

GREEN ECONOMY IN NORWAY: EXECUTIVE SUMMARY

The objective of this report is to examine to which degree the Norwegian economy is an environmentally sustainable or 'green' economy and to identify fundamental parameters to address in order to make the Norwegian economy more green. In addition, the report analyses barriers and opportunities related to a green economy in Norway.

What is a 'Green Economy'?

In recent years, there has been increased international focus on the idea of 'green economy', with discussions and policy measures aimed at a restructuring of the economy in a more environmentally friendly direction taking place in a number of countries. There is, however, no generally accepted and precise definition of the concept 'green economy' or the related terms 'green growth' and 'green jobs'. 'Green growth' is often used to describe growth in industries that deliver environment-related products and services and in such a context the term 'green jobs' is used for jobs in these industries.

In this study, we are taking a broader perspective on the concept of green economy, based on working definitions used by the UN's environmental programme UNEP and others. Green economy is in our view not a niche in the overall economy, but a type of economy in which natural capital and environmental costs are systematically valued and integrated in the economy as a whole. On this basis, we in this study define a green economy as an economy in which industries aim to ensure efficient value creation within an environmentally sustainable framework. Fundamental dimensions in a green economy can be separated into the categories 'input', 'process' and 'output'. The input dimension concerns the degree to which the resources used are sustainably exploited or harvested, the process dimension concerns the degree to which production processes are resource efficient and environmentally friendly production processes, and the output dimension is related to the degree to which the resulting product, service and/or waste has a negative impact on the environment and is recyclable. In line with our definition of 'green economy' described above, we understand 'green growth' as economic growth that has been de-coupled from negative environmental impact. A 'green job' is in this context thus a job that emphasizes efficient value creation within an ecologically sustainable framework, and it can exist in any sector. Furthermore, we define 'green industries' as industries whose main goal is to contribute to a) more efficient use of limited natural resources, b) reduced emissions of pollution or c) improved cleansing or filtering (end-of-pipe).

Norway's status with regards to green economy

Based on the OECD's five categories of factors that should be examined when looking at a green economy, we have made an assessment on a generic level of how green Norway's economy currently can be considered to be. Our conclusion is that Norway's current type of economy is situated somewhere between the extremities 'green' and 'red' (i.e. very environmentally unfriendly) and thus rather is a 'yellow economy'. On the one hand, a high level of education, a rich natural resource base, generally high environmental standards and resource-efficient production processes plus a number of policy initiatives to encourage a greener economy, provide Norway with strong green credentials. On the other hand, factors such as a dominating petroleum industry, an unsustainable and increasing pressure on natural resources, an unsustainable and increasingly large ecological footprint from consumption and a lack of an overall political plan for a transition to a more ecologically sustainable and low emission society, has the effect that the overall trend is that Norway's economy is on a trajectory making it increasingly less environmentally sustainable. In Norway green industries currently make up a limited share of the economy as such, about 2-4 % of GDP (a level typical for Western countries). We estimate that green industries in

Norway (incl. public transportation) in 2008 was behind value creation of NOK 96 billion and employed 89 053 people.

In this study, we have developed a tool with a number of criteria under the categories 'input', 'processes' and 'output' that can be used to assess to which degree a particular sector, industry or institution can be considered to be 'green'. We have tested this tool in brief and generic analyses of six Norwegian industries: Tourism, transport, health, aquaculture, petroleum and renewable energy.

Within the input dimension, land use is one criterion. With regards to this criterion, the tourism and petroleum industry show good results, while the renewable energy (hydropower and wind energy), aquaculture and transport industries are more problematic due to negative impacts on environmental and recreational values locally. Within the process dimension, carbon intensity is one criterion. With regards to this criterion, the transport and petroleum industries score poorly (the Norwegian petroleum sector does, however, score high on energy efficiency), while particularly the renewable energy and health industry does well as they mainly rely on hydroelectric power. Within the output dimension, environmental effect is a criterion. The renewable energy industry and suppliers of services rank highly as a consequence of the small environmental effect of their product or service, while the petroleum and transport industries score poorly as they generate products and services that generate a significant amount of pollution.

Barriers and opportunities

Five types of barriers stand in the way for restructuring the Norwegian economy in the direction of a more environmentally sustainable economy: The tendency towards being locked into a development track that is one-sidedly orientated towards the petroleum industry, strong vested interests in existing economic structures, costs of restructuring and unclarity about who should bear those costs, market failure and sectoral silos. In order to achieve a successful transition towards a more green economy in Norway, it will be especially important to counteract the tendencies towards petroleum lock-in and in addition assessments of natural capital and environmental costs should to a larger extent be integrated into economic planning.

Norway has significant opportunities to promote innovation, competitiveness and a knowledge-based economy related to resource efficiency and environment. A focus on the principles of green economy will be an important element in this process, which should involve innovation in resource-based as well as service-based industries. Norway is rich in resources that will be important within a green economic paradigm; clean energy (water, wind, and biomass), food (aquaculture) and materials (metals, forest). Norway thus has a good resource base for a future economy where the petroleum industry might play a smaller role than today. Norway also has significant potential within clean green industries, maybe especially in relation to energy, waste treatment systems and advisory services. Considering the high levels of education and technology in Norway and the substantial funds the Norwegian government invests into public healthcare, Norway is also in a position to become a world-leader in the development of efficient and high tech health services. An increased focus on the green economy dimension within all sectors and industries throughout the next decades will manifest itself in different ways and at different speeds in the different industries. For a high-cost country such as Norway, it will generally be important to be at the forefront of development, in order to retain a leading position in the knowledge economy and get the competitive advantage of being an early mover.

Norway has a highly educated population and a creative work culture where employees are often encouraged to participate in shaping their own work place. Green economy is not a *one size fits all* package; it is about realizing green principles at the work place and on all levels of a business in a manner adapted to the specific circumstances. In many cases, a focus on principles of a green economy will help to secure jobs through more efficient use of

resources and innovation. Management as well as labour unions in the public and private sector have an important role to play in directing attention towards issues of sustainability and green economy, and to create conditions and incentives at the work place that will trigger and leverage on the interest and creativity of employees.

The benefits of a transition towards a more green economy are multiple. Improving assessment and integration of the value of natural capital into planning processes will contribute to securing natural assets and natural capital for both the present and future generations. A significant increase in electrified transport would reduce Norway's greenhouse gas emissions and solve the significant air pollution problems currently experienced in a number of Norwegian cities under certain atmospheric conditions. A gradual transfer of value creation from the petroleum sector to other and more green growth industries (such as renewable energy, aquaculture, mining, ICT) would significantly reduce Norway's direct and indirect greenhouse gas emissions, reduce risks related to increasing dependence on the petroleum industry, and reduce risks related to developing petroleum extraction in vulnerable Arctic offshore areas. As a resource-rich country in a world characterized by increasing scarcity for many natural resources, it seems likely that Norway is poised for a significant expansion within a number of primary industries. A strong focus on ensuring an environmentally sustainable development of primary industries will in this context be important to secure competitiveness internationally and for the long-term conservation of Norwegian natural assets and natural capital to the benefit of present and future generations.

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