SUMMARY

This report summarises the results of the horizon scanning process (HS) carried out by the KENTER/shiftN research team as part of the preparations for the Environmental Outlook 2018 (MVK 2018 (*MilieuVerKenning*)). HS is a strategic process of exploration of the future aimed at the systematic study of possible dangers, opportunities and probable future developments, including – but not limited to – those at the borders of current thinking and current policy planning. HS can explore new and unexpected themes and problems, as well as persistent problems or trends.

The HS process, the results of which are summarised in this document, forms one of the three building blocks of the MVK 2018, which has been set up by the MIRA unit of the VMM (*Flanders Environment Agency*). In addition to this 'Horizon Scanning' building block, there is an 'Indicators' building block and a 'Solutions' building block. For the latter building block, broad so called 'solution directions' are explored for four systems (Energy, Mobility, Nutrition and Space).

On the one hand, **the six MTs from the report** [**"Megatrends: far-reaching, but also out of reach? How do megatrends influence the environment in Flanders?"**](#) **(2015) were validated and updated** during the HS process, including a focus on their cross-connections and weak signals, micro- and counter-trends. **On the other hand, seven so-called 'thematic key uncertainties (TSOs** = *Thematische SleutelOnzekerheden***) were identified and analysed** *(see further in this summary)*. TSOs are broad social themes that are (currently) characterised by a prevailing or dominant state, but within which there are already shifts that may continue in the future in a tilt away from that state – shifts that can also be indicated by weak signals, micro- and counter trends.

The HS process consisted of **three steps**:
  – In a first step, information was obtained on the basis of **desk research** for the validation and updating of the MTs from the Megatrends report (2015) and for the identification and substantiation of the TSOs. Both the (updated) MTs and the TSOs were described globally (in general terms).
  – In a second step, a **written consultation round** was organised (with 34 participating experts), in which the analysis from the desk research was supplemented, both for the updating of the MTs and the TSOs. The experts were also asked to make a first translation to the Flanders level and to explore the specific relevance for (MTs) and possible evolutions in Flanders (based on the TSOs).
  – In a third step, the **experts were brought together in a workshop** (19 participants). During this workshop, the link was made between the TSOs and the societal systems Energy, Mobility and Food[4]. Starting from the TSOs, possible future evolutions were explored within these systems, and barriers and levers were identified for solution approaches to environmental issues. These barriers and levers were then analysed in a manner independent of the system.

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From the results of the HS project, we can conclude that **the six MTs are still very topical**. What's more, the impact of the MTs on society and the environment seems **to have become even more pronounced – and also specifically in Flanders**.

1) Participating experts point out that certain **demographic shifts (MT1)** in Flanders have contributed to changing living/working patterns (single-parent families, shorter working hours and more leisure activities, working from home, dual-earners, more active seniors, and so on), which has increased the demand for space to reside/live/work.

   As a result, Flanders is most in need of ways to tackle the current forms of urbanisation through a more vigorous urbanisation policy, in order to reach an absolute stop to parcelling and soil sealing. Participating experts see that Flanders has a great deal of difficulty in achieving a coherent long-term policy in this area: they fear that the culture of unstructured and sometimes opportunistic interventions in the (urban) landscape can still continue for some time.

   Finally, they point to the large risk that the increase in socio-cultural heterogeneity could lead to a hardening, and thereby a polarisation of the social climate.

   The destabilising effects of changing demographic balances are becoming increasingly evident.

2) In the analysed international overview documents (*Chapter 7*), **various types of (accelerated) facilitating technological developments (MT2)** are universally emerging as a very important MT. Technology changes everything: how we work, how we live, how we communicate and how we consume. But it is difficult to foresee precisely which changes will take place, and to what extent. Technological innovations can also be disruptive: unexpectedly disrupting existing systems (e.g. 3D-printing, artificial intelligence, block chain technology, AirB&B and Uber, etc.).

   Increasing monopolisation is referred to by experts as a relatively new macro trend. A large amount of data is currently in the hands of a small number of technology companies.
   A major (new) challenge related to the rapidly evolving technology is the lack of standards, new ethical standards, and so on.

   This MT is also very visible in Flanders. There are, for example, many technological start-ups, and the belief in technological solutions to structural problems (such as climate change, scarcity of resources, etc.) is great. However, the participating experts are rather negative about Flanders' general position in this area. Flanders certainly does not hold a leading position here. It is generally very dependent on foreign technology, and could therefore quickly lose ground in the globalised and fragmented economy due to a lack of domestic decision-making centres.

3) **MT3** from the Megatrends report (2015) is **the increasing shortages of raw materials and (natural) resources**. Increasing shortages remain important, in particular as a result of the growing world population and the growing global economy. Through the manner of its production and consumption, society, and more specifically the economy, is exploiting in a far-reaching manner virtually all the raw materials and resources that are available on Earth.

   Participating experts emphasise the importance of political and economic factors that contribute to scarcity. This driving force was picked out much less in the previous analysis in the run-up to the

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Megatrends report (2015). New countries such as China and India are increasingly becoming key players in determining scarcity.

Attention is paid to this MT in all the reports carried out recently that study MTs, either as a challenge or as a driving force behind other developments, such as the increasing geographical competitiveness (MT4).

There are also many evolutions that go against the dominant trends, but which (as yet) are limited in scope and significance (micro trends) or are unclear as to whether and how they will continue and gain in importance – both on the side of producers (supply) and of consumers (demand). The increasing attention given to the so-called 'circular economy' (including attention to reuse, recovery and recycling) and keeping an eye on closing material loops is a major counter-trend that is gaining in importance and strength, both with producers and governments (policy-making). Participating experts indicated that Flanders is currently taking the lead in (certain facets of) the 'circular economy'. It launched an ambitious 'circular economy' policy: the transition to the 'circular economy' is one of the major transition priorities of the Flemish government in its 'Vision 2050'.

The consumer also has an important role to play. Behavioural change is deemed necessary to allow this transition to take hold.

4) **MT4** from the Megatrends Report (2015) indicates that the world and our society are becoming **increasingly multi-polar**. This MT brings together a number of underlying and very diverse macro trends that are considered as separate MTs in some reports. Increasing multi-polarity thereby includes both a section about the global economy and political power, among others, about social relations, societal patterns, and about individual behaviour and consumption. These trends therefore express themselves both globally and internationally, as well as socially at the national, regional and individual level.

Many (weak) signals suggest a possible strengthening of this MT: the more open questioning of the principle of solidarity at the basis of the welfare society, the visibly increasing polarisation through nationalist movements and counter-movements, the generally increasing uncertainty that continues to feed the MT, the open questioning, or even abandonment, of international consultative structures (by certain countries), the erosion of privacy and the demand for openness that accentuates certain social contradictions, and so on.

Experts confirmed that this MT is also reflected in many forms in Flanders. Overall, the impact of data and information intensity, as well as social media, is increasing. There is also an indication here that, among other things, Flanders is thereby too dependent on foreign technology companies. The discussion about the neutrality and objectivity of information and (social) media therefore also becomes more important.

Experts in the survey *(written consultation round)* confirm that the biggest challenge of this MT generally lies in finding a new general cohabitation pact, possibly inspired by, for example, the common planetary challenge of tackling climate change appropriately and in time (MT5).

5) **Climate change (MT5)** is also cited as an extremely profound MT, with already visible consequences, in almost all of the overview documents studied in the context of this HS process.

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Here, the focus is sometimes mainly concentrated on the driving forces behind climate change (such as energy production and, in particular, production on the basis of fossil sources); in other cases, above all on the (possible) consequences and, more specifically their ecological impacts.

The growing attention for the denial of climate change and for climate migration, for example, is new compared to the Megatrends report (2015). As a result of a changing climate, living conditions in certain regions of the world and in some countries will deteriorate to the point of triggering migration.

According to the participating experts, emissions trading in greenhouse gases has, so far, not led to a reduction in global emissions of man-made greenhouse gases, but rather to a perpetuation of economic activities that cause the concentration of these greenhouse gases to increase further. Furthermore, an overall reduction in global energy consumption is also not guaranteed, due to increasing digitisation and the growing global purchasing power.
A radical change of course is needed in order to halt climate change in good time. The urgency of this is gradually coming through.

According to the participating experts, climate change can only be counteracted if the urgency of coherent actions on climate mitigation (and climate adaptation) is recognised, in particular at the political level. An ambitious, coherent long-term vision and a matching Flemish action plan (for the period up to 2030) are, in particular, also necessary in order to convince all the social actors that investments can contribute to the fight against climate change. The hope is expressed that policy-makers in Flanders would not only focus on initiatives that reduce territorial greenhouse gas emissions (e.g. through energy-reducing measures), but would also take initiatives that reduce these emissions abroad – more specifically also those that are linked to our imports for the benefit of our consumption.

6) **MT6** is essentially about increasingly fragile social, economic, financial and ecological systems: they often cannot keep pace with the rapid and profound implications of global changes.
Each MT contributes to the **overall increase in the vulnerability of systems (MT6)**. The systematic and frequent occurrence of significant weakenings in just about all systems is a signal for a systemic effect of a higher order. For all these reasons, MT6 can be considered a 'meta-trend'. Experts who took part in the written consultation (step 2) endorsed the great importance and complexity of this MT.

In particular, the impact of the financial and monetary system is cited by experts as a major driving force and macro trend.
Governments must therefore also act against the detrimental effects of the financial/monetary and economic system (privatisation of profits and passing the risks on to society). Experts also note that, when it comes to tackling environmental issues, monetarisation is still relatively ineffective in society (to a large extent, environmental care still remains externalised from the financial-monetary and economic sphere) – and this in particular despite the imminent threat of climate change.

Another important macro trend in this MT is the weakening and lack of legitimacy of central authority, both at the European and national level. This makes it increasingly difficult to devise and implement a vigorous policy.

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This MT also manifests itself emphatically in Flanders. Both administrative systems and civil organisations are under increasing pressure to adapt to the rapidly changing context. This is all the more difficult in Flanders, because, for too long, not enough attention has been paid to the interrelationship between systems and to a clear, coherent integrated vision in the implementation of reforms. All too often, there is a long wait for the solutions to become operational, and certainly also for the realisation of the integral coherence between them.

Partly from the analysis of the MTs and their underlying macro and micro trends, but above all also from the identification of certain, apparently contradictory theme-related developments (with weak signals and counter-trends in terms of these themes), **seven TSOs were identified and studied.** A TSO is described as an important thematic dynamic that can contribute to a possible major shift in the future evolution of society. On the basis of these seven TSOs, possible future evolutions for the three societal systems Energy, Mobility and Food were also explored afterwards, as well as barriers and levers for the realisation of broad solution approaches to environmental issues for these systems.

A brief description is given below as to **which TSOs were identified**, and **to what extent the participating experts expect a shift** in the subject **to take place (in Flanders)**.

- **TSO1: Shift from financial/economic added-value creation to (also more) social/ecological added-value creation**.
  This concerns the possible shift from the currently very dominant growth paradigm based on economic/financial principles to a more socially/ecologically oriented value creation. There are a lot of signals indicating that the growth paradigm is no longer sustainable in its present form, and that attention should be paid to alternative visions of value creation and ways of measuring progress. Experts expect a long-term shift (two generations), in which Flanders will tend to react more slowly than the rest of the world.
- **TSO2: Shift from central to (also more) decentralised production systems (supply)**.
  This TSO revolves around a shift from the currently dominant system that mainly consists of central – large-scale – production and supply taking place towards (more) decentralised production / decentralised supply. Examples are shifts in agricultural systems (towards local marketing and production of agricultural products) or in energy production (decentralised production of renewable energy). The experts are of the opinion that the shift will not take place in all sectors to the same degree and at the same speed. The next ten years will be crucial.
- **TSO3: Shift from the predominance of individual interest to (also more) social interest in consumption.**
  This concerns a shift of the considerations that determine the consumer's choice to purchase or use products or services. The key uncertainty revolves around the emergence of ecological citizenship, with a growing awareness that many essentially 'individual' choices have undesirable consequences for others and for our environment. The experts differ very strongly in their assessment of the degree and speed with which this shift will take place (5 to 10 years up to > 30 years).
- **TSO4: Shift from a global to an (also more) locally-oriented approach to problems (including changes in geopolitical context).**
  This refers to the possible increasing shift in the levels at which problems are discussed and decisions are taken. It concerns the increasing divisions regarding global issues such as climate change, whereby the trend is to return to the national/regional decision-making level. The same dynamism is also playing out at the European level. Finally, the macro trend is visible within

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countries/regions where large urban centres develop their own decision-making dynamics to cope themselves with global and international problems, but certainly also more local problems. The experts think that the shift in the short and long term will be rather limited.

- **TSO5: (Reaction against) the shift from objective, unambiguous information flows to subjective, variable information flows**
  Information is becoming increasingly important, but at the same time the ambiguity regarding the quality and sources of information flows is increasing. This key uncertainty suggests that a response to this development is underway from, among other things, the emergence of new forms of information flows and of alternative user groups (e.g. peer-to-peer) and sources that approach the information flows more critically. The shift to subjective information flows has already taken place to a large extent. The counter-reaction is slowly getting underway.

- **TSO6: Shift in the vision of the role of technology in society.**
  This TSO is about the increasing reaction to the dominant role of technology in our society, both as a supplier of solutions and as a driving force for value creation and economic growth. Today, it is becoming increasingly clear how technological progress has led to pressing problems, not only in the field of, for example, environment and mobility, but increasingly in the social fabric and its organisation. The experts indicate that resistance to technological developments is already present. A period of 15 years must be taken into account for the social shift for software and hardware.

- **TSO7: Shift from a top-down (including a policy-oriented) society to a winning interest in bottom-up initiatives.**
  This thematic key uncertainty relates to a shift from a more top-down – amongst others policy-oriented – society to a society in which bottom-up initiatives increasingly gain in importance in order to meet certain urgent challenges. This TSO revolves around the increasing bottom-up power of social groups and the extent to which it can be decisive for real tipping points. Experts believe that a full reorientation will not be possible, but that partial initiatives will be able to reach many consumers in a reasonably short period of time.

In order to explore the possible future evolutions of the three societal systems (Energy, Mobility and Food), four environmental scenarios were developed in which the TSOs were combined in a plausible, logical and relevant way.

- *Business as Usual* is the reference framework against which the other scenarios can be compared. The participating experts are of the opinion that, for each of the societal systems, it will prove impossible to really carry through the transition to sustainability. Among other things, policy-making fails in this scenario.

- The *Tecology* scenario assumes that large industrial companies and small emerging technology companies will produce and offer services more on the basis of socio-ecological values. There is a great belief in technological solutions. The consumer will be attracted to these because useful solutions are created. Examples of technological solutions include, among others, electric/self-propelled cars or smart energy meters, but also the data technology needed, for example, for sharing platforms.

- The *Ecolocal* scenario is based on local interests and tackling problems locally. A key role is reserved for bottom-up initiatives: local (small and medium-sized) businesses are involved with local civil society, citizens and possibly local governments. The production of food and energy is more local; people increasingly live and work in the same place, so that also less travelling is needed.

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- In the *Ecosense* scenario, it is the consumer who asks for socially responsible products and services. This obliges the economy to create and offer solutions. Large industrial players play a more important role in the sustainability of the systems (e.g. sustainability of energy systems, centrally organised car sharing systems, electric charging stations, cultured meat).

The scenarios were used in an expert workshop on December 15, 2017 to **explore possible future evolutions in the three societal systems**, and to **identify which elements from these scenarios (and thereby the TSOs) are/could be barriers or levers for the solution approaches** that could be realised with a view to a transition towards the (ecological) sustainability of these systems.

The analysis of the results of the workshop shows that the **barriers and levers can be very diverse**: they manifest themselves both in socio-cultural, technological, economic and environmental terms, as well as in infrastructural, political, policy, regulatory and ethical fields **(each of the STEEPLE categories)**.

In order to determine whether and how to respond to the barriers and levers, they were assigned to the four depth layers of McClelland's Iceberg model. According to this model, the barriers and levers are **classified according to the level at which they engage in the system: the deeper the barriers and levers lie, the more stubborn they are and the greater their leverage effect respectively**. At a low level, barriers and levers have a more systemic, and therefore greater impact, but are more difficult to influence (lifting thresholds or using levers).

A fairly limited number of barriers and levers are located on the surface (*level of events and decisions*). Barriers to solution directions towards sustainability revolve around the choice of the lowest prices (consumer side – TSO3) and profit maximisation (producer side – TSO1), but also around a shortage of starting capital, high labour costs that inhibit labour-intensive alternatives, or the fact that local production/services would be insufficiently effective (in case the shift of TSO2 continues). In addition, the fact that the consumer is currently experiencing sufficient comfort does not force the making of other choices. If the consequences of changes in choices could become more visible/tangible, this could be a lever for change.

There are many more barriers and levers at the *level of behavioural patterns and mechanisms*. Consumer habits, manipulation of information by large companies (TSO5 – information), major economic players who are lobbying policy (TSO7 – perpetuating the current top-down situation), and so on are examples of barriers at this level. For the levers, we can state that a changed image of sustainable products can support the transition, as well as the digitisation and emergence of local initiatives (TSO2 more decentralised production – TSO7 more bottom-up initiatives).

Intervention at the *level of the system structure* is already much more difficult, but will be much more effective. Spatial planning as we know it in Flanders today forms a huge barrier for the solutions needed to support the transition to a more sustainable society (fragmentation, living and working apart, etc.). The lack of leadership and the lack of long-term thinking by the government were also cited as major barriers by the experts who took part in the workshop (TSO4 – TSO7). The availability of new technology in open source environments (MT2), on the other hand, is a major lever for change. Other levers that were mentioned are, for example, chain cooperation, the mobilisation of civic capital (TSO7 – bottom-up initiatives), demand-driven developments (TSO3 – consumption considerations), but also policies that promote sustainable public procurement, and thereby create a market for sustainable products and services.

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The *level of mental models* (cultural values and standards) is the most difficult one to intervene in. Changes at this level take place very slowly. Barriers at this level can include resistance to technology (TSO6 – vision of technology), weak social support for change and lack of courage to think in the long term. The levers at this level are consumer confidence in solutions of the 'green entrepreneur', education and social cohesion (for example, in the case of a change to more local, bottom-up initiatives – TSO7).

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