy-wide emission reduction target and appropriately implementing a global market-based measure*, Communication from the Commission COM(2021) 552 final .

European Commission (2021d). *Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) 2019/631 as regards strengthening the CO2 emission performance standards for new passenger cars and new light commercial vehicles in line with the Union's increased climate ambition*, Communication from the Commission COM(2021) 556 final.

European Commission (2021e). *Proposal for a new Directive on alternative fuels infrastructure deployment*, Communication from the Commission COM(2021) 559 final.

European Commission (2021f). *2030 Climate Target Plan "Stepping up Europe's 2030 climate ambition"*, Communication from the Commission COM(2021) 562 final.

European Commission (2021g). *Proposal for a Council Directive restructuring the Union framework for the taxation of energy products and electricity (recast)*, Communication from the Commission COM(2021) 563 final.

European Commission (2021h). *Proposal for a Regulation of the European Parliament and of the Council establishing a carbon border adjustment mechanism*, Communication from the Commission COM(2021) 564 final.

European Commission (2021i). *Commission Recommendation of 16.12.2021on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organisations*. C(2021) 9332 final.

European Commission (2022). *Inception Impact Assessment regarding a legislative proposal for an amendment of the Sale of Goods Directive and possibly a separate new legislative proposal on the right to repair)*, Ref. Ares(2022)175084.

Geschka, H.; Hahnenwald, H.; Schwarz-Geschka, M. (2008). *Szenariotechnik*. In: Gassmann, Oliver; Sutter, Philipp (eds.) Praxiswissen Innovationsmanagement. Von der Idee zum Markterfolg. München: Hanser, pp. 119-138.

Regulation (EC) 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, OJ L 396, 30.12.2006, pp. 1–849.

Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088, OJ L 198, 22.6.2020, pp. 13–43.

Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), OJ L 243, 9.7.2021, pp. 1–17.

Schenten, J. and Rehn, J. (2021). *A Theory of Change (ToC) supporting the visioning of a sustainable supply chain*. Swiss Academies of Arts and Sciences. Network for Transdisciplinary Research (td-net). Accessible under: https://naturalsciences.ch/co-producing-knowledge-explained/practical_experiences/theory_of_change (last access 15 February 2022).