DYNAMIX
Decoupling growth from resource use and environmental impacts

POLICY REPORT
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# An overarching policy mix for fostering sustainable consumption and production – synthesis of potential impacts

*This policy report presents the findings from ex-ante impact assessments of the overarching policy mix aimed at fostering sustainable consumption and production to support decoupling.*

*The overarching policy mix is one out of three policy mixes developed in the DYNAMIX project. Each policy mix was developed based on an understanding of relevant drivers for unsustainable resource use and informed by an ex-post analysis of cases for successful or failing policy support for achieving decoupling. In contrast to the other two policy mixes (which focus on land use and on the use of metals and competing or substitute materials), the overarching policy mix aims at supporting decoupling of EU consumption from resource use and environmental impacts through creating supportive framework conditions for producers and consumers to make more sustainable choices.*

*After an executive summary, this report first presents the rationale of the policy mix (section 1) and then describes its objectives and instrument mix (section 2). In a next step, the report highlights both potential key environmental impacts (section 3.1) as well as potential side-effects (economic and social impacts as well as issues of legal feasibility and public acceptability – section 3.2) that may reduce the policy mix' potential environmental effectiveness. Based on these key findings the policy report then provides suggestions for revising the policy mix, which could mitigate such side-effects and hence foster the mix' potential environmental effectiveness (section 4).*

## 0 Executive summary

The overall environmental impact related to the consumption of goods and services in the EU continues to grow, both within and beyond the EU. Since an increasing share of the final and intermediate goods consumed in Europe are produced outside of Europe, we shift a growing proportion of impacts of our consumption (linked to the extraction of materials, processing and manufacturing and transport of final and intermediate goods) to other parts of the world. For instance, from 1995 to 2008, greenhouse gas emissions outside the EU, but related to EU consumption, increased from 13% to 24%.

A web of interrelated drivers appears to lie at the root of observed trends towards increasing consumption over the last decades. Drivers include population growth, rising affluence, de-

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creasing production prices, increasing pace of product innovation, increasing availability of consumption choices through the expansion of trade, fossil-fuel dominated infrastructures and consumption patterns shaped by social norms, advertising and consumerist values.

Against this background, the overarching policy mix aims at combining instruments that could help creating supportive framework conditions for producers and consumers to make more sustainable choices. The mix' structure and design is presented in the following section.

Aiming to tackle this web of drivers, the overarching policy mix combines price-based instruments, incentives for innovation, regulatory instruments, and information for and education of consumers to achieve the following vision.

*By 2050 all European citizens meet their basic needs and enjoy high levels of quality of life and well-being. At the same time, significant shifts in production and consumption patterns have significantly reduced the impacts associated with the average consumption of a European citizen and have brought Europe's overall footprint within the earth's carrying capacity. Including through system innovation, resource efficiency and recycling have been substantially improved, and resources are used in an almost perfect circular economy.*

The overarching policy mix comprises eight policy instruments, aimed at achieving several objectives linked to fostering sustainable consumption and production to support decoupling:

| Longer-term objectives | Instrument |
|---|---|
| Encouraging a shift from working time to more leisure time for sustainable activities | (1) Labour market reform fostering a shift from consumption to leisure |
| Enable more responsible choices vis-à-vis overconsumption and waste generation | (2) Step-by-step restriction of advertisement and marketing |
| Products are more easily repairable and have longer durability and operational lives | (3) Boosting Extended producer responsibility (EPR) schemes |
| Smart pricing – full cost pricing for resource provision, internalisation of externalities to the extent feasible | (4) Tax on material use, incineration and landfilling (Circular Economy Tax Trio)<br>Price incentives for resource-efficient products through (5) feebates and (6) VAT reductions |
| System innovation replacing inefficient and resource intensive systems is fostered | (7) Skill enhancement programme<br>(8) Support for local currencies |

In order to assess the potential of this policy mix to contribute to the DYNAMIX key environmental targets for the EU for 2050:

I. Reducing consumption of virgin metals by 80%, compared to 2010 levels.
II. Limiting annual per capita greenhouse gas (GHG) emissions to 2 tons of $CO_2$ equivalent.
III. Reducing consumption of arable land to reach zero net demand of non-EU arable land.
IV. Reducing nutrient surpluses to levels achievable by the best available techniques.
V. Managing freshwater use so that no region experiences water stress.

Potential environmental and socio-economic impacts as well as issues of legal feasibility and public acceptance were assessed through qualitative assessments and, where possible, quantitative model simulations. These ex-ante assessments indicate the following potential impacts of the overarching policy mix:

| Policy instrument | Impacts | | Public acceptance | Legal feasibility |
|---|---|---|---|---|
| | Environmental | Socio-economic | | |
| Labour market reform fostering a shift from consumption to leisure | | | | |
| Step-by-step restriction of advertisement and marketing | | | | |
| Boosting (EPR) | | | | |
| Circular Economy Tax trio | | | | |
| EU-wide introduction of feebate schemes | | | | |
| VAT reductions | | | | |
| Skill enhancement programmes | | | | |
| Support for local currencies | | | | |

| | | | | | |
|---|---|---|---|---|---|
| ***Legend*** | | *likely positive* | - | *likely rather negative* |
| | | *Likely rather positive* | -- | *likely negative* |
| | | *likely neutral* | | |

While these assessments indicate a likely, but not quantifiable, contribution of the overarching policy mix to achieving the DYNAMIX key targets, potential socio-economic impacts and issues of public acceptance might prevent this policy mix from being implemented or might reduce its effectiveness. Socio-economic impacts include increasing compliance costs for businesses and enforcement effort for administrations or potential job losses in the advertising sector. Partly linked to socio-economic impacts, public acceptance is likely negative for instruments potentially leading to job losses in certain sectors or for lower qualification levels.

The policy mix was designed to be consistent, i.e. minimising conflicts and maximising positive interactions between instruments. For instance, *boosting EPR schemes* and the *Circular Economy Tax Trio* use different mechanisms (regulatory and market-based) to encouraging resource efficient product design. Most importantly, skill enhancement programmes can capture skilling needs in the formal economy, e.g. for resource efficient processes and product design, hence (i) improving match-making between businesses' skill needs and employees' skills and (ii) alleviating employment and distributional effects of other instruments in the overarching policy mix.

Despite a consistent design of the policy mix, the assessment results indicate that

a) Some of the instruments will likely face significant challenges as regards political feasibility;
b) The policy mix will not be able to achieve the environmental key targets set out, even if all instruments were politically feasible.

By adjusting the potentially contentious policy instruments so that the potential negative side-effects are minimised (e.g. using voluntary instead of mandatory approaches to labour market

reform and to local currency schemes; including a recycling of tax revenues as close as possible to the affected actors), political feasibility of the overarching policy mix could be fostered.

Furthermore, strengthening a smart and effective time-sequencing (roadmapping) of the policy instruments can further help to improve political feasibility. A sequenced approach should

I. First introduce less contentious measures (e.g. information campaigns accompanying or preceding taxation; first targeting misleading claims and visual pollution in restriction of advertising) that can help pave the way for;

II. Later introducing more ambitious policy proposals (because these first measures provide targeted actors with potentially positive empirical experiences and thus might trigger more positive responses to later policy proposals which without the first measures would not have been as acceptable); and

III. Ensure instruments fit for mitigating potentially negative side effects (e.g. skill enhancement programmes, subsidies for poorer households) are introduced sufficiently early to be functioning when side effects of other instruments start occurring.

The concept of policy mixing is promising because it

- Requires identifying most important drivers to be tackled to achieve certain objectives;
- Allows bundling together instruments in a way that contributes to achieving set targets while minimising or mitigating unintended negative side-effects, thus strengthening acceptability and political feasibility of the policy mix.

However, the concept of policy mixes might clash with political practices and experience. Resulting from political needs, such as existing alliances, election-based tactics or lacking time or knowledge long-term strategic policy mixing poses a formidable challenge.

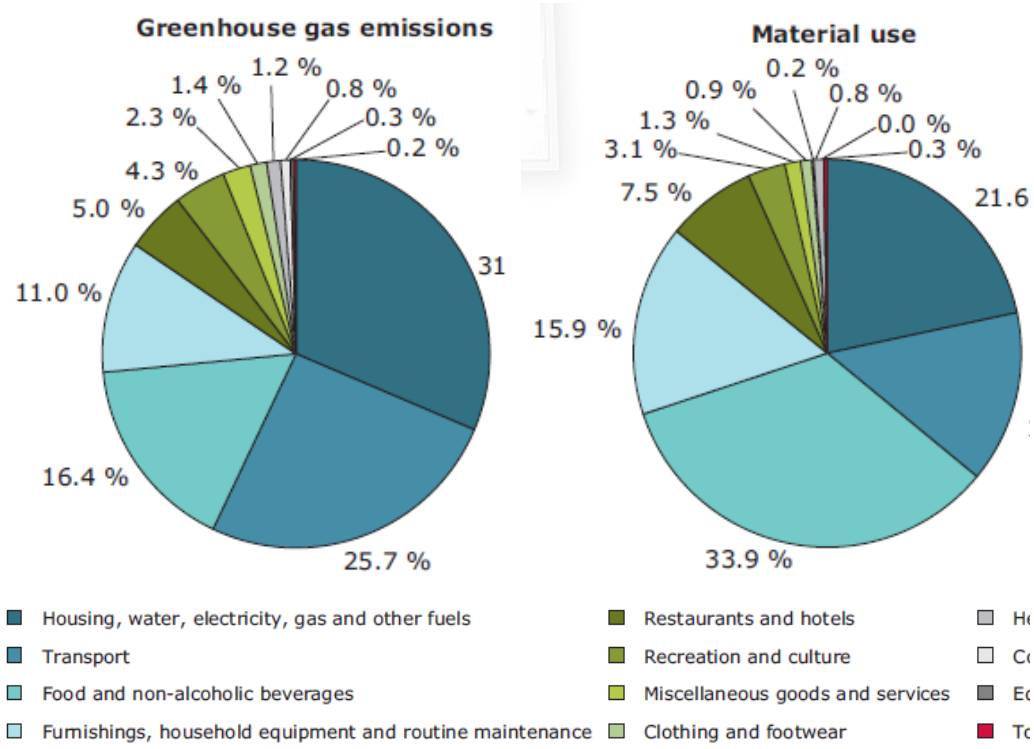
The ex-ante assessments undertaken in the context of the DYNAMIX project could only partly be based on harmonised assumptions and parameters. Therefore, the results of the qualitative and the quantitative assessments differ – in some cases significantly. Furthermore, the assessments undertaken were not able to assess actual cumulative effects of the instrument combination in the policy mix beyond individual effects. This remains a methodological challenge requiring more research.

# 1 Unsustainable resource consumption – rationale of the overarching policy mix[1]

The overall environmental impact related to the consumption of goods and services by households and businesses in the EU continues to grow, both within and beyond the EU. Three consumption categories were found to account for more than two thirds of consumption-related greenhouse gas (GHG) emissions and material use: food and drink, housing and utilities, and transport/mobility (see Figure 1 below).[2]

**Three consumption categories account for the largest share of the EU's environmental impacts: Housing, Transport, Food and drink**

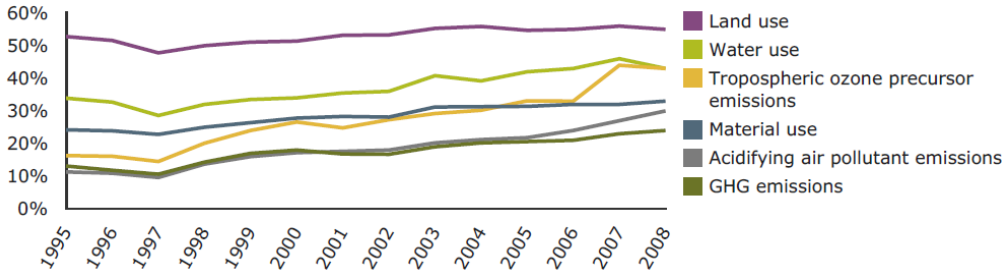
Figure 1: Greenhouse gas emissions and material use caused by private (household) consumption by consumption category, EU-27, 2007; Source: EEA (2012)[3]: 15, adapted




Since an increasing share of the final and intermediate goods consumed in Europe are produced outside of Europe, we shift a growing proportion of impacts of our consumption (linked to the extraction of materials, processing and manufacturing and transport of final and intermediate goods) to other parts of the world. From 1995 to 2008, the share of several environmental impacts related to EU consumption grew – for instance, GHG emitted outside the EU increased from 13% to 24% (see Figure 2 below).[4]

**EU consumption leads to increasing shifting of environmental impacts to other countries**

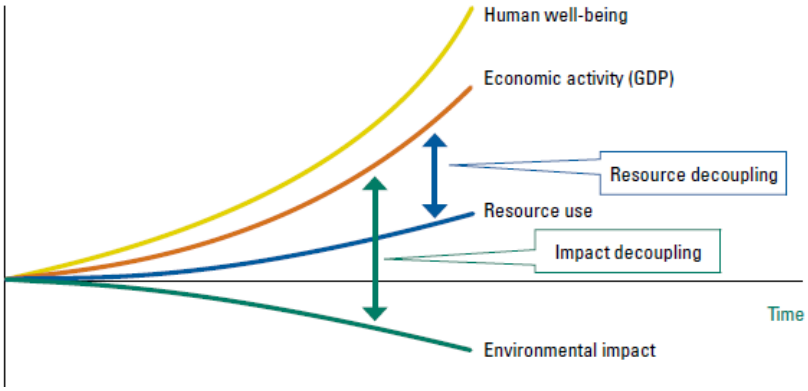
Figure 2: Percentage of the EU footprint exerted outside EU borders; Source: EEA (2015)[4]: 37



Against this background of increasing resource use and environmental impacts, efforts are needed to foster the decoupling of EU consumption from resource use (resource decoupling) and environmental impacts (impact decoupling) (see Figure 3 below).

**EU policies needed to support resource and impact decoupling**

Figure 3: Concept of resource and impact decoupling; Source: UNEP (2011)[5]: xiii



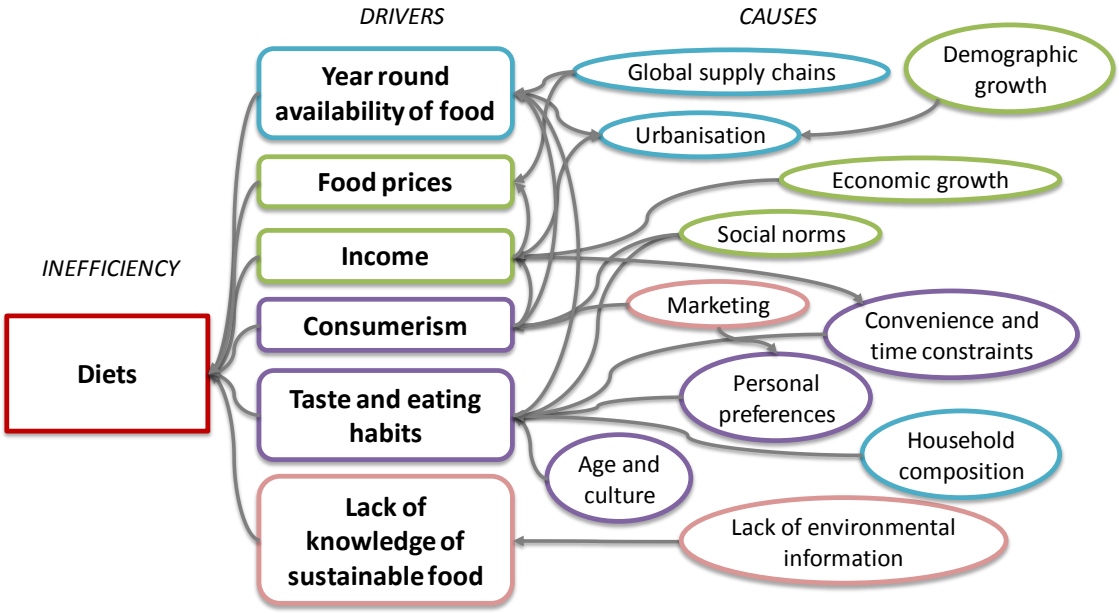

In order to effectively target policy support for decoupling it is essential to understand and identify the main drivers of unsustainable consumption of EU citizens and businesses.

## 1.1. Main drivers of unsustainable consumption

**A complex web of drivers affects (un)sustainability of resource use**

The increases in consumption of resource-intensive goods and services observed in the EU over the last decades have no single most important driver. Rather, a web of interrelated drivers results in the observed trends. Drivers include population growth, rising affluence, decreasing production prices, increasing pace of product innovation, increasing availability of consumption choices through the expansion of trade, fossil-fuel dominated infrastructures and consumption patterns shaped by social norms, advertising and consumerist values (Figure 4 below exemplifies the interaction of drivers affecting dietary choices).[6]

Figure 4: Drivers and causes for unsustainable diets and food choices; Source: Tan et al. (2013)[7]: 67



**Social peer pressure and consumerism contribute to unsustainable consumption**

Widespread **consumerism**, promoted by advertising and social peer-pressure, encourages individuals to establish their place in society through material belongings (e.g. housing, vehicles, and products) and lifestyle choices (e.g. dietary choices, choices of holiday destinations and transport mode). This causes people to consume to cultivate an identity, an image and prestige vis-à-vis other individuals and groups. Hence, consumption goes beyond satisfaction of basic needs and "wants" are often perceived as "needs".

**Short pay-back times, inadequate resource pricing and insufficient liability rules contribute to unsustainable production**

Producers and **production** are prone to unsustainable resource use, inter alia, because profit demands and pay-back times for investments in combination with inadequate resource pricing complicate long-term planning and internalisation of external costs of resource use.[8] This incentivises short product lifespan (including built-in obsolescence) and limited life-cycle costing[9] in investment decisions.[10] Insufficient liability rules and warranties for products in the private sector and the existence of environmentally harmful subsidies further exacerbate this.[11]

Such production and consumption-side factors lock-in unsustainable consumption patterns, yielding systemic linkages between technology, existing infrastructure and behaviour patterns that are challenging to break. Transport infrastructure development, for instance, suffered from constrained financing in the context of the financial crisis – banks were less willing to invest in more sustainable long-term infrastructure projects such as railways and underground networks. Adding in social factors like convenience and individual motorisation rates further make investing in green transport infrastructure a difficult choice for policy.

The underlying drivers of unsustainable consumption pose formidable challenges: they are deeply embedded and often mutually reinforcing. Our economic model is fuelled by consumption spending, and GDP growth is largely perceived as the only way to ensure jobs and prosperity. In this context, institutions and their policies seem to view consumption as a panacea against economic shocks and to keep the economy going.

## 1.2. Intervention points for consumer policy

This diverse set and web of drivers raises the key question of if and how policy could foster sustainable consumption behaviour[12]. Information-based instruments (such as product eco-labelling) are popular and used wide-spread to promote behavioural change. While important to improve consumer information and awareness, evaluations of such policies have shown that information-based instruments used in isolation are not effective.[13] This calls for combining different additional policy instruments as part of a policy mix.[14]

**Tackling the complex web of drivers calls for combining different policy instruments in a policy mix**

Further points for potentially relevant policy intervention can be derived from the multi-disciplinary fields of behavioural economics and sociology of consumption. Here, research has produced evidence that framing, anchoring, mental shortcuts, information overload and emotions play a crucial role in consumer decision-making.[15] Furthermore, learning from research using practice theory everyday practices, such as consumption choices, are shaped by the interplay of materials (for example infrastructure and technology), competences of consumers (mainly skills and knowledge) and meaning to the consumers (referring to values, attitudes and emotions).[16] Hence, instead of focusing on the individual and its general attitude towards the environment,

consumer policies need to consider and integrated the impact of social groups and social practices (for example bike riding or car sharing).[17]

Against this background of a complex web of interlinked drivers that cause unsustainable consumption, the overarching policy mix aims at combining instruments that could help creating supportive framework conditions for producers and consumers to make more sustainable choices. The mix' structure and design is presented in the following section.

## 2 Structure and design of the policy mix – objectives and instrument mix

In the wider context of fostering sustainable consumption and production to support decoupling, the overarching policy mix aims at achieve the following vision:

**Vision for the overarching policy mix**

*By 2050 all European citizens meet their basic needs and enjoy high levels of quality of life and well-being. Significant shifts in production and consumption patterns mean that impacts associated with the average consumption of a European citizen have gone down significantly and Europe's overall footprint is within the earth's carrying capacity. Efficiency and recycling in the economy have been substantially improved, including through system innovation (rather than only through technical improvements). Energy and materials are effectively used in an almost perfect circular economy.*

Through this vision, the overarching policy mix is intended to contribute to the DYNAMIX key environmental targets for the EU for 2050:[18]

**DYNAMIX key environmental targets**

I. Reducing consumption of virgin metals by 80%, compared to 2010 levels and measured as raw material consumption (RMC).

II. Limiting annual per capita greenhouse gas (GHG) emissions to 2 tons of $CO_2$ equivalent.

III. Reducing consumption of arable land to reach zero net demand of non-EU arable land.

IV. Reducing nitrogen and phosphorus surpluses in the EU to levels that can be achieved by the best available techniques.

V. Managing freshwater use so that no region experiences water stress.

**Making the case for combining information-based, market-based and regulatory instruments**

The above vision and key targets make a clear case for combining price-based instruments, incentives for innovation, information for and education of consumers and improved governance (for example mainstreaming of resource efficiency concerns into all EU policies), all of which the EU has also recognised as policy priorities.[19] In addition, regulations (bans, emissions or quality standards, targets) as well as wider governance tools (transparency, accounting, assessment tools, participation and an improved science-policy interface to provide for evidence based policies) are also important for increasing resource efficiency and reducing environmental impacts associated with resource consumption.

The overarching policy mix comprises eight policy instruments, aimed at supporting the achievement of several objectives linked to fostering sustainable consumption and production to support decoupling (see Table 1 below).[20]

Table 1: The overarching policy mix – instruments selected in relation to drivers and objectives

| Drivers | Longer-term objectives | Instrument and type |
|---|---|---|
| Rising affluence and material aspirations | Encouraging a shift from working time to more leisure time for sustainable activities | (1) Labour market reform fostering a shift from consumption to leisure<br>*regulatory instrument* |
| Consumerist values and pace of innovation fuelling consumption | Enable more responsible choices vis-à-vis overconsumption and waste generation | (2) Step-by-step restriction of advertisement and marketing<br>*regulatory instrument* |
| Short product lifespan | Products are more easily repairable and have longer durability and operational lives | (3) Extended producer responsibility (EPR)<br>*regulatory instrument/market-based instrument* |
| Inadequate resource pricing, insufficient availability and affordability of more sustainable choices | Smart pricing – full cost pricing for resource provision, internalisation of externalities to the extent feasible | (4) Tax on material use, incineration and landfilling (Circular Economy Tax Trio)<br>*market-based instrument* |
| | | (5) EU wide introduction of feebate schemes for selected product categories<br>*market-based instrument* |
| | | (6) Reduced VAT for the most environmentally advantageous products and services<br>*market-based instrument* |
| Technological and social lock-ins | System innovation replacing inefficient and resource intensive systems is fostered | (7) Skill enhancement programme<br>*information-based instrument* |
| | | (8) Support for local currencies<br>*market-creating instrument* |

*Source: Adapted from Ekvall et al. (2015)*

**Policy instruments selected in relation to drivers and objectives of the policy mix**

The following overview specifies the mechanism of the eight policy instruments.[20]

**Policy instrument 1: Labour market reform fostering a shift from consumption to leisure**

(1) Labour market reform fostering a shift from consumption to leisure

This instrument includes measures to encourage a reduction in working hours. Among other measures, it could include the examination of longer statutory vacation times, the dismantling of discrimination of part-time workers, the introduction of flexible wage records and reductions in the fixed cost of labour that currently disfavour part-time posts (e.g. in employee taxation and administration).

As such measures are likely to be met with strong opposition, a public debate could lay the ground for further pilot policies in Member States in the mid-term. Later, an EU framework could follow.

On average leisure time pursuits tend to be associated with lower GHG emissions than work or consumption activities. A shift from income to leisure thus holds the potential to decrease consumption levels compared to a business-as-usual scenario with continually rising incomes.

(2) Step-by-step restriction of advertisement and marketing

Given the role of marketing and advertisement in stimulating consumption levels and fostering

values of material status, step-by-step restrictions on advertisement will be introduced, including:

**Policy instrument 2: Step-by-step restriction of advertisement and marketing**

Extending existing regulation (e.g. targeting alcohol/cigarettes; sugar/fats; visual pollution in cities);

Using synergies with other societal goals, particularly improving public health and building partnerships with policy-makers and stakeholders;

Using existing EU law on misrepresentative claims to strengthen the commercial and environmental value associated with developing an environmentally beneficial product or service;

Funding consumer organisations to bring legal action against misleading marketing that wrongly suggests a pro-environmental association;

Moving towards restrictions of advertisement on luxury goods linked to conspicuous consumption.

**Policy instrument 3: Boosting extended producer responsibility (EPR)**

(3) Boosting extended producer responsibility (EPR)

EPR provides incentives to manufacturers for better product design and for setting up more resource efficient business models. The EPR schemes also encourage waste management solutions through the internalisation of the negative effects of waste resulting from end-of-life products.

The producers' responsibility proposed here would be extended to the entire lifecycle of a selected range of products (therefore including their take-back, recycling or disposal) to decrease total environmental impact of those products. Under the new EPR programmes, industry would have the full responsibility (including costs) for the disposal of packaging and other materials associated with the product it puts on the market.

In addition to improving existing extended producer responsibility (EPR) schemes (for Waste Electrical and Electronic Equipment, End-of-Life Vehicles, Battery and accumulators, and Packaging) further EPR schemes would be set up on EU level to cover a selected number of further products: Tyres, Graphic paper, Medical waste, Oils and Agricultural films.

**Policy instrument 4: A Circular Economy Tax Trio**

(4) Circular Economy Tax Trio)

The "circular economy tax trio" combines taxes on virgin materials, landfills and waste incineration aiming at three objectives simultaneously: (a) reducing raw virgin resources extraction; (b) encouraging recycling/making recycling more profitable; (c) internalising externalities linked to the extraction/transportation of raw materials and to waste landfilling and incineration.

The tax-mix will target both the early stages of the lifecycle, by making the use of raw materials more expensive through a resource extraction tax on aggregates of €2.40 per tonne by 2020, and the final stages (disposal) – landfilling and waste incineration becoming more expensive too (€90 per tonne of landfilled waste and €15 per tonne of incinerated waste by 2020).

**Policy instrument 5: EU wide introduction of feebate schemes**

(5) EU wide introduction of feebate schemes for selected product categories

This instrument would aim to develop at EU level a common framework for the introduction of bonus-malus schemes across the EU. The two basic principles are to: (i) Provide financial incentives for the purchase of low-emitting, environmental friendly products (bonus = rebate); (ii) Charge a fee for high-emissions and highly resource use appliances (malus).

The enhanced Bonus-Malus Scheme proposed here would (i) imply applying an improved version of the French Bonus Malus scheme on cars across Europe, rewarding the purchase of smaller, fuel-efficient as well as hybrid and electric cars, and penalising the purchase of large and fuel-inefficient cars; and (ii) be applied to other relevant product categories potentially including products such as batteries and accumulators, paints, detergents, refrigerators etc., based on their different environmental and social impact.

The bonus and malus need to be set at the right level for the schemes to be cost neutral – in particular for accounting for differences in prices across different countries and different price elasticities. These levels could not be identified in the project and would need in-depth consideration for practical implementation.

(6) Reduced VAT for the most environmentally advantageous products and services

This instrument involves a reduced VAT rate (therefore applying at point of sale, with no im-

pact on exports) of 6 % for the most environmentally advantageous or least resource intensive products and services across a wider range of products and activities, for which policy instruments in the form of EU environmental standards already exist or could be easily introduced.

**Policy instrument 6: Reduced VAT rates**

Products (and services) having been awarded the European Eco-label or the highest A+++ grade in the EU energy label would benefit from the reduced VAT rate of 6% in all MS. This reduced VAT rate would also apply to electricity from renewable energies, installation of energy saving materials and equipment/retro-fitting of people's homes, e.g. for insulation materials, and a selected number of services such as retrofitting of household appliances in order to make them more energy efficient, hotels/tourist attractions (which can already be eco-labelled), or environmentally beneficial locally labour intensive services such as local transport, repair, refurbishing, etc.

**Policy instrument 7: Skill enhancement programme**

(7) Skill enhancement programme

At the EU level, a strategy will be developed for (a) mainstreaming resource efficiency aspects into relevant academic and vocational curricula (economics, engineering, marketing, architecture, design, business accounting, land management, craftsmen, etc.) and (b) conceptual frameworks for training for professionals to develop skill and techniques relevant for implementing resource efficiency measures in existing firms or developing new business models.

It is important to address both white collar and blue collar jobs. Therefore, the skill enhancement programme will have to have targeted programmes, contents and design for (i) professionals and leaders responsible for strategic decisions, implementation of innovations, etc, and (ii) broader programmes which provide workers with "green" skills suitable for the new business models. Thus, both the necessary changes at the managerial and leadership level can be initiated as well as the swift reallocation of workers can be organised which is a necessary part of the decoupling.

**Policy instrument 8: Support for local currencies**

(8) Support for local currencies

The instrument entails the expansion of the use of alternative local currencies within communities for labour-based services. The alternative currency is initially distributed within the community, and then traded for local services negotiated in prices based on the currency. These services can include, for example, haircuts, cleaning, gardening, hosting, cake-baking, vegetable growing, chicken and egg rearing, child-care, care for the elderly, chauffeuring, public space improvements, equipment and auto repairs. As these trades are untaxed, this serves to make the local services more affordable, compared to products. The parts of the services that require material goods would be paid for in the usual currency.

Accumulation of the alternative currency would be made public - and so provide an alternative status metric to consumption. A person's balance of alternative currency could stand as a measure of social contribution because it shows that they are working for the community. This provides an alternative to earning in the formal economy as a route to deliver status and well-being, and so gives people options to achieve well-being through reducing paid working-hours. The currency would be electronic to allow for an automatic update of each person's balance of the currency.

In the following, we will highlight key findings from the ex-ante assessment of the policy mix's effects and describe the potential interactions between the instruments (section 3), as well as provide suggestions for revision of the policy mix (section 4).

# 3 Potential of the overarching policy mix to foster sustainable consumption and production to support decoupling

This section first presents potential key environmental impacts (section 3.1), as much as possible assessed against the DYNAMIX key environmental targets listed above. Then, we highlight potential side-effects (economic and social impacts as well as issues of legal feasibility and public acceptability – section 3.2) that may reduce the policy mix' potential environmental effectiveness.

## 3.1. Potential environmental impacts

The overarching policy mix can be considered as having positive **environmental effects**[21] because in combination the eight policy instruments will

**Potential environmental impacts through increasing prices as well as product availability and affordability, eco-design and enabling framework conditions**

a) Increase prices for use of materials and material-intensive products as well as for waste incineration and landfilling;
b) Increase the availability and affordability of less material-intense and more climate-friendly products and services;
c) Help integrate resource efficiency into product design through expanding EPR systems to additional waste streams (e.g. waste tyres, waste oils); and
d) Provide enabling frameworks for reducing material consumption in businesses through skill enhancement programmes, and among households via encouraging the reduction of working hours, restricting consumption-fuelling advertising and supporting local service exchange through local currencies.

Through these mechanisms, the overarching policy mix will likely contribute to increasing dematerialisation and decarbonisation and to fostering a circular economy. Furthermore, referring back to the vision underlying the policy mix, the instrument mix can be expected to improve efficiency and circularity in the economy.

Benchmarked against achieving the DYNAMIX environmental key targets, the policy mix will, with great likelihood, contribute to the following two targets.

*Target I: Reducing consumption of virgin metals by 80%, compared to 2010 levels and measured as raw material consumption (RMC).*

**Policy mix has a great likelihood to contribute to reduction of virgin metal demand through boosting EPR, reducing VAT rates and a Circular Economy Tax Trio.**

Although no exact level of contribution to this target can be given, findings for several instruments of the overarching policy mix indicate a great likelihood of contributing to achieving it. For instance, the instrument *boosting EPR* could effectively reduce the need for virgin materials. The effects of a full implementation of the WEEE Directive were estimated to reduce the need for extraction of lead by 131-340 kilotonnes per year in the EU[22].

In addition, the instrument *reducing VAT rates* for environmentally friendly and eco-labelled products could lead to material savings of more than half a million tonnes in the EU-25, assuming a market share of eco-labelled products of 5%.[23] Furthermore, a combined virgin material and landfilling tax, as proposed in the Circular Economy Tax Trio, could be expected to have effects similar to those of the UK aggregates tax that was combined with a landfill tax. Linked to this taxation, the use of primary aggregates in the UK was found to decline from some 260 million tonnes (Mt) in 1990 to around 146 Mt in 2011.[24] Combining the tax with a progressive landfill tax appears to have had positive effects on the use of recycled materials, which increased from 10 Mt in 1990 to 52 Mt in 2008.[25]

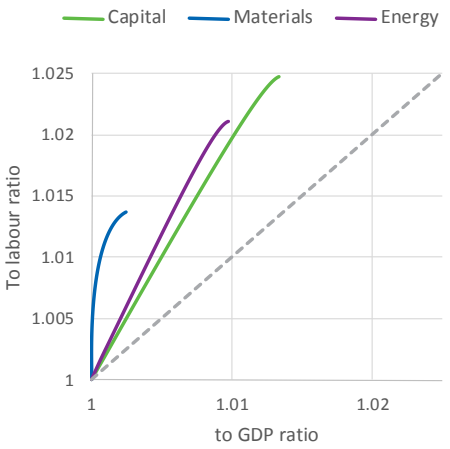
The instrument *Labour market reform fostering a shift from consumption to leisure* will lead to a decline in labour supply (see below under Socio-Economic Impacts). As linked to declining labour supply, the price of labour (wages) will increase, some substitution of labour by capital, energy and materials will increase, hence increasing the capital, energy and materials-to-labour ratios (see Table 2 and Figure 5 below). However, as the economy will produce less goods to be consumed, a reduction in the use of energy and materials will occur in the long run (-2.5% for materials use and -2.0% for energy use).

**Labour market reform fostering a shift from consumption to leisure could reduce material use and energy use by 2.5% and 2% by 2050, respectively.**

Table 2: Change in energy and material intensity as a result of consumption to leisure shift, changes 2020-2050 to baseline

| | 2020 | 2030 | 2040 | 2050 |
|---|---|---|---|---|
| Energy use | -0.5% | -1.0% | -1.6% | -2.0% |
| Materials use | -0.8% | -1.5% | -2.1% | -2.5% |
| Energy intensity | 0.5% | 0.8% | 0.9% | 1.0% |
| Materials intensity | 0.0% | 0.1% | 0.2% | 0.2% |

Figure 5: Change in capital, materials and ener GDP and to labour ratio (2015=1)




Source: MEWA model simulations

**Simulation results for a Circular Economy Tax Trio show only marginal effects on material use.**

Model simulations for the instrument *Circular Economy Tax Trio* indicate that the policy instrument will have marginal positive effects on material intensity (decrease by about 0.1%, see Table 3), meaning that the decrease in material consumption due to improved efficiency will be fully offset by the proportional increase in the production volume – hence highlighting a likelihood for economy-wide rebound effects.

Table 3: Potential effects of the Circular Economy Tax Trio on material efficiency, changes 2020-2050 to baseline; MEWA model simulations

| | 2020 | 2030 | 2040 | 2050 |
|---|---|---|---|---|
| Consumption | 0.03% | 0.05% | 0.06% | 0.08% |
| Material use | -0.02% | -0.01% | -0.01% | 0.00% |
| Material intensity | -0.06% | -0.07% | -0.08% | -0.09% |

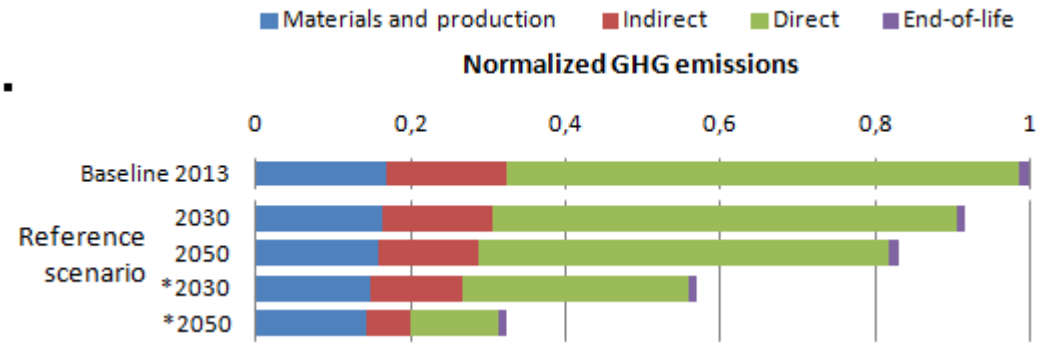
Another simulation model used – the MEMO II model – yields a slightly higher material efficiency increase of around 1.1% by 2030 and 1.5% by 2050.

*Target II: Limiting annual per capita greenhouse gas (GHG) emissions to 2 tons of $CO_2$ equivalent.*

Although no exact level of contribution to this target can be given, very likely the overarching policy mix contributes towards achieving it. For instance, introducing an *EU-wide feebate scheme* on passenger cars could reduce life-cycle $CO_2$-emissions of the EU passenger car fleet by more than 60% by 2050 compared to 2013 levels (see Figure 6 below).

**EU wide introduction of feebate schemes on passenger cars could reduce CO2-emissions of the EU passenger car fleet by >60% by 2050.**

Figure 6: Normalised emissions of EU passenger car fleet in $CO_2$-equivalents[26]




* with EU-wide feebate scheme on cars implemented

This effect stems largely from incentivising an increase in the share of hybrid and electric vehicles as well as smaller cars in the EU passenger car fleet. Car size is one important factor because a) less material is needed to manufacture small cars, thus reducing the emissions during materials provision and car production, and b) small cars require less fuel to drive, thus emitting less $CO_2$ per kilometre than larger cars. However, the choice of mobility technology (hybrid and electric vehicles rather than integrated combustion engines) has a much greater effect on GHG emission reduction than car size.

**Increasing the share of alternative engines in the car fleet has a much bigger impact than reducing car size and fuel need per car.**

Furthermore, also the indirect emissions of the car fleet, i.e. emissions from producing fuel/diesel and electricity for powering the cars, decline, because the feebate incentivises not only shifts to smaller cars needing less fuel/diesel production, but also making electric vehicles more efficient, hence needing relatively less electricity production. Potential rebound effects of an overall increasing size of the car fleet or more kilometres being driven with more efficient cars could counteract this emission saving effect[27] – but this could not be assessed with the models used within the project.

Other instruments of the overarching policy mix could complement the effects of reducing $CO_2$ emissions. For instance, the instrument *Labour market reform fostering a shift from consumption to leisure* could reduce work-related energy consumption – although this depends on the kind of leisure activities undertaken. A study for the UK finds the carbon footprint of leisure activities to be on average around 17% lower than the average for all other activities.[28] For Sweden, a decrease in work time by 1 % was estimated to reduce energy use and GHG emissions by about 0.8 % - and even when accounting for different energy intense activities conducted during increased leisure time, the emission reduction effect due to the income effect of reduced working time was greater.[29]

Against these assessments, we consider a positive effect of the overarching policy mix and hence a contribution to achieving the first two DYNAMIX key environmental targets very likely.

Due to the policy mix' focus on consumption – by businesses and households – of materials, products and services, the overarching policy mix likely has only limited, but rather positive effects on the other three DYNAMIX key targets (see Table 4 below).

Table 4: Potential contributions of the overarching policy mix on achieving the DYNAMIX targets

| DYNAMIX environmental key target for the EU for 2050 | Contribution of the overarching policy mix |
|---|---|
| I. Reducing consumption of virgin metals by 80%, compared to 2010 | Very likely positive effects and contributing to achieving the target, e.g. via *boosting EPR schemes*, *Reduced VAT rates* and *Labour market reform fostering a shift from consumption to leisure* |
| II. Limiting annual per capita greenhouse gas (GHG) emissions to 2 tons of $CO_2$ equivalent. | Very likely positive effects and contributing to achieving the target, e.g. via *EU-wide introduction of feebate schemes* and *Labour market reform fostering a shift from consumption to leisure* |
| III. Reducing consumption of arable land to reach zero net demand of non-EU arable land. | Likely somewhat contributing to achieving the target through<br>• reducing the need for (additional) extraction or landfill sites via the *Circular Economy Tax Trio*<br>• encouraging more small-scale (urban gardening) food production in households' leisure time via *Labour market reform fostering a shift from consumption to leisure* |
| IV. Reducing nitrogen and phosphorus surpluses in the EU to levels that can be achieved by best available techniques. | Likely limited contribution to achieving the target through<br>• encouraging more small-scale (urban gardening) food production in households' leisure time via *Labour market reform fostering a shift from consumption to leisure* |
| V. Managing freshwater use so that no region experiences water stress | Likely very limited contribution to achieving the target through<br>• reducing water needs for mining via *Circular Economy Tax Trio* |

**The overarching policy mix contributes mostly to reducing virgin metal consumption and to limiting per capita GHG emissions.**

Hence, although the assessments could not provide any quantification of the extent to which the policy mix can help achieving the DYNAMIX key targets, a positive contribution seems very likely. However, potentially negative side-effects of the policy instruments might prevent this policy mix from being implemented or might reduce its effectiveness – so that the above potential environmental effects may not occur or be different. In this context, socio-economic impacts as well as issues of legal feasibility and public acceptability of the mix must be considered.

**Potential side-effects reducing the effectiveness of the overarching policy – socio-economic impacts.**

## 3.2. Potential side-effects of the policy mix

### Socio-economic impacts

From a perspective of socio-economic impacts[30], potentially negative effects of the policy mix (or some of its instruments) on the costs for industries and/or state bodes, on the European labour market (employment effects) and on inequality (distributional effects) may adversely affect the likelihood of the mix being implemented as envisaged. Table 5 below presents both potentially positive and negative socio-economic impacts of the overarching policy mix.

Table 5: Potential budgetary, employment and distributional effects of the instruments of the policy mix

| Instrument | Budgetary effects (companies/state bodies) | Employment effects | Distributional effects |
|---|---|---|---|
| (1) Labour market reform fostering a shift from consumption to leisure | If reducing working hours is mandatory:<br>Likely negative effects due to labour productivity reductions<br>Likely greater monitoring and enforcement effort for state bodies | Likely negative effects in case of mandatory changes as mandatory changes would reduce productivity of workers especially among lower qualified work forces could increase lay-offs. | Likely negative in the case of mandatory changes leading to decreased productivity and increased unemployment, affecting less qualified workers most.<br>Likely positive effects in case of voluntary changes (e.g. introduction of voluntary flexible labour market arrangements) due to improved work-life-balance and eased job entry for graduates, young parents and young pensioners |
| (2) Step-by-step restriction of advertisement and marketing | Likely negative due to demand-driven reductions in ROI for the advertising sector<br>Likely greater monitoring and enforcement effort for state bodies | Likely negative effects through (a) direct job loss in the advertising sector and (b) indirectly in the wider economy through potential changes in consumer demand for certain products | Likely negative effects through an increase in unemployment<br>Likely positive effects through less visual pollution, advertising targeted at children and a potential increase in social capital through the reduction of consumerism |
| (3) Boosting Extended producer responsibility (EPR) | Expanding EPR schemes could suffer from additional administrative effort to monitor and sanction non-compliance (problems of free riding) and hence increased enforcement costs. | Likely small net positive effects due to greater labour-intensity of product design and recycling vs. waste management and incineration | Likely limited effects because while prices for certain products may increase due to EPR fees being added, durability should improve hence reducing the need for (quick) replacing |

**Potential budgetary, employment and distributional effects of the labour market reform instrument.**

**Potential budgetary, employment and distributional effects of the step-by-step restriction of advertisement instrument.**

**Potential budgetary, employment and distributional effects of the boosting EPR instrument.**

**Potential budgetary, employment and distributional effects of the Circular Economy Tax Trio instrument.**

| Instrument | Budgetary effects (companies/state bodies) | Employment effects | Distributional effects |
|---|---|---|---|
| (4) Circular Economy Tax Trio | Likely small positive effects due to material savings for companies<br>Likely negative effects for the mining sector | Likely small net positive effects due to greater labour-intensity of recycling vs. waste management and incineration<br>Likely negative effects on regional level for economies with larger mining shares in national account | Likely negative effects due to regional unemployment effects for economies with strong mining sectors<br>Likely negative due to regional income effects on poorer households located in countries with low incomes and high rates of landfilling |
| (5) EU wide introduction of feebate schemes | Managing a fund to ensure budget-neutrality of the feebate schemes (i.e. collecting taxes on non-green products and using this revenue to subsidise the green products in order to avoid the government having to finance the fund itself) is challenging and difficult to achieve due to price elasticities and uncertainty of demand development. | Likely only limited effects because the instruments encourage demand shift within given product categories and thus most labour reallocation should occur within the affected sectors and companies that produce both environmentally advantageous and disadvantageous products and services | Likely negative effects due to issues of affordability for lower income households needing to purchase products receiving a fee |
| (6) Reduced VAT | VAT reductions may increase compliance costs for enterprises and tax authorities | | Likely small positive effects because reduced prices may increase affordability of environmentally friendly products |
| (7) Skill enhancement programme | Likely positive due to a (better) matching between skill needs and skilled labour | Likely positive effects (also potential to mitigate negative effects of other policy mix instruments) as they allow the labour market to (better) adapt to a green(er) economy by improving matching between skill needs and skilling activities. Potential to shorten the process of job searching and of reducing the period of unemployment after a lay-off. | Depending on the design of the programmes likely positive effects because skilling could increase equality of employment opportunities |

| Instrument | Budgetary effects (companies/state bodies) | Employment effects | Distributional effects |
|---|---|---|---|
| (8) Support for local currencies | Potentially limited effects due to lower demand for products but greater demand for services in local communities<br>Depending on design of local currency schemes state bodies need to monitor and enforce taxation differences of participants to the local currency schemes | Likely small positive effects as local currencies reduce relative prices of locally produced services, which are in general more labour intensive than the economy on average, and thus increase employment at least locally | Likely positive as community activities are fostered across participants to the local currency schemes |

**Potential budgetary, employment and distributional effects of the support for local currencies instrument.**

Modelling results for the instruments *Circular Economy Tax Trio* and *Labour market reform fostering a shift from consumption to leisure* provide further detail on potential socio-economic impacts.

*Potential socio-economic impacts: Circular Economy Tax Trio*

Model simulations for the Circular Economy Tax Trio indicate that macroeconomic variables will change only slightly – depending on the simulation model used either slightly decreasing (MEMO II model) or slightly increasing (MEWA model) (see Table 6 below).

Table 6: Potential effects of the Circular Economy Tax Trio on major macroeconomic variables, changes 2030 and 2050 to baseline

| Macroeconomic variable | 2030 | | 2050 | |
|---|---|---|---|---|
| | MEWA | MEMO II | MEWA | MEMO II |
| GDP | 0.05% | -0,51% | 0.08% | -0,13% |
| Employment | 0.05% | -0,6% | 0.06% | -0,15% |
| Investment | 0.07% | -0,64% | 0.10% | -0,38% |

Source: MEWA and MEMO II model simulations

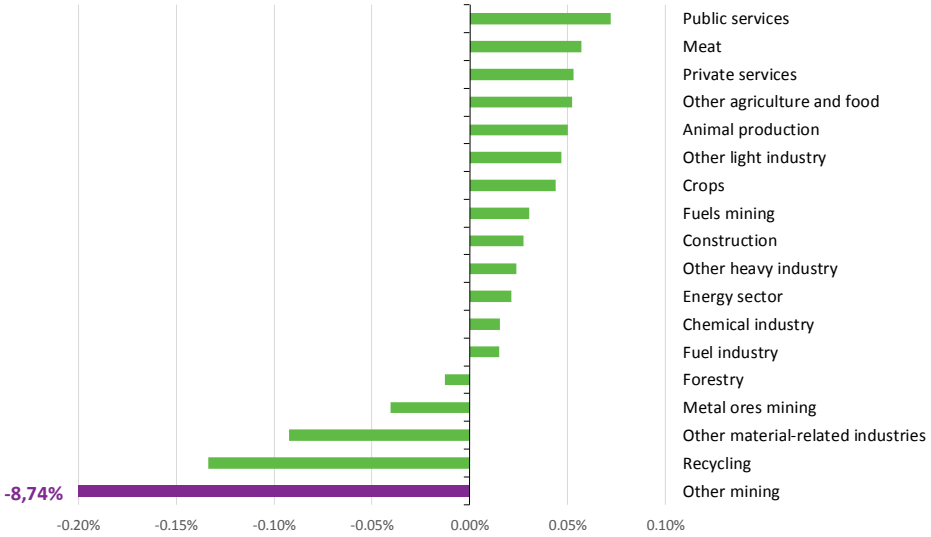
**A Circular Economy Tax Trio could – depending on the simulation model used – slightly increase or decrease GDP and employment.**

The potential effects are small because (i) the proposed marginal tax rate is relatively small, (ii) taxation is limited to mines located within the EU borders (imports are not taxed) and (iii) in the European economy the mining sector is only small scale. According to MEWA model findings, EU GDP could rise by 0.08% by 2050 due to a small surplus generated through material savings. Employment will also rise (0.06%) because the instrument is thought to increase employment in recycling at the expenses of employment in waste disposal and incineration – the net direct impact on the number of jobs is expected to be positive[31], as recycling is usually more labour-intensive than disposal and incineration.[32]

Based on MEMO II results GDP will drop by approximately 0.5% around 2030 and by some 0.13% points around 2050. Employment could decrease in a similar order of magnitude. The revenues of the circular economy tax trio are found to be small, amounting to some 0.2% of GDP.

However, from a sectoral perspective, socio-economic impacts of the instrument may be significant. Sectoral production in the mining sector is expected to drop by 9% by 2050 (see Figure 7 below).

Figure 7: Change in the production volume on the sectoral level in 2050




Source: MEWA model simulations

**A Circular Economy Tax Trio could have sectoral impacts on mining.**

While at the scale of the European economy both the limited share of this sector in the European economy and the ability of other industries to substitute domestic raw materials with cheaper substitutes from import or recycling render potential impacts marginally positive, countries where virgin aggregates make a significant contribution to the national economies might experience significant loss in mining sector production and associated job losses and tax income reductions.

**Regional structural policy could help communities affected hardest by a Circular Economy Tax Trio to mitigate negative effects.**

In addition, taxation of relevant municipal services, such as waste management in the Circular Economy Tax Trio, will often mostly affect the poorest households disproportionally.[33] Significant income differences across the EU may make this problematic in particular for poorer households located in Central and Eastern Europe – not only because of relatively low incomes, but also due to high rates of landfilling requiring households to pay more for the taxed waste management option. This could contribute to unemployment and poverty where taxation reduces jobs not only in the mining sector, but also in other resource-intensive industries based on local raw materials which are expensive to transport.

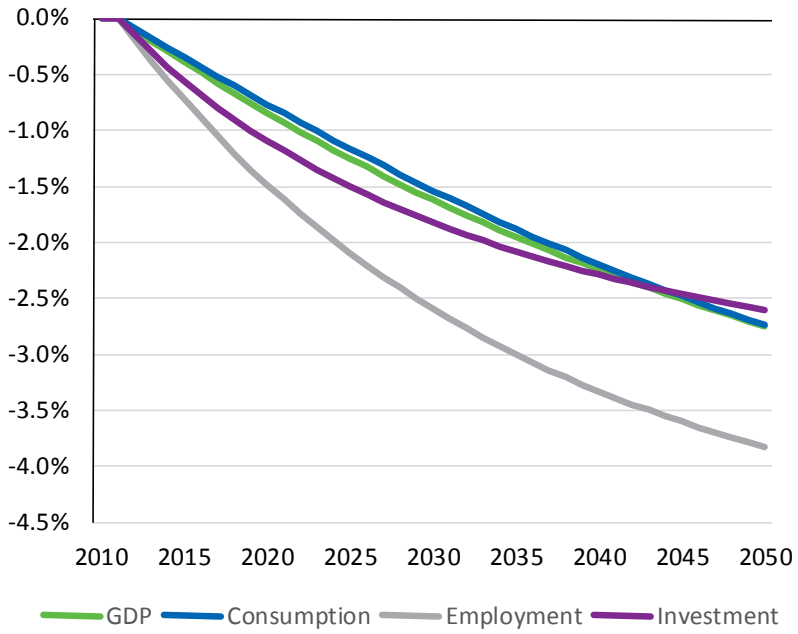
Therefore the desirable supplement to the policy instrument should take a form of a regional, structural policy that would help affected communities to accommodate and counterbalance the negative consequences of the circular economy tax trio on their labour market and investment perspectives.

*<u>Potential socio-economic impacts:</u> Labour market reform fostering a shift from consumption to leisure*

Although difficult to model, enabling a shift from consumption to leisure will lead to a decrease in the "motivation" to work and consequently to a decline in labour supply. Along with changes in employment, GDP, consumption and investment levels will fall (see Figure 8 below).

Figure 8: Changes in GDP, consumption, employment and investment related to the consumption to leisure shift.

**A labour market reform fostering a shift from consumption to leisure could increase wages and reduce consumption, GDP and employment.**




Source: MEWA model simulations

Furthermore, linked to declining labour supply, the price of labour (wages) will increase by 2.0% by 2050[34], leading to some substitution of labour by capital, energy and materials, hence increasing the capital, energy and materials-to-labour ratios (see Table 4 and Figure 5 under 3.1 Potential environmental impacts). Overall, enabling the shift from consumption to leisure will not only lead to some decrease of energy and materials used, but it will also limit the productivity and hamper the competitiveness of the economy. Such change is also difficult to introduce and may require extensive promotional activities to affect individual choices.

**If labour market reform is voluntary, it could ease (re-)entry of students, parents and pensioners to the labour market.**

Furthermore, the instrument might increase inequalities in case of a mandatory shortening of the work week and increase in statutory holidays. As this will decrease productivity per worker, lay-offs could primarily affect less qualified workers.

However, if the labour market reform measures are voluntary, they will positively impact social inclusion through enabling people to spend more time with their families and facilitate labour market entry for (i) students not having enough time for a full-time job; (ii) parents, who will be able to return to the labour market earlier; and (iii) younger pensioners, who may no longer have the vitality to take a full-time job.

The use of **regulatory instruments** may counteract instrument efficiency and yield inequalities. This is because regulation imposes the same target to heterogeneous actors irrespective of their relative ability to attain it. Thus, regulatory instruments risk not fully tapping the **innovation capacities** of different

actors, but in fact only forcing actors to abide by minimum compliance standards. For instance, a forced decrease in working hours in the context of *Labour market reform fostering a shift from consumption to leisure* potentially hits low-income earners hardest. In contrast, voluntary, incentivised shifts towards leisure may appeal to better paid workers and in turn lead to reduced inequalities. Furthermore, when using compulsory standards for the instrument *boosting EPR schemes*, e.g. for product packaging, individual should be prioritised over collective responsibility schemes. Collective schemes may not sufficiently stimulate investments in product design because the collective schemes mutualise costs while complicating an effective internalisation of the increased costs into product prices.[35]

**Careful use of smartly designed regulatory instruments alongside market-based instruments seems promising to tap innovation potential and address rebound effects.**

In this context, market-based instruments (MBIs) are often considered more effective than regulatory instruments, enabling businesses to adapt innovatively at least cost. However, two aspects of the use of MBIs merit attention:

(1) The two MBIs *EU wide introduction of feebate schemes* and *Reduced VAT rates* incentivise the purchase of more resource and energy efficient products and services. Hence, their use could increase the consumption of products and services use in absolute terms and hence contribute to overcompensating the initial savings effect – i.e. **rebound effects** could result. This may happen if, for instance, a reduced VAT rate on products, which fulfil energy efficiency criteria acts as a subsidy to replace products before their end of life by more upmarket or larger A-rated products.

**Revenues generated by market-based instruments should be used effectively for funding instrument use and mitigating negative effects on affected sectors.**

(2) **Revenues generated** by MBIs need to be wisely used: for instance, to

a) Pay for subsidies (rebates) granted in order to achieve as much budget-neutrality as possible in *feebate schemes*;
b) Mitigate potential closure of quarries or extraction sites affected by taxation of virgin materials (in *the Circular Economy Tax Trio*) through supporting the re-introduction of laid-off workers into the labour market; and
c) Mitigate the potential loss of jobs in the advertising sector due to the *step-by-step restriction of advertising and marketing*.

Overall, the political feasibility of the overarching policy mix may suffer from issues of public acceptance, which in turn often relate to concerns of competitiveness, employment and distributional effects, as well as legal feasibility. We will turn to these issues next.

### Public acceptability

**Perceived threats from instrument use to competitiveness could translate to public resistance based on fears of job losses.**

**Public acceptability** differs across the instruments contained in the policy mix, with more instruments evoking resistance than receiving support.[36] Low public acceptability is likely for:

- *The Circular economy tax trio* – If material, waste incineration and landfilling are perceived by affected sectors to threaten competitiveness, arguments about concerns of economic leakage and job losses may easily transmit to the public attitude and cause resistance to this instrument. As no border tax adjustment arrangements are foreseen in the instrument description the affected sectors can be expected to seek to make this case.

- *Labour market reform fostering a shift from consumption to leisure* – Similar arguments to those given under socio-economic impacts will also likely cause great resistance to mandatory measures. Learning from discourses surrounding the introduction, implementation and impact of the EU's Working Time Directive (WTD) in the early 1990s, employer associations were found up against the WTD arguing about the negative impacts of inflexibility and increased labour costs and the importance of maintaining employer and job market flexibility for economic competitiveness.

**Fostering positive perceptions linked to instrument use, e.g. limiting advertising targeted at children, helps winning public support.**

- *Step-by-step restriction of advertising and marketing* – Public support can be found for the early measures, which are in-line with the existing regulatory regime, in particular as regards limiting advertising targeted at children and unfair marketing. The more far reaching restrictions on advertisement of luxury goods linked to conspicuous consumption would, however, raise significant resistance in public opinion.
- *Support for local currencies* – While there is no significant public acceptability issue associated, objections could be expected in cases where the local currencies are primarily motivated by avoiding taxation for those joining the local currency exchange or where use of the local currency becomes compulsory for buyers or sellers.

In contrast, some level of public support could be expected for:

+ *EU-wide introduction of feebate schemes* – This form of environmental tax reform is widely understood and acceptable by the public. However, as regards potential socio-economic impacts the actual selection of products to receive the fee should ensure that the scheme does not discriminate against poorer households, which might not be able to afford more costly items benefiting from the VAT reductions (e.g. an A+++ rated washing machine) in the first place. When feebates are introduced for mostly homogenous products, low-income households will most likely carry the burden of the price increase as investment costs are linked to efficiency. If due to the feebate a needed product category (e.g. a larger car for a larger family) became on average more expensive, discrimination would result and call for accompanying measures mitigating such effects for those in need.

**Public support likely for bonus-malus schemes, VAT reductions and skill enhancement – due to better aligning supply and demand for sustainable products and skills for sustainable production.**

+ *Reduced VAT rates* – Broadly acceptable to most actors, but a main block may come from the EU VAT Directive (2006/112/EC), if minimum requirements (standard tax rate no less than 15% and reduced tax rate no less than 5%) are not complied with. As the instrument description sets the reduced rate at 6%, legal compliance seems to be given.
+ *Skill enhancement programmes* – Likely widely acceptable because of the potential mitigating effects of skill enhancement programmes on (i) improving match-making between businesses' skill needs and employees' skills and (ii) alleviating employment and distributional effects of other instruments in the overarching policy mix.

### Legal feasibility

As regards legal feasibility no major issues or conflicts with World Trade Organisation (WTO) law or the EU Treaty emerged. For some instruments, relevant aspects to consider are:[37]

**Step-by-step restriction of advertisement potentially legally feasible along the lines of tobacco advertising restrictions.**

a) Under GATS (General Agreement on Trade in Services) and GATT (General Agreement on Tariffs and Trade) restrictions of advertising and marketing can be qualified as measures having equivalent effect to quantitative restrictions on imports. These would be forbidden if these restrictions affect the opportunities for importation itself. There is no guidance available for whether the design of the instrument *Step-by-step restriction of advertisement and marketing* would affect the opportunities for importation. However, the case of tobacco advertising restrictions could be used for orientation. Such restrictions have been adopted for public health purposes by Members without a violation of specific commitments for trade in advertising services. Hence, legal feasibility issues are rather unlikely for *Step-by-step restriction of advertisement and marketing* in this policy mix.
b) When *boosting EPR schemes*, it has to be ensured that product waste streams are not singled out for discriminatory treatment based on their source of origin.
c) *Skill enhancement programmes* may be prone to risks of discriminatory treatment. They hence need to ensure that there are no artificial barriers to entry for students and/or professionals coming from other Member States.

**While generally legally feasible, political feasibility for new taxation proposals would be challenged through requirement for unanimous vote by Council.**

At EU level, any harmonisation of legislation concerning turnover taxes, excise duties and other forms of indirect taxation – the three MBIs of the overarching policy mix *Circular Economy Tax Trio*; *EU-wide introduction of feebate schemes*; *VAT reductions* – would require unanimous vote by the Council. A justification would require the action to be "necessary to ensure the establishment and the functioning of the internal market and to avoid distortion of competition" (Article 113 of the Treaty on the Functioning of the European Union, TFEU). Hence, while legally feasible, **political feasibility** seems rather low as the justification according to Article 113 TFEU cannot easily or credibly be established for the three MBIs. This casts doubt on the likelihood of getting unanimity on these suggested instruments.

### 3.3. Consistency and coherence of the policy mix

When designing the policy mix, the instruments were designed to be consistent (minimising conflicts between instruments) and coherent (maximising synergies and positive interactions between instruments) in themselves and in their interlinkages with other instruments.[38]

The two instruments EU-wide introduction of feebate schemes for selected product categories and VAT reductions for the most environmentally advantageous products and services apply similar mechanisms to incentivise the purchase of environmentally friendly products and services and penalise the use (feebate scheme only) of those that are environmentally disadvantageous. However, they have largely different foci:

**Synergies between EU-wide feebate schemes and reduced VAT rates because of different, complementary foci.**

- The feebate scheme applies to major household appliances based on their energy consumption, as well as batteries and accumulators, paints or detergents
- VAT reductions apply to
    - Products (and services) having been awarded the European Ecolabel or the A+++ grade in the EU energy label;

- Electricity from renewable energies, installation of energy saving materials and equipment/retro-fitting of people's homes, e.g. insulation materials; and
- Selected number of services such as retrofitting of household appliances in order to make them more energy efficient, hotels/tourist attractions (which can already be eco-labelled), or environmentally beneficial locally labour intensive services such as local transport, repair, refurbishing, etc.

For consumer electrical goods, the VAT reductions would work alongside the feebate mechanism, and thus should provide additional incentives to manufacturers to continuously improve environmental performance (e.g. energy efficiency) in order to benefit from the reduced tax rate.

**Synergies between boosting EPR and Circular Economy Tax Trio through providing incentives for product eco-design.**

Boosting EPR incentivises making product design and production processes more resource efficient by obliging producers and retailers of certain products to take end-of-life products back and pay for their recycling or safe disposal – therefore, it supports the reduction of waste incineration and landfilling through the Circular Economy tax trio by imposing mandatory requirements. The Circular Economy tax trio was designed to capture both resource use on the input side (through taxing virgin aggregates extraction) and environmental impacts resulting from after-use of resource (incineration and landfilling of all types of waste).

**Synergies between labour market reform and step-by-step restriction of advertisement through tackling desire and need for new products.**

The two instruments enabling a shift from consumption to leisure and step-by-step restriction of advertisement and marketing both aim at reducing consumption of resource-intense products and services. They both tackle the desire and perceived need for new products, but the former builds on partially replacing income by more spare time for community engagement, subsistence and sharing activities. The reductions in price for some environmentally friendly goods through the VAT reductions and the feebate schemes could go some way towards mitigating the income reduction effect and make environmentally friendly products and services relatively more affordable than less sustainable options under budget reductions.

Local currencies further support this development because they establish an alternative means to exchange labour-based services, thus encouraging the development and use of individual capabilities and also making the use of these services more affordable vis-à-vis product use. Hence, more time can be used to offer services, while the reductions in income could be compensated by increasing use of services and subsistence via the local currency.

**Skill enhancement programmes enable better match-making between skill needs and supply on the labour market, hence mitigating effects of other instruments in the policy mix.**

Lastly, most instruments provide some shocks and incentives to the economy to adapt towards more resource efficiency and circularity, improved product design, and increased provision of environmentally friendly products and services, while limiting advertising and marketing. Hence, many sectors as well as their employers and employees would need to adapt skills to new requirements. Hence, the skill enhancement programmes can capture skilling needs in the formal economy, e.g. for resource efficient processes and product design, hence (i) improving match-making between businesses' skill needs and employees' skills and (ii) alleviating employment and distributional effects of other instruments in the overarching policy mix. However, as the skill enhancement programmes targets the formal economy through academic and vocational training, it cannot serve to buffer the need for increasing capabilities for exchange of services on the individual or community level.

Despite the overall largely consistent and coherent design of the policy mix, the available assessment results indicate that (see Table 7 below)

c) Some of the instruments will likely face significant challenges as regards political feasibility; and
d) The policy mix will not be able to achieve the environmental key targets set out, even if all instruments were politically feasible.

**Indicative assessment of the potential impacts of the overarching policy mix – contributing towards, but not sufficient to achieve DYNAMIX key environmental targets.**

Table 7: Indicative assessment of potential impacts of the overarching policy mix

| Policy instrument | Impacts | | Public acceptance | Legal feasibility |
|---|---|---|---|---|
| | Environ-mental | Socio-economic | | |
| Labour market reform fostering a shift from consumption to leisure | | | | |
| Step-by-step restriction of advertisement and marketing | | | | |
| Boosting (EPR) | | | | |
| Circular Economy Tax trio | | | | |
| EU-wide introduction of feebate schemes | | | | |
| VAT reductions | | | | |
| Skill enhancement programmes | | | | |
| Support for local currencies | | | | |

| | | | | |
|---|---|---|---|---|
| ***Legend*** | | *likely positive* | - | *likely rather negative* |
| | | *Likely rather positive* | -- | *likely negative* |
| | | *likely neutral* | | |

In the following we will provide some pointers for revising the policy instruments that may have the potential to improve the political feasibility and environmental impacts in the long term.

# 4 Pointers for revision of the policy mix

## *(1) Labour market reform fostering a shift from consumption to leisure*

**Making labour market reform voluntary will ease job entry for selected target groups. Labour market reform could be popularised around career's leave and on-call time to increase acceptability.**

In order to enable positive employment effects of the labour market reform voluntary flexible labour market regulations should be introduced and part-time working arrangements empowered so that they can be applied even for a highly qualified workforce. Under such conditions, reform likely will facilitate labour market entry for

a) Students who have enough time for a part-time job, but not for a full-time job;
b) Parents, who will be able to return to the labour market earlier; and
c) Younger pensioners, who are still able to work part-time, but may no longer have the vitality to take a full-time job.

As part of a voluntary increase in working hour reductions, part-time working arrange-

ments should be popularised so that they are not discriminated against in terms of taxation and that they are not associated with lower per-hour wages and easy jobs for less qualified workers.

Popularisation of part-time working arrangements or use of sabbaticals could benefit from refocusing the policy instrument around a specific cause for extra time and increasing flexibility associated with a good and growing level of public acceptability and momentum, e.g. for parental leave or career's leave or for issues of on-call time for key workers.

**Start restricting advertising with widely accepted issues (e.g. unfair marketing) to win support for later, more ambitious restrictions.**

*(2) Step-by-step restriction of advertising and marketing*

It seems important to ensure the sequenced implementation approach, starting with widely acceptable restrictions (unfair marketing and marketing targeted at children) and then successively making efforts to win public support for later, more contentious measures. This could be aided by framing the dialogue on restricting advertising around protection of social space and targeting misleading or unfair advertising, which receives strong public support across many Member States, particularly Spain, Germany, UK, France, Netherlands, and Portugal.

**Incentivise return of end-of-life products to boost EPR.**

*(3) Boosting EPR*

Returning of end-of-life products should be incentivised (as with bottle deposits) by offering money-back and easy availability of returning options (a good example includes the return of mobile phones to recycling schemes).

*(4) Circular Economy Tax Trio*

**Make Circular Economy Tax Trio part of wider tax reform and arrange for border tax adjustments.**

The taxes should be:

- Announced as and made part of a larger-scale tax reform process;
- Agreed on a cross-party consensus and consulted on extensively with the affected sectors;
- Including a recycling of revenues as close as possible to the affected sectors in a way that mitigates potential losses and fears of leakage;
- Receiving coordinated options for border tax adjustments (tax imports and exempt exports from taxation) to ease pressure on competitiveness and thus increase public support.

*(5) EU-wide introduction of feebate schemes*

**Ensure that feebate schemes do not discriminate against lower-income households and provide differentiated incentives linked to environmental impact.**

The schemes should encourage that within each targeted product category (in terms of car size, inter alia small, large, luxury, mini vans, SUVs) several options with varying efficiency and hence differing costs are available to choose from. Thus, it would avoid that needed product categories (e.g. a larger car for a larger family) become on average more expensive, hence minimising discriminatory effects.

While thus a potential discriminatory effect could be reduced, the feebate design should still ensure that environmental benefits can be generated – for instance through increasing the fees and rebates according to magnitude of sustainability effect of a product or service. In the above case of cars, rebates for hybrid and electric cars should provide an incentive to shift from internal combustion engine cars to alternative engine and not just to slightly more efficient internal combustion engine cars.

*VAT reductions*

In order to limit potential rebound effects triggered by VAT reductions, the instrument

**Design VAT reductions as part of a wider tax reform making least efficient products more**

would need to be complemented by a tax on least efficient products, thus minimising the risk that saved household money from the purchase (and use) of more efficient products and services is employed to consume other, less efficient products and services. Including the VAT reductions and taxation on least efficient products and services into a wider VAT reform could avoid such a potential income effect. However, this would not limit rebounds in terms of using more of the same products and services (direct rebound effect) having received VAT reductions.

As envisaged by the EU-wide introduction of feebate schemes for selected product categories, for consumer electrical goods, the VAT reduction would work alongside the feebate mechanism and potentially foster incentives to manufacturers to continuously improve energy-efficiency (or other relevant environmental parameters) in order to benefit from the reduced VAT rate in addition to the rebate at point of sale from the feebate scheme.

In addition, the instrument should be accompanied by an adequate information campaign because if properly communicated, this instrument could have an impact on consumer demand beyond the financial advantage it confers – the so-called signalling effect.

Furthermore, the taxation rate should not be uniform, but could be tailored to the different products and services targeted to differentiate according to national context. Given Member States' discretion in the area of indirect taxation, implementing VAT reductions at Member State level appears more promising. A Member State introducing such reduced tax rates would have to meet certain minimum requirements stemming from the VAT Directive (2006/112/EC), which sets the standard rate at no less than 15 % and reduced tax rates at no less than 5 %. This would significantly reduce concerns regarding compatibility with EU law.

*Skill enhancement*

**Involve businesses into development of skill enhancement programmes to optimise match-making.**

State actors will face difficulties in identifying future qualification needs in a Circular Economy. This will complicate the setting up of appropriate skilling programmes to align supply and demand on the future labour market, and potentially cause inequalities. Therefore, private enterprises should be actively involved in the development (and also encouraged to participate in the provision) of skill enhancement programmes as they are in a better position to gauge which sort of skills are needed.

*Support for local currencies*

In the design and implementation of the local currency scheme(s) issues of tax avoidance should be transparently communicated and dealt with by increasing the income taxation for those taking part in the local currency scheme in order to cover costs for the state of income taxation revenue foregone.

Therefore, participation to the scheme should not be made mandatory, but decided democratically on the level of municipalities or parts of municipalities.

By adjusting the potentially contentious policy instruments so that the potential negative side-effects are minimised, the political feasibility of the overarching policy mix could be fostered.

**Use smart time-sequencing of instruments, starting with least contentious instruments …**

Furthermore, strengthening a smart and effective time-sequencing (roadmapping) of the policy instruments can further help to improve political feasibility. A sequenced approach should

I. First introduce less contentious measures (e.g. information campaigns accompanying or preceding taxation; first targeting misleading claims and visual pollution in restriction of advertising);

**… then introducing more ambitious policy proposals, while applying supportive instruments for mitigating negative side-effects.**

II. Later introduce more ambitious policy proposals (because these first measures provide targeted actors with potentially positive empirical experiences and thus might trigger more positive responses to later policy proposals which without the first measures would not have been as acceptable); and

III. Ensure instruments fit for mitigating potentially negative side effects (e.g. skill enhancement programmes, subsidies for poorer households) are introduced sufficiently early to be functioning when side effects of other instruments start occurring.

For the eight instruments contained in the policy mix, we would therefore suggest to

- Introduce the Circular Economy Tax Trio, the feebate schemes, the VAT reductions and the boosted EPR schemes around 2025;
- Introduce the skill enhancement programmes around 2020 (prepared by a transdisciplinary advisory body comprising business sectors that are going to be affected by the above four measures) to develop the capacities to provide the skills necessary when the above four instruments take effect;
- Start supporting local currencies from 2020 onwards to establish service markets and prepare the ground for citizens to get used to options for building their own service-oriented capacities and skills;
- Introduce voluntary labour market reform aspects around 2025 (deciding on whether or not to introduce mandatory changes in the coming decades later on); and
- Restrict unfair advertisement, advertising targeted a children and advertisements in city centres by 2020; step-wise expanding the focus to sugar/fats in 2025 and to selected luxury goods linked to global social responsibility (e.g. blood diamonds) by mid 2030.

## 5 Outlook and caveats

**Concept of policy mixing requires identification of relevant drivers and to think about smart instrument combination.**

The concept of policy mixing is promising because it requires identifying most important drivers and mechanisms to be tackled to achieve certain objectives. At the same time, by bundling together primary instruments, which mainly serve to achieve a set objective, with supportive instruments, which minimize or mitigate unintended negative side-effects of primary measures, acceptability and political feasibility of the policy mix can be strengthened.[39]

**Political realities pose formidable challenges to effectively designing and implementing policy mixes.**

However, designing, implementing and evaluating policy mixes is much more difficult than individual instruments loosely bundled. The concept of policy mixes might clash with political practices and experience, where policy formulation often entails so-called policy layering, i.e. stacking new instruments or objectives on-top of existing ones without any overarching design.[40] Resulting from political needs, such as existing alliances, election-based tactics or lacking time or knowledge, policy layering increases the risk of unplanned mixes with contradicting objectives and measures and hence trade-offs in effectiveness.

The ex-ante assessments undertaken in the context of the DYNAMIX project could only partly be based on harmonised assumptions and parameters. Therefore, the results of the qualitative and the quantitative assessments dif-

**Differences in assumptions and model mechanisms impact on ex-ante assessments.**

fer – in some cases significantly. It cannot be stressed enough that the assumptions going in the assessments define the outcome to a great degree.

Furthermore, the simulation models used function in a certain systemic logic, which limits their ability to model some instruments or instrument designs that could lead to systemic changes.

And finally, the assessments undertaken were not able to assess actual cumulative effects of the instrument combination in the policy mix beyond individual effects. This remains a methodological challenge requiring more research.

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DYNAMIX Deliverable D8.2.3 Policy field Roadmap – The overarching policy mix

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[20] The following criteria were used to guide the selection of instruments:

I. Potential for systemic impact of the mix;

II. Addressing both supply-side demand-side drivers through the mix;

III. Policies may deliver important benefits in terms of improving quality of life;

IV. Policy intervention is necessary, because markets won't bring about the necessary changes;

V. Feedback on proposed instruments and additional instrument ideas from stakeholders throughout various DYNAMIX project events.

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