



Climate Governance Commission

# Study of progressive businesses

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# 1. Executive summary

The **Climate Governance Commission** (CGC) aims to fill a crucial gap in confronting the global climate emergency by promoting feasible, high impact global governance solutions for urgent and effective climate action.

The business community has an important role to play in the transition to a fossil free society, where “clusters” of progressive companies, cities and countries today often lead the way. This report is based on a series of interviews with climate-progressive business leaders – i.e. leaders of businesses that are committed to be in the forefront of the transition to a zero-emissions economy - and aims to identify barriers and bottlenecks that - from a business perspective - prevent existing solutions from being implemented at the pace and scale that mirrors the magnitude of the climate challenge.

As reflected in the interviews, the business sector often reiterates that it wants government policies to be long-term and as generic, scalable, and technology-neutral as possible. It was reiterated that policies should reduce risk and stimulate innovation, entrepreneurship, technical progress, and cost-effectiveness, while also encouraging competition. Climate leadership and visionary storytelling from individual business leaders, affirming that rapid transformation is possible and profitable, was also underlined as important.

According to recent analysis, the potential for increased emissions in developing countries is now higher than the potential for reduced emissions in developed countries. Some respondents based in the global south highlight the fact that it is emissions from the developed world that created the climate crisis and there is a need for a “just” energy transition in the light of this fact. Important key approaches in this respect could be securing access to low cost renewables around the globe, effective risk sharing mechanisms for financing the transition, and global knowledge sharing. Carefully-designed policies and an energy transition mindful of social and employment needs are also vital, in order to avoid injustices and popular resistance, jeopardizing a successful green transition.

From these interviews with progressive business leaders and investors - where barriers and bottlenecks that prevent a transformation to fossil free business models have been identified, as well as what policies would help businesses overcome these barriers - four policy clusters can be derived:

- Mechanisms for public financing and risk mitigation
- Pricing and competitiveness measures
- Regulations
- Targets and Roadmaps

The report is structured around the identified bottlenecks, which are seen key areas.



## 1.1 Competitiveness, fossil subsidies and price on carbon

A major obstacle to a fossil-free transition is the low price of fossil fuels, as well as continuing massive fossil fuel subsidies. Most companies highlight that industries act in the context of international competition. They do not want the competitive disadvantage of higher initial costs in making the energy transition. Therefore, governance solutions need to cover markets that are big enough to be enticing from a business perspective. A carbon border tax adjustment can be an important mechanism to avoid “carbon leakage,” and also to encourage other countries and regions to implement carbon prices. In the absence of strong global climate governance mechanisms, “climate clubs” focusing on carbon pricing, or other types of “multi-stakeholder alliances”, such as public procurement alliances, green hydrogen alliances, etc., are seen by many companies as a pragmatic way to push global policies forward that could start to enable an energy transition at scale.

## 1.2 Financing and risk

Early stages of green innovation development and countries with perceived high-risk profiles regularly encounter problems in attracting sufficient private capital to fund climate-progressive projects. The focus for public investments should be on financing not only R&D, but also pilot phases for breakthrough technologies, first industrial deployments, and new infrastructure, so that private capital can focus on market risks and public capital can focus on reducing technological risks. An equally important role for public investments is to reduce risks in fragile economic environments, such as in developing countries. Public capital can be used as leverage to attract private investments, if focused on well-designed risk-sharing instruments. Such financial instruments already exist, but must be significantly improved and scaled up, and should be an integrated part of aid to developing countries. To reduce policy risks, the necessary climate/energy transition must be a cross-party rather than a one-party commitment and/or represent an embedded, whole of government commitment, in order to survive elections and successive mandate periods.

## 1.3 Infrastructure and path dependence

Path dependence means that the past determines the future, as past and existing technologies and strategies have shaped the environment in which new solutions must compete. The interdependence between different industry sectors and the technological solutions needed for transformation can also be an obstacle. For example, electrification of the road transport sector is dependent on developments and cost reductions in the battery industry, and developments in the battery industry in turn depend on market growth created by electrification of transportation.



In order to transcend path dependencies and manage such interdependencies, there is a need for massive public investment in new technologies such as green hydrogen, storage solutions as well as in fossil free infrastructure. The drive for digitalization can also be seen as an infrastructure as well, as it is crucial to connect digitalization and decarbonization strategies.

## 1.4 Regulations and standards

Climate risks are now more frequently viewed as financial risks by financial institutions, which represents good progress; however, it is also crucial to ensure that a greater focus on fossil fuel risks does not only focus on divestment, but also on green solutions and innovation. Lack of transparent data and accounting standards on CO<sub>2</sub> and climate risk, for all business and finance actors, is a main obstacle. In addition to climate, other planetary boundaries need to be a driver as well and integrated into standards and policies. Virgin raw materials are currently too cheap and waste should, in many areas, be re-defined as a resource instead of as “waste” in legislation (thereby limiting its re-use). Strengthened and harmonized producer responsibility has been highlighted as an important governance area to address in order to promote circular business models. It is crucial, though, also not to over-regulate, but rather to seek to set an overall regulatory framework. There are two counterforces that need to be balanced: more regulation in some respects and less regulation in others, to drive the required innovation and change.



## 2. Background and purpose

The Climate Governance Commission aims to fill a crucial gap in confronting the global climate emergency by developing, proposing, and building partnerships that promote feasible, high impact global governance solutions for urgent and effective climate action with the ambition to limit global temperature rise to 1.5°C or less.

Among other partners, the Commission is collaborating with the **Exponential Roadmap Initiative**, which has identified 36 technologically viable and market-ready solutions that can be scaled to halve greenhouse gas emissions by 2030 worldwide and provide pathways to achieve the <1.5°C temperature rise limitation target.

The Commission aims to identify barriers and bottlenecks that prevent these existing solutions from being implemented at a pace and scale that mirrors the magnitude of the challenge. It then seeks to propose and promote implementable, high impact reforms or enhancements of global governance institutions and processes to assist in overcoming current obstacles and accelerating a just transition to a necessarily sustainable society.

One sub-project in the Commission is a study of progressive businesses, business initiatives, and action roadmaps to map out perceived challenges that prevent the implementation of business plans and models that are aligned with the <1.5°C increase target.

The business community has an important role to play in the transition to a fossil free society, where “clusters” of progressive companies, cities and countries today often lead the way. Many companies have identified the opportunity to achieve a competitive advantage in speeding up the transition to fossil free business models in order to be able to grow in the future, and also the need to reduce climate-related risks.

The purpose with the report is:

- To link governance solutions proposed by the Climate Governance Commission with real problems that progressive business leaders actually encounter in trying to change their business models and operations to become carbon free and contribute to a rapid transition to a fossil free and sustainable economy.
- To create interest in policy as well as governance solutions among progressive business leaders. Green opinion formation within the business community is a valuable voice to bolster ambitious climate policies on a global as well as national level. At the same time, progressive business “clusters” can create recognition of the need, as well as the demand, for better global governance to enable the implementation of effective climate policies. Hence it’s imperative that these progressive companies take part in the discussions on global governance solutions and strengthen their positive green lobbying.
- To create a greater understanding among policy-makers and governance specialists of perceived obstacles and bottlenecks in the business community regarding their transition to fossil-free solutions.
- To raise awareness that stakeholders in global governance discussions can be progressive business leaders as well as policy-makers.



## 3. Method

Informal interviews were held during the period May 2020 to February 2021 and will continue throughout 2021. The focus of the interviews has been on the following two questions:

- What are the key obstacles/bottlenecks for your industry in the transition to a fossil free industry, to achieve the goal of limiting global temperature rise to below 1.5°C?
- What kind of policy decisions/governance solutions are needed to speed up the transition to a fossil free society and to limit global temperature rise to 1.5°C or less?

In some instances, there has been time for additional discussion on opportunities in the transition.

In addition to the interviews, there has been a mapping of the action roadmaps developed by Fossil Free Sweden. Fossil Free Sweden was started in 2015 at the initiative of the Swedish Government and works to bring together relevant actors, in the form of companies, municipalities, regions and organizations, to give their support to making Sweden one of the first fossil free nations in the world. By working with these actors, **Fossil Free Sweden** is able to identify obstacles and opportunities in order to accelerate developments and the achievement of climate goals.

This report is based on the interviews and the mapping of the roadmaps from Fossil Free Sweden, but contains the author's personal overall interpretations and conclusions so far. See a list of respondents in the appendix.

The report is structured around the following key areas identified through the interviews:

- Competitiveness, fossil subsidies and price on carbon
- Financing and risk
- Infrastructure and path dependence
- Regulations and standards



## 4. Competitiveness, fossil subsidies and price on carbon

### 4.1 Main obstacles and bottlenecks for a rapid transformation - competitiveness, fossil subsidies and price on carbon

Companies act in a globalized world characterized by international competition constraining their room for unilateral action. They do not want a competitive disadvantage of higher costs and are therefore skeptical of cost-driving national policies that reduce international competitiveness. Such policies are also often suspected to lead to “carbon leakage,” due to companies moving production or losing market shares to companies operating under less stringent policies. Although the empirical evidence for carbon leakage resulting from stricter environmental regulations is weak (Ward et al., 2015), it may still impact business support for climate policies.

A major obstacle to a fossil-free transition is the low price of fossil fuels, especially natural gas. This is due to both the lack of a global carbon price that reflects the social and longer term economic costs of climate change, and the existence of massive subsidies for fossil fuel production and consumption. The fossil fuel lobby is still strong and in many countries removing fossil fuel subsidies and moving towards renewable alternatives are highly politicized decisions. Some companies point out that the political climate leadership is not strong enough.

Although the World Bank has listed 61 existing carbon pricing initiatives around the world – 31 ETS and 30 carbon tax systems (World Bank Group, 2020) – many companies express that the price on carbon dioxide emissions is not high enough to drive the necessary green transition, and that existing pricing schemes do not cover markets large enough to be sufficiently attractive from a business perspective to lead to a green transformation of entire industries.

Some companies also point to the lack of an agreed upon end date for fossil fuel use as an obstacle. Most markets are too small to drive transformation in major industries individually, and an agreed upon goal in geographically large markets is needed to rectify this.

One additional challenge is how limited the supply of bio-based raw materials is compared to the supply of fossil fuels. The aggregate demand for bioenergy is much higher than the supply. Some respondents discussed the potential in using waste land for growing energy crops in order to tackle the limited supply. In addition, there is a complexity regarding potential goal conflicts around biodiversity and climate.





## 4.2 Important governance areas - competitiveness, fossil subsidies and price on carbon

Important governance solutions for a rapid transformation include political leadership and securing a sufficiently high carbon price that covers markets large and attractive enough to drive a green transformation of industries, innovations and new disruptive green solutions. Fossil subsidies are another important area that must be addressed. Fossil subsidies affect competitiveness and trade and are an integrated part of trade policy. And since the beginning of the Covid19 pandemic in early 2020, G20 has committed at least **USD 393** billion to support different energy packages, where more than 50% has gone to fossil fuels.

Most respondents are positive towards the EU ETS and that recent amendments have led to higher prices and lowered emissions. More sectors need to be included in the EU ETS. Further, if Europe decarbonizes faster than other regions, it should not impose undue costs on domestic producers that exporters to Europe do not bear. Some respondents think that carbon pricing should be integrated into trade policy.

A carbon border tax adjustment can be an important mechanism to avoid carbon leakage, and also encourage other countries and regions to implement carbon prices. In the absence of a global carbon price, a “Climate Club,” consisting of a group of countries that jointly represent a sufficiently large market, is by many companies seen as a pragmatic way to move forward. Some companies based in other parts of the world highlight that a European carbon border tax adjustment can stimulate carbon pricing in other countries as well.

Some respondents have been discussing the strong rise in climate related litigation, in particular at the national level, as an important step for stronger accountability and as inducement for green transformation. Two respondents highlighted laws against “ecocide” as a potential governance solution.

The link between climate action and long-term profitability and competitiveness has become clearer for many in the business community and needs to be further secured. Many companies now see not only a competitive advantage in speeding up the transition to fossil free business models to be able to grow in the future, but also a compelling need to reduce climate-related risks, as for example a high exposure to fossil fuels.

Energy and material efficiency, i.e. reducing energy-, water- and material usage in industrial processes, should be an overarching strategy. A massive electrification of the industry and transport sectors is also considered key, as the limited supply of bio energy is a bottleneck. A rich supply of low-cost renewable electricity, in all parts of the world, would work as a powerful lever, as it not only competes with fossil fuels, but also would promote massive electrification of heavy industry and the transport sector, as well as a green hydrogen economy. It can also promote circularity because the production and recycling of materials are energy-intensive processes.



A tax shift that lowers taxes on labour and increases taxes on resource use would be important to promote resource efficiency as well as circular business models.

Public procurement is highlighted by some respondents as an effective tool to enhance the competitiveness of green solutions. Public procurement rules should be aligned with the <1.5°C temperature increase target and promote circularity.

Another method that can enhance the competitiveness of green solutions is a “bonus malus” system. The idea of a bonus malus system is to reward energy efficient solutions and products with low emissions while penalizing products with high emissions. Bonus malus systems could also be used for promoting the use of recycled materials and reducing virgin materials.

Reduction obligation quotas are other possible regulatory tools to use in order to reduce greenhouse gas emissions. They can for example be designed as an obligation to reduce greenhouse gas emissions from fossil petrol and diesel through a gradual increased share of renewable fuels, with incentives for the latter. The aim in such support schemes is to create improved conditions for phasing out fossil fuels through an increased proportion of renewable fuels. Such policies can also be designed as green certificate schemes, as a tradable commodity proving that, for example, certain electricity is generated using renewable sources, connected to defined quotas in the electricity mix.



# 5. Financing and risk

## 5.1 Main obstacles and bottlenecks for a rapid transformation - financing and risk

The interviews have highlighted access to capital for what is perceived as high-risk investments as a big hindrance. There is an abundance of capital for low-risk investments, but not for investments where the risk is perceived to be high. This applies to investments in green technologies that are in the early stages of development as well as green investments in countries with a perceived high-risk profile. In order to align with the <math><1.5^{\circ}\text{C}</math> temperature increase target, capital needs to be made available for such investments.

Early stages of development cover almost all stages until a new product or technology is commercially viable, not only the first stages of R&D, for which there is often more funding available. Important stages where it is reportedly difficult to get access to capital are pilots and upscaling, as well as the general financing of breakthrough technologies. Private investors want to take market risks for mature technologies, but they are reluctant to invest in pilot factories that will not be optimized or profitable. Another reason why private capital prefers market risks over technology risks is that technology risks demand high competence in specific areas. Investors often prefer investments in software to hardware since software is less complex, and the lead time to correct and adjust what goes wrong is shorter than for hardware that is installed in a factory.

Countries with perceived high-risk profiles, including developing countries with fragile economies, as well as countries with political instability, are marked by problems in attracting private capital. For example, investors see investments in wind power in Sweden or Finland as low risk investments, while wind power in developing countries are most often seen as high-risk investments, leading to higher capital costs, and lower investments. In addition some respondents based in India point out that the power distribution sector is state owned and in poor financial shape leading to a too slow transition. One respondent with big production facilities in Thailand highlighted that the single buyer market/monopoly situation in the energy sector hinder the company to invest in/own renewable energy and that PPA's (Power Purchase Agreements) are not allowed.

There are also policy risks that companies want to avoid. There are several examples of how support schemes for renewables have been abolished. One example is Spain, where a very aggressive subsidy policy for solar energy was implemented in 2007, which was leading to huge investments the following years. But in 2012, these incentives suddenly were abolished since the public treasury could not assume such a high cost overrun caused by the feed-in tariff system. National policies or governance solutions that can be seen as too expensive can be viewed as high-risk policy solutions. The same goes for policy solutions that do not have support from both the current government as well as the major opposition parties.

Another obstacle is the lack of transparent data and accounting standards on climate risks, (see section 7; Standards and regulations).



## 5.2 Important governance areas - financing and risk

A main governance area to assist in freeing up the capital needed for the transition to align with the temperature increase target is risk sharing between public and private investments. Public investments should systematically and strategically take higher risks to attract private capital for innovation and development in the green sector. There is an abundance of private capital, but today much of it is tied up in investments that are perceived as low-risk.

One important role of public investments should be to reduce the risk for private investors in order to ensure that sustainable solutions in early stages can become commercial solutions. The focus for public investments should be on financing not only R&D, but also pilot phases for breakthrough technologies, first industrial deployments, and new infrastructure, so that private capital can focus on market risks. The financial instruments already exist, but must be significantly improved and scaled up.

An equally important role for public investments is to reduce risks in fragile economic environments, such as developing countries. Public capital (from national, regional and international development institutions) can be used as leverage to attract private investments, if focused on risk-sharing instruments, such as first-loss guarantees, or first loss pieces, guarantees, subordinated debt, export credits, etc. The means exist, but must become more effective, scaled up and should be an integrated part of aid to developing countries.

All respondents in the finance sector highlight the importance of transparent, reliable data and accounting standards and disclosures regarding climate risks. This is covered in section 7; Standards and regulations.

Some respondents also suggested that there is a need for creating a better framework and financial instruments for global commons in order to protect critical ecosystems that are essential for a stable planet. Whereas frameworks and instruments are currently being developed in the area of climate impact, similar initiatives are still largely lacking regarding other critical areas, such as biodiversity or deforestation. How can, for example, improved financial governance solutions contribute to protect the Amazon?

The introduction of a stop date for fossil fuels is highlighted as a solution by some companies. Similar to a carbon price, such a measure must cover a large market attractive enough to drive green transformation of industries. A stop date, in combination with enough time for transition, would reduce policy risks and increase predictability. Announcements of net-zero emissions by individual countries, in combination with a CO<sub>2</sub> budget, can be seen as end dates, but ambitions can more easily be ignored than an explicit stop-date.



To reduce policy risks, climate transition must be a cross party rather than a one party commitment, in order to survive over elections and successive mandate periods. The EU Green Deal demonstrates such an approach, where it is seen as a green shift as well as a shift to strengthen the competitiveness in the EU region collectively. Another tool to reduce policy risk is to design technic-neutral market-based support schemes that promote competition and low-cost green solutions in order to avoid too expensive support schemes that face the risk of being abolished. Finland, for example, had a very generous feed-in tariff for wind power that was abolished since it was seen as too expensive. Instead, the government introduced a technic-neutral auction-based support scheme, which led to a dramatic reduction in the cost for wind power. From a financial point of view, it is not the highest tariff that is the best, but a support scheme that is designed to follow learning curves and cost reductions, ensuring that the cost for taxpayers and the society will never be too high.

National (or regional as EU) climate laws are identified as important tools to set a long-term direction by creating a system for monitoring progress and providing predictability for investors and other economic actors. As a green company or investor, your business is acting in a more safe and predictable environment in a state with a climate law compared to a state without a climate law.

Some respondents have also discussed the significant increase in climate related litigation as an important step for stronger accountability and as inducement for green transformation. Two respondents highlighted laws against “ecocide”, at the national and international levels, as a potential governance solution.



## 6. Infrastructure and path dependence

### 6.1 Main obstacles and bottlenecks for a rapid transformation - infrastructure and path dependence

Path dependence means that the past determines the future, because past and existing technologies and strategies have shaped the environment in which new solutions must compete. The infrastructure for fossil-based transport and industry has been built up and refined for 100 years. Since this infrastructure consists of very large, integrated and capital-intensive systems, this gives fossil based technologies competitive advantages against green alternatives in many different ways.

For example,

- Converting a refinery from oil to bioenergy results in certain parts of production facilities becoming redundant, meaning there will be stranded assets.
- If you want to start a transportation business, it is only a matter of buying a number of fossil trucks and then starting the business. The entrance costs are much higher if you want to start a fossil-free transportation business since the charging infrastructure for electric vehicles is not in place, nor is there an optimized railway infrastructure.

A broad challenge is the inflexibility of most infrastructure. In urban environments, for example, small three-wheeled electric cars could be suitable for transport between the city and the suburbs, but today, they are too slow to be allowed on the roads and too fast to be allowed on the bike lanes.

Interdependence between different industry sectors and technological solutions for transformation can also be an obstacle. Electrification of the road transport sector is dependent on developments and cost-reductions in the battery industry, and developments in the battery industry in turn depend on the market growth created by electrification of transportation. The shipping sector is dependent on renewable fuel, and the time of one single source of fuel is probably over. The fact that the renewable fuel probably will come from different sources that the industry itself does not control is a major challenge.

A massive electrification of heavy industry and fossil free steel production, as well as aviation and shipping, is dependent on a well developed grid infrastructure. The electrification of hard-to-abate sectors as heavy industry is equally dependent on the development of and access to low-cost green hydrogen, whereas the development of a competitive green hydrogen industry in turn depends on there being a market for its products.



The value chain for production of batteries is geographically fragmented. Only a few countries in the world have cobalt and lithium. More than 50 percent of existing cobalt mines are located in the Congo, and the cobalt is then transported to China for refining and only later to other parts of the world for battery production. With this said, there is a development towards cobalt free batteries. The supply of raw material for battery production is a challenge as well, which leads to a need for more vertically integrated production facilities that includes recycling.

## 6.2 Important governance areas - infrastructure and path dependence

There is a need for massive public investment in fossil free infrastructure such as electricity grids, charging infrastructure for electric vehicles, railways, infrastructure for green mobility (public transport, car sharing, biking) as well as infrastructure for decarbonization of heavy industries (such as hydrogen). There is an urgent need for harmonization between countries regarding infrastructure in order to create big enough markets to promote green mobility and green industry solutions. It is equally important to try to avoid lock-ins when investing in infrastructure and try to create infrastructure that provides the conditions for a plethora of green solutions.

The digitalization perspective can be seen as an infrastructure since it is important to connect digitalization and decarbonization strategies. Connecting analytical capabilities are important for a connected transport system that enable more efficient logistics for a decentralized dynamic grid and for reverse logistics in a circular economy. Digitalization is equally important to create flexible resources such as smart charging of EV's, etc in an energy system based on renewable energy. For the shipping industry there is a big potential in the use of data where you can save 20% if you get an exact arrival time and can adjust the speed to that arrival time instead of circulating around the ports. But this is not happening in the scale and pace needed.

It is important to address the value chains and interdependence of different industries for a green transformation. Priority areas that should be addressed in order to identify and overcome bottlenecks include the development of batteries and the access of low-cost green hydrogen.



## 7. Regulations and standards

### 7.1 Main obstacles and bottlenecks for a rapid transformation - regulations and standards

The finance sector points to the lack of transparent data and accounting standards on CO<sub>2</sub>, and how to measure climate risk in companies and portfolios, as a main obstacle. Today it is not possible for financial actors to measure and value climate risks in the same way they value financial risks. There is also a lack of disclosure and accountability.

Current laws and regulations steer towards short term profitability prior to considering any long-term profitability within planetary boundaries. Financial structures and incentive programs are short-term and are designed to maximize returns over a relatively short period of time.

Some of the respondents have commented that there is a mindset problem, where many business leaders are still able to be proud of company profit regardless of damage to nature and ecosystems.

The interviews have also highlighted that existing regulations and standards hinder the transition towards circularity. A challenge is that the climate crisis and laws to address it in themselves are not enough of a motivator. Other planetary boundaries need to be a driver as well and integrated into policies. Raw materials are cheap and virgin materials are often cheaper than recycled materials, and the supply of these raw materials has historically been considered abundant. Furthermore, there is an information problem, as it is difficult for companies to understand which raw materials are best from an ecological perspective. Getting data from suppliers regarding the ecological footprint is a struggle. There is a lack of reliable open source LCA (Life Cycle Analysis) data for materials based on planetary boundaries or on biodiversity and climate. The same goes for other sectors such as food, where it is difficult for consumers to compare products from a climate/ecological perspective. There is a challenge though in making LCA more comparable, since nailing certain assumptions makes LCA less representative of actual conditions.

Short material lifetime is an important obstacle. Materials are not designed for long term use or recycling. For fashion and furniture, the materials are often blends instead of mono-materials, which makes them more difficult to recycle. There is also a lack of clarity on what types of material, for example what types of plastics, are approved, as well as how those materials should be recycled. Definitions of waste are a noted great obstacle since waste in many cases could be used as a resource if it was not defined as such. Another obstacle is that legislation is often based on origin of a raw material rather than quality which leads to nutrients and minerals captured from waste not being allowed in many markets.





A main problem with product design is the short life time and the lack of incentives to design products that last a long time or are easy to recycle hinders the transition. For complex products, lack of modularity and design for repair is a major parameter. A mobile phone can have up to 400 suppliers with highly-integrated different materials and it is therefore difficult to separate and recycle. And the large number of suppliers makes it hard to correctly account for embodied emissions. There are further no incentives for business models based on usage instead of ownership. There are also administrative obstacles for business models based on rental/usage instead of ownership.

## 7.2 Important governance areas - regulations and standards

The finance sector points out that expectations and requirements, as well as the development of standards, data collection, measurements and transparency, must be increased and companies should be held accountable. There are currently a range of initiatives in this respect, such as [SASB](#), [GRI](#), [TCFD EU Taxonomy](#), [TCDi](#), ECB 13, [NGFS](#), [IPCEI](#), [TFND](#) , but they are too slow and need to be developed and expanded.

Climate risks are more frequently viewed as financial risks by financial institutions, which is good, but it is also crucial to ensure that a higher focus on fossil risks does not only focus on divestment. It is equally important to focus on financing and increasing the needed green solutions and innovations.

Another area where standards and regulations are critical is in promoting a circular economy. Material use should take priority in climate mitigation and resilience strategies.

Strengthened and harmonized producer responsibility has been highlighted as an important governance area to address in order to promote reuse and circular business models. If the manufacturers were fully responsible for recycling all products, both products and materials would be designed to last longer and to be easier to recycle. This approach would also promote other business models based on renting and reusing instead of purely on ownership.

Product and material design criteria are important in order to promote long product lifetimes. Products should be designed for reuse, refurbishment, remanufacturing and recycling. There should be open source LCA data that support information on climate and planetary boundaries and/or on biodiversity. Open source LCA analysis would help those who handle raw materials make decisions. It could also be used as a way to inform final consumers.

The European Ecodesign directive could be used more often and more extensively as a tool. As of 1 September 2018, for example, energy intensive and inefficient halogen lightbulbs are not sold anymore across the European Union. The directive could be used to ban energy consuming driveline systems, chemicals, techniques and chemical treatments that should be phased out, but also for requiring that products must be composed of recycled materials and be possible to recycle. The new EU regulations on batteries and waste batteries are important.



Waste should, in many areas, be re-defined as a resource instead of waste in legislation. This is important for the reuse and recycling of materials as well as for capturing nutrients and minerals from waste. Food and biomass waste must be reduced and organic waste must be recycled. Legislation on nutrient and mineral waste should be based on quality rather than origin to promote recycled sources rather than virgin sources.

Regulation and standards are very important areas. It is crucial, though, not to regulate too much, but rather try to set an overall framework. There are two counterforces that need to be balanced: more regulation on some aspects and less regulation on others. One example is what is defined as food (for example insects as a source of protein) and regulations that lead to waste not being seen as a resource. Another example is small electrical vehicles that would be perfect in urbanized areas, but that are seen as too slow to fit within car traffic and too fast to fit among bikes. Policies and regulations need to drive transformation, entrepreneurship and a flora of green solutions, not hinder these.

## 8. Reflections on governance solutions and policies for a rapid transformation

Most companies highlight that industries act in the context of international competition. They do not want the competitive disadvantage of higher initial costs. Therefore, governance solutions need to cover markets that are big enough to be enticing from a business perspective. The business sector wants policies to be long-term and as generic, scalable, and technology-neutral as possible. The policies should reduce risk, stimulate innovation, entrepreneurship, technical progress, and cost-effectiveness, while also encouraging competition.

At the same time, however, some companies see that it can be a competitive advantage to speed up the transition to a fossil free industry with some help from national policies. The industry will then be better prepared with a strengthened competitiveness and opportunities for growth in a fossil free future.

The Paris Agreement is seen as “the best that we have”, and many respondents now express hope that it will start to deliver. It can be seen as a floor with a mechanism to strengthen ambitions over time.

The interviews have emphasized the idea of “climate clubs” (companies, countries, cities, etc.) as pragmatic ways to move forward and increase competitiveness. Additionally, climate clubs encourage the political mandate to agree on needed legislation and policies. Climate clubs or lead individual countries can also be important in fast-tracking developments and reaching economies of scale for new technical solutions. An interesting example is the early growth of renewables in Germany, due to high feed-in tariffs, that led to learning curves and large-scale benefits. This development gave the rest of the world access to low-cost renewables. It has sometimes been described as one of the most efficient examples of an environmental aid-program in history (even though it was costly for the Germans).



Some respondents have highlighted the importance of climate leadership and visionary storytelling from individual business leaders regarding that rapid transformation is possible and profitable. This can inspire others to follow, particularly if it is backed up by an expressed political intent to support green production and consumption and showcases new green solutions.

There is a dilemma between a need for more regulation as well as a need for less regulation; rather, there is a need for a holistic and careful re-conceptualization of the regulatory environment in order to ensure that it is fully in tune with climate goals and crucial planetary boundaries. Today, policies, definitions, and standards often hinder instead of drive the needed innovations. Another challenge is that regulation often requires complicated measurements, and you tend to measure what is easily measurable, which may result in complex administrative systems with low effect.

The potential for increased emissions in developing countries is probably higher than the potential for reduced emissions in developed countries. Some respondents based in the global south highlight the fact that it is emissions from the developed world that created the climate crisis and that the transition needs to be just. Important keys could be to secure access to low cost renewables around the globe, effective risk sharing mechanisms for financing the transition and knowledge sharing.

A green transition will lead to additional investments and new job opportunities in renewables, new industries, and regenerative agriculture, among others. These are all areas to invest in that could create new green jobs. However, new green jobs do not automatically replace the old brown jobs. Carefully designed policies and a just transition mindful of social and employment needs are important, otherwise, it will lead to injustices and populism, and, as a result, green transition will not be successful.

Shifting focus from barriers and bottlenecks to policy clusters, four key policy clusters can be derived:

1. Mechanisms for public financing and risk mitigation, where key vital policies include areas as risk sharing instruments, public procurement and green infrastructure investments.
2. Pricing and competitiveness measures, where price on carbon dioxide, removal of fossil subsidies, green subsidies are important components.
3. Regulations where key vital policies include climate laws; a predictable and phased-in end date or dates for fossil fuel exploration, extraction, and use, standards and requirements; and enhanced and harmonized producer responsibility and design criterias in order to promote circular business models.
4. Targets and roadmaps can provide “softer” and less interfering governance instruments than binding regulation, and can therefore be easier to implement and gain support for. Still, such instruments can play a vital role in a green transition process, by setting expectations, mobilising key actors and aligning plans across business sectors, and enhancing accountability.



# References

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# Appendix

The report is a working document and is based on informal interviews and discussions with the following people and a study of the roadmaps from Fossil Free Sweden. It contains the author's personal overall interpretations and conclusions. More interviews to follow.

Anders Wijkman, Climate-KIC, Club of Rome  
Andreas Follér, Head of Sustainability, Scania  
Anirbhan Ghosh, Chief Sustainability Officer, Mahindra Group  
Angela Naneu Churie Kallhauge, Head, Carbon Pricing Leadership Coalition  
Anna Lidbom, Head of Sustainability, LKAB  
Christoph Grobbel, Chairman, South Pole  
Daniel Sachs, CEO, Proventus Capital  
Emma Wiesner, Public Affairs Manager, Northvolt (now EU Parliament)  
Eva Karlsson, CEO, Houdini  
Fredrik Hannerz, Head of Unit Swedish Environmental Protection Agency, EU ETS  
Gareth Scheerder, Environment & Climate Manager, Pandora  
Hillary Irby, Head of Impact Investment, Soros Fund Management  
Jesper Kansbod, Head of Governmental Relations, SSAB/Hybrit  
Johan Ihrfelt, CEO, and Thomas von Otter, vice CEO, Peas Industries, OX2, Biond, Utellus  
Johan Kuylenstierna, Chair, Swedish Climate Policy Council  
Jonas Carlehed, Sustainability Manager, IKEA  
Jules Kortenhorst, CEO, Rocky Mountain Institute  
Leif Johansson, Chairman of the Board, Astra Zeneca  
Mahendra Singhi, MD & CEO, Anupam Bandol, Assistant General Manager, Ashwani Pahuja, Chief Sustainability Officer, Dalmia Cement (Bharat)  
Malin Strand, Policy Strategist & Project Manager, Fossil Free Sweden  
Marcello Palazzi, Founder Progressio Foundation, Global Ambassador B Lab and NOW Partners  
Marjo Koivisto, Investment Associate and Head of ESG, Proventus Capital  
Markus Hökfelt, CEO, Almi Invest Green Tech fund (now SEB)  
Martin Hultman, Associate Professor in science-, technology and environmental studies, Chalmers  
Mattias Goldmann, Chief Sustainability Officer, Sweco  
Michael Ellis, Managing Director & COO, Inherent Group  
Oliver Johnson, Leadership Group for Industry Transition, SEI, Head of Unit Climate, Energy and Society  
Per Olofsson, Investor, Climeon, Renewcell, Paracell, Silvicapital, etc.  
Pernilla Bergmark, Principal Researcher ICT Sustainability Impacts, Ericsson  
Peter Abrahamsson, EVP Sustainable Development and Linda Werner Head of Strategy and Business Development, Preem  
Pär Larshans, Director of Sustainability and Public Affairs, Ragn-Sells  
Sam Manaberi, CEO, Trine  
Sandrine Dixon-Declève, Co-President of The Club of Rome, Chair of Economic and Societal Impact of Research and Innovation (ESIR) expert group, Ambassador of the Energy Transition Commission for Europe  
Stefan Henningsson, Climate Specialist, Nordea  
Simon Bergulf, Director Regulatory Affairs, Maersk  
Sumant Sinha, Managing Director and Chairman, ReNew Power  
Svante Axelsson, National Coordinator, Fossil Free Sweden  
Sverker Åkerblom, Investment manager, Blackrock (now CEO Tectonic Shift)



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