Collection of good practices for strong and inclusive energy and climate plans

Agriculture

Bavarian Case study – Cultural landscape programme (KULAP) - climate measures

Country	**Germany**
Sector	**Agriculture**
Year	2019-2020
Narrative description	Measures beneficial for the climate often have positive side effects for water quality, biodiversity, air quality or soil conservation. Accordingly, the designation of such measures is not always straight forward and the same measure might be seen as a climate or nature conservation measure by different countries, i.e. countries might 'label' their climate mitigation measures under different categories. In that context it is positive that the Bavarian cultural landscape programme contains measures specifically targeting climate mitigation. These measures include area-based payments for extensive grazing without the use of mineral fertilisers, low emission fertilisation and the conversion of crops into grassland along water bodies. Payments for extensive grazing depend on the livestock density, i.e. 169 EUR / ha for up to 1.4 livestock units (LSU) per hectare and 120 EUR / ha for up to 1.76 LSU/ha.
Responsible authority	Bavarian state ministry of nutrition, agriculture and forests (Bayerisches Staatsministerium für Ernährung, Landwirtschaft und Forsten)
Relevant legal basis	Common regulation for the support of agri, climate and animal welfare measures in Bavaria (Gemeinsame Richtlinie zur Förderung von Agrarumwelt-, Klima- und Tierschutzmaßnahmen (AUM) in Bayern (G4-7292-1/1218))"
Policy Type	Regulation, subsidy
Governance Level/ Target audience	**State of Bavaria/ farmers**
Objectives	Increase in climate and environmentally friendly practices through compensation payments

Bavarian Case study – Cultural landscape programme (KULAP) - climate measures

Summary of reasons for success	Rural development programmes (RDP) are well established throughout Europe. Their climate aspects are likely to be strengthened in the post-2020 CAP. While many RDPs contain similar agri-environment-climate measures, their designation as a climate measure is rather rare. Highlighting the links between biodiversity, water and air quality and climate change can also increase acceptance among farmers. It furthermore sends the signal that agricultural emissions need to be reduced as well.
Replication potential	Similar measures have been implemented before, for instance in Denmark. In general replication is already possible as this is a rather soft measure. Instead of making it mandatory the measure could also be linked to existing subsidies. In any case success will depend on the actual reduction of fertilizer use and therefore the measure should be integrated into a wider policy framework.
Relevant website	"http://www.stmelf.bayern.de/mam/cms01/agrarpolitik/dateien/massnahmenuebersicht_kulap.pdf http://www.stmelf.bayern.de/kulap"

Danish Case study – Danish Nitrate Action Programme and Danish regulation of nutrients in agriculture

Country	**Denmark**
Sector	**Agriculture**
Year	2008- ongoing
Narrative description	As a country with a large and intensive agricultural sector, excess nitrogen leaching has long been a problem in Denmark. The first policy that addressed the issue dates back to 1987. Naturally, the policy responses are well developed by now and founded on knowledge and experience on the side of administrations as well as farmers. Denmark always used a mix of policies. Recently, the former standards for applying nitrogen in farming have been phased out and replaced by the so called 'harmony rules' limiting the amount of nitrates from livestock manure per hectare. Additionally, farm level leaching permits are going to be introduced in late 2019. These permits are "calculated as the maximum nitrogen leaching from the root zone per hectare (kg N per hectare)" and differ between catchment areas. Farmers can choose the different instruments with which they wish to achieve the permit. These instruments include "e.g. catch crops, buffer strips, reduced nitrogen application etc.". Farmers are also going to receive compensation for their efforts to reduce nitrogen leaching. Additionally, a catch crop scheme, afforestation, wetland restoration as well as the construction of mini-wetlands are included in the policy mix. All these measures will not only help to reduce GHG emissions (through reductions of N2O from the soil, CH4 from manure and carbon sequestration), they will also improve water and air quality as well as have positive impacts on biodiversity.
Responsible authority	Regional ministries for agriculture and environment, land compensation agencies

Danish Case study – Danish Nitrate Action Programme and Danish regulation of nutrients in agriculture

Relevant legal basis	policy mix of flexible regulations (leaching permits with choice of instruments) and compensation scheme
Policy Type	Holistic: Toolbox
Governance Level/ Target audience	**Ministry of Food and Environment of Denmark & (Danish) Environmental Protection Agency** **Farmers**
Objectives	Reduction of nitrogen levels in surface and groundwater (indirect reduction of N2O emissions), with links to emissions from livestock and carbon sequestration
Summary of reasons for success	The diverse, flexible and harmonic mix of different policy instruments as well as the explicit links to co-benefits with other policy objectives make the Danish approach a good example. However, Danish agriculture is still very intensive, albeit efficient. Therefore, while the technical aspects can be partially or fully applied in other countries, the quotas and nitrogen levels permitted should be questioned against the respective national context (also with respect to biodiversity).
Replication potential	The Danish approach already serves as best practice and is presented at different fora and platforms (EU, OECD, …). While not every member state may have an equally long history with these types of policies, the approach can in principle be applied already. Especially the links to different EU policies (Nitrates Directive, Water Framework Directive, Rural Development Programs, Natura 2000) ensure this compatibility.
Relevant website	https://eng.mst.dk/trade/agriculture/nitrates-directive/nitrate-action-programme/ https://eng.mst.dk/media/mst/Attachments/DanishNitrateActionProgramme2008201507092012.pdf https://www.slideshare.net/OECD_ENV/13-the-danish-policy-mix-to-address-the-environmental-impacts-of-fertilisers-bror-andreas-christensen http://ec.europa.eu/environment/water/water-nitrates/pdf/leaflets/Leaflet_Central_Denmark_EN.pdf

Danish Case study – Danish Nitrate Action Programme and Danish regulation of nutrients in agriculture

Denmark Case study – Requirements for fixed covers on manure and slurry tanks

Country	**Denmark**
Sector	**Agriculture**
Year	2013
Narrative description	Covering manure and slurry storage tanks is an easy and cost-effective measure to reduce methane and nitrous oxide emissions. Instead of providing incentives, Denmark chose regulatory law to tackle these sources of emissions. At the same time, this regulation is accompanied by standards and guidance for farmers and manufacturers. Until 2020, it is estimated that 78.000 tonnes of CO2eq can be saved in Denmark at about 310EUR/tonnes (excluding other social and economic benefits) from covering slurry tanks alone. Overall, the Danish approach to mitigate GHG emissions from agriculture is dominated by increasing efficiency and reducing emission intensity. Therefore, many measures bear the risk of causing rebound effects, lock-ins and other negative side effects of further intensification. While covering manure and slurry tanks is an uncontroversial measure it still does not address the general problem of emissions from livestock, which can never be zero. Accordingly, this measure is still just a bridge technology. The measure comes with several environmental, social and economic co-benefits. Most notably air quality and public health are improved due to the reduction of ammonia and methane emissions. This reduction in ammonia emissions leads then to higher nitrogen content of the slurry, which can be used as fertiliser. Additionally, the cover prevents rainwater to enter the tanks which increases tank capacity and reduces costs for applying the fertiliser to the fields.
Responsible authority	Danish Environmental Protection Agency (Miljøstyrelsens)
Relevant legal basis	Simplified land consolidation procedure -Flurbereinigungsverfahren mit der besonderen Zielsetzung „Flächenmanagement für Klima und Umwelt“ ("§§ 86ff. FlurbG")

Denmark Case study – Requirements for fixed covers on manure and slurry tanks

Policy Type	Public Intervention
Governance Level/ Target audience	**Denmark - National** **Farmers and agricultural company**
Objectives	Reduction of methane, nitrous oxide and ammonia emissions
Summary of reasons for success	Regulation is successful if compliance is monitored and enforced. In this case the regulation has been embedded in a wider set of measures that combine different instruments targeting various overlapping policy objectives such as water pollution, air quality and climate change, thereby increasing acceptance.
Replication potential	Covers for manure and slurry are a well-established technology with many environmental, social and economic benefits. Making their application mandatory therefore is justifiable. Depending on the national farm structure it might be necessary to financially support the needed investment, especially for smaller farmers.
Relevant website	https://ens.dk/sites/ens.dk/files/Analyser/dk_climate_change_mitigation_uk.pdf https://oldwiki.mst.dk/Default.aspx?Page=Opbevaring-af-fast-g%c3%b8dning&NS=Husdyrvejledning&AspxAutoDetectCookieSupport=1 https://oldwiki.mst.dk/Husdyrvejledning.Opbevaring-af-flydende-husdyrg%C3%B8dning-ensilagesaft-mm.ashx

EU Case study – Variable fertilisation rate

Country	**Across EU countries in different forms**
Sector	**Agriculture**
Year	
Narrative description	Variable fertilisation rates present a mitigation technology rather than a policy. To the knowledge of the authors there are no major policies incentivising its use to date, although it is currently being promoted EU wide as one of the major solutions to protect the environment and climate while saving costs and increasing yields. Agricultural fields are not monotonous with respect to their biophysical characteristics. In other words, soil fertility and/or microclimate can vary and therefore lead to uneven crop growth. The idea of a variable fertilisation rate is to match fertiliser application more precisely with the resulting varying fertiliser needed. Fertiliser need is determined using remote sensing, drones or simply measuring the amounts harvested. With the help of new machinery, the fertiliser application is then matched on a very small scale within one field with the measured or calculated fertiliser need. By reducing overall application of (nitrogen) fertiliser, nitrous oxide emissions and emissions from fertiliser production can be reduced. Additionally, the technology can lead to cost savings which in Germany range between 10 EUR/ha and 25 EUR/ha, depending on the size of the field, with improvements on N efficiency by 10-15% reducing the application without impact on crop yield. From a policy perspective these cost savings should exclude the use of subsidies. However, initial high investment costs can still present a burden, that could be lowered by loans. Depending on farm size the return of investment might not be high enough for smaller farmers to make these investments. In such cases, several farmers might have to share machinery, e.g. by leasing schemes. Additionally, higher technical knowledge is required, which can present a barrier.
Responsible authority	
Relevant legal basis	

EU Case study – Variable fertilisation rate

Policy Type	
Governance Level/ Target audience	
Objectives	more efficient fertilizer use to reduce cost and emissions
Summary of reasons for success	The overall cost-effectiveness of the measure removes most of the economic barriers and makes climate mitigation a welcome by-product of an otherwise, financially motivated change.
Replication potential	Currently, the European Commission is promoting the measure as part of its focus on precision and smart agriculture and the post-2020 CAP. Future policies aiming to scale up the application of a variable fertilisation rate should be carefully designed and cautious when it comes to the use of subsidies. Instead the actual barriers, such as risk of investment or too slow a return on investment for small farms should be addressed.
Relevant website	https://cordis.europa.eu/project/rcn/204388/reporting/en http://ieassa.org/en/variable-rate-fertilization/"

France Case study – Agroforestry Development Plan

Country	**France**
Sector	**Agriculture**
Year	2015-2020
Narrative description	Rooted in the concept of agroecology, agroforestry systems present a land use system in which trees, shrubs and other woody perennials are grown in combination with crops and pastures. In France, for many years the concept has been promoted and the adoption of such practices are increasing. The national agroforestry plan can be seen as good practice, in that it focuses on different elements and actions divided into five main axes. These axes include research and monitoring, regulatory frameworks and financial support, advisory services and promotion, and an increase in economic sustainability as well as international advocacy. However, its actual implementation (including allocation of financial resources) will determine if the plan can live up to its potential. If it does, it can be seen as a good practice with net-zero compatibility. Agroforestry can bring multiple co-benefits including climate adaptation, soil protection and an increase in biodiversity. However, the latter depends on its actual implementation, e.g. which trees and shrubs are being used and where they are planted. A row of hybrid poplar trees might even have adverse effects on species relying on open habitats.
Responsible authority	Ministry of Agriculture (Ministère de l'agriculture, de l'agroalimentaire et de la forêt)
Relevant legal basis	Law 2014–1170 of 13 October 2014 of the future for agriculture, food, and forestry (LOI No. 2014–1170 d0 avenir pour l'agriculture, l'alimentation et la forêt)"
Policy Type	holistic (different tools combined, including regulation, awareness raising …)
Governance Level/ Target audience	**France - National Farmers and decision makers**
Objectives	Mainstreaming and promoting agroforestry in the wider context of agroecology

France Case study – Agroforestry Development Plan

Summary of reasons for success	In the post-2020 CAP such approaches could receive stronger support as a climate mitigation measure throughout all of France, given that biodiversity safeguards and benefits are put in place. In addition to ongoing payments for ecosystems services (PES), initial grants such as those in the Irish forestry programme might also present an option to upscale the measure.
Replication potential	The agro-forestry approach is known and is already being applied on a smaller scale in many EU countries. The approaches vary from ecosystem to ecosystem, climatic conditions and traditions. However, holistic plans to enshrine agroforestry and agroecology into national agricultural policies can easily be implemented by other member states
Relevant website	https://euraf.isa.utl.pt/files/pub/synthese-plan_agroforesterie-anglais.pdf#overlay-context=welcome https://agforward.eu/index.php/en/home-redirect.html https://agriculture.gouv.fr/objectif-atteint-pour-la-4e-journee-nationale-de-lagroforesterie

Germany Case study – Moor preserving water levels Agri-Environment and Climate Measure (AECM)

Country	**Germany**
Sector	**Agriculture**
Year	2015-2020
Narrative description	Increasing water levels prevents the release of CO2 from the mineralisation of organic material in peat-rich soils. If the water levels are raised above ground level, carbon can even be sequestered from the atmosphere. Naturally, farming on these soils will be less intense with reduced grazing or mowing. Such measures can be rather complex, as they often involve several authorities (water, environment, agriculture) and affect neighbouring landowners. However, this complexity does not trickle down to the individual farmer by the way it is designed here. For instance, most permissions are obtained by the authorities themselves, which largely reduces the administrative burden and is therefore a major barrier to wider uptake. The measure is subsidised by 387 EUR per hectare per year which saves about 14-24 tonnes of CO2eq for the same area and year. Despite low administrative barriers the uptake of the measure could still be improved. Rewetting measures usually face cultural barriers as previous generations of farmers have claimed the land by draining it. Therefore, intensive awareness raising and trust building by the respective authorities are often necessary. In the long term it might be necessary to not just stop the on-going degradation of peat soils, but to turn them into carbon sinks again. However, this measure can still be evaluated as net-zero compatible. The co-benefits for biodiversity are secured by safeguards, e.g. it is not possible to use fertilisers or pesticides on the respective areas.
Responsible authority	State Office of Environment of the Brandenburg Federal State (Landesamt für Umwelt Brandenburg)

Germany Case study – Moor preserving water levels Agri-Environment and Climate Measure (AECM)

Relevant legal basis	The measure is part of the 'cultural landscape programme', based on EU Regulation 1305/2013 & 1303/2013 as well as the budgetary regulations and the Rural Development Programme of Brandenburg & Berlin (AUKM „Moorschonende Stauhaltung" des Kulturlandschaftsprogramms (KULAP))
Policy Type	Subsidy based on cost incurred
Governance Level/ Target audience	**Germany - state Brandenburg** **Farmer and agricultural company**
Objectives	Reduction of greenhouse gases from peatlands and peat conservation through year-long high-water levels on grassland on peat soils and peaty mineral soils.
Summary of reasons for success	Raising water levels is a complicated measure involving different authorities and neighbouring landowners. It also faces cultural resistance as for decades, the practice has been used to drain land rather than rewet it. Here the implementing authority provides a lot of guidance to farmers and takes over permission process e.g. from water authorities, thereby lowering the administrative burden for farmers. Yet trust needs to be built over time by peer learning among farmers.
Replication potential	This policy needs to be seen in the context of barriers preventing farmers from rewetting measures even if they are being compensated and/or rewarded. Barriers can be administrative burdens or historical attachment to drainage-based agriculture. All these barriers need to be taken into account when adjusting this approach to different national and regional contexts.
Relevant website	https://lfu.brandenburg.de/cms/detail.php/bb1.c.427130.de https://lfu.brandenburg.de/cms/media.php/lbm1.a.3310.de/Moorschonende_Stauhaltung.pdf

Germany Case study – Fertiliser assessment via ‘farm gate balance sheets’

Country	**Germany**
Sector	**Agriculture**
Year	2018-2023
Narrative description	Drafting and applying material flow balance sheets is mandatory in Germany for larger farms as of 2018 and smaller farms as of 2023. On a farm level, nutrients enter and leave on different pathways. Fertiliser, animal feed, animals, seeds and seedlings as well as nitrogen-fixing plants from the air (e.g. legumes) supply nutrients to a farm, and leave them again via the agricultural products produced. The regulation provides the methodology on how to calculate this nitrogen balance. The measure should be seen as having a mandatory awareness raising and data collection approach. While the calculations can reveal an imbalance, that is nutrients leaving the farm in other ways than as agricultural products, no mandatory action is required in such a case. However, such imbalances would not just reveal on-farm nutrient losses as greenhouse gas into the air and pollutants into the water, but also show ways to improve efficiency, by reducing these losses. In that respect it can be an easy to replicate policy for countries, who are less advanced on their nutrient management policies.
Responsible authority	German Federal Ministry for Food and Agriculture (BMEL)
Relevant legal basis	Stoffstrombilanzverordnung
Policy Type	Regulation on data collection and submission
Governance Level/ Target audience	**National / farmers and group of farmers**
Objectives	Awareness raising and data collection to reduce on-farm nutrient loss (and thereby GHG emissions)

Germany Case study – Fertiliser assessment via ‘farm gate balance sheets’

Summary of reasons for success	While the measure is seen as burden to farmers, it was also a way to avoid stricter regulation. The measure is relatively new in Germany and a first evaluation will only be conducted in 2021. What will be with the data and information acquired will be crucial, i.e. how farmers can be supported and incentivised to address the identified nutrient losses.
Replication potential	Similar measures have been implemented before, for instance in Denmark. In general, replication is already possible as this is a rather soft measure. Instead of making it mandatory the measure could also be linked to existing subsidies. In any case success will depend on the actual reduction of fertiliser use and therefore the measure should be integrated into a wider policy framework.
Relevant website	"https://www.bmel.de/DE/Landwirtschaft/Pflanzenbau/Ackerbau/_Texte/Stoffstrombilanz.html http://www.stoffstrombilanz.com/"

Title	Germany case study – Fertiliser assessment via ‘farm gate balance sheets’
Summary of the table above	While the measure is seen as a burden to farmers, it was also a way to avoid stricter regulation. The measure is relatively new in Germany and a first evaluation will only be conducted in 2021. What will be with the data and information acquired will be crucial, i.e. how farmers can be supported and incentivised to address the identified nutrient losses.
Policy Type	Regulation on data collection and submission
Country	**Germany**
Sector	**Agriculture**

Germany Case study – Fertiliser assessment via ‘farm gate balance sheets’

Year	2018-2023
4 Highlights	• Helps avoid stricter regulation • Replication possible • Methodology for calculating nitrogen balance
Picture	

Germany Case study – Land consolidation with a special focus on climate and environment

Country	**Germany**
Sector	**Agriculture**
Year	Variable - usually a 10-year programme
Narrative description	Protecting climate, environment and nature in agricultural landscapes essentially requires the harmonisation of different ecosystem services. This can imply different strategies like payments to farmers or environmental standards via regulation. In some areas the provision of public goods (such as climate regulation, biodiversity maintenance or erosion control) can outweigh the provision of private goods and services (such as provision of food and fibres) to a large extent. In such cases it might be the best strategy to take the area out of production and devote it to nature. The respective land use conflicts can be resolved permanently through land consolidation procedures. In the German state Lower Saxony, climate and environment have been added as possible objectives to allow for such procedures. Currently two different sites have been designated to be consolidated, meaning to be taken out of production. For instance, the 2000ha large "Vogelmoor" has been chosen, and besides also has a strong focus on rewetting to reduce GHG emissions from peat mineralisation. The GHG emission reductions or removals have not been calculated and in any case would differ from site to site. However, given the permanence of the sink created, the high administrative costs occurred during the procedure are eventually negligible. For the same reason this measure is fully compatible with a net-zero pathway. The delivery of co-benefits is also high, since the area is high in biodiversity.
Responsible authority	Agency for Regional Development Braunschweig (Amt für regionale Landesentwicklung Braunschweig)
Relevant legal basis	Simplified land consolidation procedure -Flurbereinigungsverfahren mit der besonderen Zielsetzung „Flächenmanagement für Klima und Umwelt“ ("§§ 86ff. FlurbG")

Germany Case study – Land consolidation with a special focus on climate and environment

Policy Type	Public Intervention
Governance Level/ Target audience	**Germany - state Lower Saxony** **Landowner and land user, mostly farmers**
Objectives	Reduction of Greenhouse gases from peatlands soils and nature conservation through permanent land set-asides.
Summary of reasons for success	Land consolidation programmes are an established diplomatic procedure that aims to rearrange ownership rights. The process usually spans several years leaving enough room for rational debates and decisions on all sides. Additionally, stakeholders are already experienced with it. Linking this process to environmental objectives simply widens the scope in which this process can be applied.
Replication potential	Scaling the measure up nationally should be fairly easy as the procedure already exists and simply would need to be applied in another context. On an EU-scale it would depend on the extent to which such measures already exist and link to the respective national culture on changing land ownership rights. Alterations like semi-private landbanks might be helpful to adjust the measure to other member states.
Relevant website	https://www.arl-bs.niedersachsen.de/startseite/foerderung_projekte/ile/flurbereinigung/im_landkreis_gifhorn/geplantes-flurbereinigungsverfahren-groes-moor-147928.html https://www.arl-bs.niedersachsen.de/startseite/foerderung_projekte/ile/flurbereinigung/im_landkreis_gifhorn/geplantes-flurbereinigungsverfahren-vogelmoor-154315.html"

Germany Case study – Moor futures

Country	**Germany**
Sector	**Agriculture**
Year	2011- ongoing
Narrative description	In this voluntary offsetting scheme, drained peat and wetlands, often used for agriculture, are taken out of production and rewetted. The restoration of the area increases carbon sequestration. Individuals and businesses can buy certificates of about 40 EUR per 1 t CO2eq linked to specific projects. These certificates then finance the whole project including planning, construction measures, compensation for landowners, scientific monitoring as well as communication about the topic. In general, voluntary commitments can of course not replace the gap caused by a lack of regulation. However, among such voluntary approaches Moor Futures can be seen as a good practice using a scientifically sound and regionally integrated approach with strong environmental co-benefits. Actual emissions reduction and abatement costs vary between projects. In the example of the project "Polder Kieve" the certificates were sold for 35 EUR per 1 t CO2eq. Certificates for 14.000 t CO2eq (i.e. 500.000 EUR) were sold to finance the project, however scientific monitoring later revealed much greater carbon sequestration of about 46.000 t CO2eq. With a lifetime of 50 years these projects are compatible with net-zero pathways, especially since carbon is removed from the atmosphere. Co-benefits for nature and environment are manifold and present a strong incentive for people to offset emissions.
Responsible authority	Regional ministries for agriculture and environment, land compensation agencies
Relevant legal basis	NA
Policy Type	Tradable Carbon certificate/credits
Governance Level/ Target audience	**Germany - states Brandenburg, Mecklenburg-Vorpommer, Schleswig-Holstein NGOs, National park authority individuals and business emitting CO2**

Germany Case study – Moor futures

Objectives	Creation of a voluntary carbon credit scheme for moor rewetting with integration of other ecosystem services
Summary of reasons for success	Aside from the scientifically solid methodology, the integration with other ecosystem services and a regional approach can be seen as the main factors of success. In other words, the combination of a climate mitigation project with nature conservation in a certain region has a strong appeal for individuals and businesses from that region.
Replication potential	The standard is well developed, and the approach could be implemented elsewhere under different names. The scheme and trademark itself however follow a regional approach and any expansion would depend on the approval of the regional ministries and agencies.
Relevant website	https://www.bfn.de/fileadmin/BfN/service/Dokumente/skripten/Skript407.pdf https://www.moorfutures.de/

Germany Case study – Moor preserving water levels Agri-Environment and Climate Measure (AECM)

Country	**Germany**
Sector	**Agriculture**
Year	2015-2020
Narrative description	Increasing water levels prevents the release of CO2 from the mineralisation of organic material in peat-rich soils. If the water levels are raised above ground level, carbon can even be sequestered from the atmosphere. Naturally, farming on these soils will be less intense with reduced grazing or mowing. Such measures can be rather complex, as they often involve several authorities (water, environment, agriculture) and affect neighbouring landowners. However, this complexity does not trickle down to the individual farmer by the way it is designed here. For instance, most permissions are obtained by the authorities themselves, which largely reduces the administrative burden and is therefore a major barrier to wider uptake. The measure is subsidised by 387 EUR per hectare per year which saves about 14-24 tonnes of CO2eq for the same area and year. Despite low administrative barriers the uptake of the measure could still be improved. Rewetting measures usually face cultural barriers as previous generations of farmers have claimed the land by draining it. Therefore, intensive awareness raising and trust building by the respective authorities are often necessary. In the long term it might be necessary to not just stop the on-going degradation of peat soils, but to turn them into carbon sinks again. However, this measure can still be evaluated as net-zero compatible. The co-benefits for biodiversity are secured by safeguards, e.g. it is not possible to use fertilisers or pesticides on the respective areas.
Responsible authority	State Office of Environment of the Brandenburg Federal State (Landesamt für Umwelt Brandenburg)

Germany Case study – Moor preserving water levels Agri-Environment and Climate Measure (AECM)

Relevant legal basis	The measure is part of the 'cultural landscape programme', based on EU Regulation 1305/2013 & 1303/2013 as well as the budgetary regulations and the Rural Development Programme of Brandenburg & Berlin (AUKM „Moorschonende Stauhaltung" des Kulturlandschaftsprogramms (KULAP))
Policy Type	Subsidy based on cost incurred
Governance Level/ Target audience	**Germany - state Brandenburg** **Farmer and agricultural company**
Objectives	Reduction of greenhouse gases from peatlands and peat conservation through year-long high-water levels on grassland on peat soils and peaty mineral soils.
Summary of reasons for success	Raising water levels is a complicated measure involving different authorities and neighbouring landowners. It also faces cultural resistance as for decades, the practice has been used to drain land rather than rewet it. Here the implementing authority provides a lot of guidance to farmers and takes over permission process e.g. from water authorities, thereby lowering the administrative burden for farmers. Yet trust needs to be built over time by peer learning among farmers.
Replication potential	This policy needs to be seen in the context of barriers preventing farmers from rewetting measures even if they are being compensated and/or rewarded. Barriers can be administrative burdens or historical attachment to drainage-based agriculture. All these barriers need to be taken into account when adjusting this approach to different national and regional contexts.
Relevant website	https://lfu.brandenburg.de/cms/detail.php/bb1.c.427130.de https://lfu.brandenburg.de/cms/media.php/lbm1.a.3310.de/Moorschonende_Stauhaltung.pdf

Hungary Case study - Investments for improving the resilience and environmental value of forest ecosystems

Country	**Hungary**
Sector	**Agriculture**
Year	2015-2020
Narrative description	The measure aims to contribute to healthy, natural forest ecosystems with increased resilience, and a higher environmental and ecological value. It intends to achieve this by establishing multi-level forest ecosystems as part of a transformation of the structural elements of forests. The measure also supports the removal of invasive alien tree and shrub species, thus improving the health status and living conditions of forests with native tree species, and maintaining/increasing forest biodiversity. The total budget indicated in the call is 4.7 m HUF (14.3 m EUR), altogether approximately 300 applications can get funding through this subsidy. The project is still going on, no data is available yet on its success rate or more detailed impact/results. Co-benefits of the measure: climate mitigation, climate change adaptation, resilience against pests, weather impacts, increasing forest biodiversity, preventing soil erosion, water-retention, supporting pollinators, providing timber as a renewable energy source, supporting local economy and the local community
Responsible authority	Hungarian Ministry of Agriculture
Relevant legal basis	Implemented pursuant to EU Regulation 1305/2013 (Government decree No. 1248/2016. (V. 18.))

Hungary Case study - Investments for improving the resilience and environmental value of forest ecosystems

Policy Type	**Investment subsidy**
Governance Level/ Target audience	**Forestry Manager and Land owner**
Objectives	**To increase the resilience of forest ecosystems and to improve the natural status of existing forests**
Summary of reasons for success	*It remains to be seen*
Replication potential	The measure could easily be implemented in other Member States
Relevant website	https://www.palyazat.gov.hu/vp5-851-16-az-erdei-koszisztmk-ellenll-kpessgnek-s-krnyezeti-rtknek-nvelst-clz-beruhzsok

Hungary Case study - Non productive investments for habitat improvements

Country	**Hungary**
Sector	**Agriculture**
Year	2015-2020
Narrative description	Agricultural production with a wide range of ecosystem services, contributes to the provision and conservation of public goods. However, this function of farming has been significantly suppressed in the past decades. These days, it has become typical to experience the loss of biodiversity on farmland habitats, the erosion of ecosystem elements and those of the green infrastructure network, in addition to the degradation of landscape elements. This measure can contribute to the restoration and improvement of the status of farmlands and their ecosystem services, restore, conserve and improve farmland biodiversity, strengthen the social benefits of Natura 2000 sites and high-nature-value farmlands and, in the meantime, comply with agro-environmental and climate goals. The total budget indicated in the call is 3.51 b HUF (10.7 m EUR), altogether approximately 400 applications can get funding through this subsidy. The project is still going on, no data is available yet on its success rate or more detailed impact/results. The potential impact of this measure is more obvious in increasing farmland biodiversity, climate mitigation is an additional benefit.
Responsible authority	Hungarian Ministry of Agriculture
Relevant legal basis	It is implemented pursuant to EU Regulation 1305/2013 (Government decree No. 1248/2016. (V. 18.))
Policy Type	**Investment subsidy**

Hungary Case study - Non productive investments for habitat improvements

Governance Level/ Target audience	**Farmers**
Objectives	**To restore and improve the status of farmlands and their ecosystem services including biodiversity and comply with climate goals**
Summary of reasons for success	*It remains to be seen, however the creation of habitat such as hedge have some other co-benefits such as enhancing biological control or protecting the crops against strong wind.*
Replication potential	The measure could easily be implemented in other Member States
Relevant website	https://www.palyazat.gov.hu/vp4-441-16-lhelyfejlesztsi-cl-nem-termel-beruhzsok

Ireland Case study – Establishment grants for Agroforestry

Country	**Ireland**
Sector	**Agriculture**
Year	2014-2020
Narrative description	Agroforestry aims to integrate woody perennials like trees, shrubs and hedgerows with crop and livestock production. Climate benefits arise from carbon sequestration in trees, but also a potential increase of soil carbon content. In this grant the focus is set on the latter, combining sheep and cattle grazing or silage production with trees. The grant provides a per hectare payment representing up to 80% of the eligible investment cost for planting and fencing (up to 6220 EUR / ha). Additionally, a per hectare payment of about 650 EUR for maintenance is available for the first 5 years after planting. The scheme is accompanied by rules and guidelines ensuring the long-term climate benefits. Planted trees are 'forestry' and therefore subject to replanting obligations. Additionally, these grants should only be applied on non-drained mineral soils, to make sure they don't increase mineralisation of carbon rich soils therefore neutralising any climate benefits. It is considered as compatible with net-zero pathways. The measure brings multiple co-benefits, e.g. for soil conservation or biodiversity. In general biodiversity is higher in agroforestry systems, however, naturally this depends on local conditions, as some species in agro-ecosystems can also require a more open landscape.
Responsible authority	Teagasc - The Agriculture and Food Development Authority
Relevant legal basis	Forestry Programme 2014 - 2020 Afforestation grant and premium category (GPC) 11 - Agroforestry
Policy Type	Subisidy
Governance Level/ Target audience	**Ireland - National Farmers**

Ireland Case study – Establishment grants for Agroforestry

Objectives	The grant scheme aims to combine trees cultivation with grazing or silage production to increase carbon sequestration
Summary of reasons for success	The combination of detailed grants linked to specific activities with mandatory counselling by farm advisors and the well-established links with forestry laws guarantee the long-term sustainability of this measure. Considering soil conditions (no afforestation on drain peatland soils) as well ensures the actual climate benefits.
Replication potential	The measure can be easily replicated/copied, but needs to fit into national laws with respect to land use, agriculture and forestry. If little experience exits so far an initial pilot phase might be necessary to fine tune the grants in terms of the amount of funding as well as necessary safeguards regarding their long-term sustainability.
Relevant website	https://www.teagasc.ie/crops/forestry/grants/establishment-grants/agroforestry/ https://agforward.eu/index.php/en/home-redirect.html

Ireland Case study – Green, Low-Carbon, Agri-Environment Scheme - GLAS

Country	**Ireland**
Sector	**Agriculture**
Year	2015-2020
Narrative description	With 30% of its greenhouse gas emissions coming from agriculture, Ireland is the only country, which chose 'Resource efficiency and climate' as the main priority of its Rural Development Programme. Many of the measures focus on the increase of emission efficiency, or in other words the decoupling of production and emissions. For instance, Ireland maintains a breeding programme that selects, among other factors, "low emission cows". At the same time Ireland's national strategy for the agricultural sector aims to increase production and exports. Therefore, emissions from agriculture are projected to increase. In other words, any relative gains in emissions efficiency are cancelled out by an overall increase in production and in turn an absolute increase in emissions. However, the "Green, Low-Carbon, Agri-Environment Scheme" GLAS can be seen as an exemplary approach, which combines nature-friendly farming with climate mitigation. GLAS is built on basic environmental action core requirements, priority environmental actions as a first requisite for scheme entry and general environmental actions as funds permit. The supported measures include among others, minimum tillage, hedgerows, low-input permanent pastures, and environmental management of fallow land. This measure is net-zero compatible.
Responsible authority	Irish Department of Agriculture, Food and the Marine (DAFM)
Relevant legal basis	GLAS is implemented pursuant to EU Regulation 1305/2013
Policy Type	Subsidy based on cost incurred

Ireland Case study – Green, Low-Carbon, Agri-Environment Scheme - GLAS

Governance Level/ Target audience	**National**
Objectives	To preserve and promote the necessary changes to agricultural practices that make a positive contribution to the environment and climate
Summary of reasons for success	The scheme was designed through a participatory process involving different actors including farmers and nature conservationists, which ensured its actual environmental and climate benefits, but also its acceptability and practicability. The semi-flexible combination of different measures instead of a single-action compensation scheme ensure strong environmental benefits.
Replication potential	The measure could easily be implemented in other member states as well. Likewise, similar schemes with a climate focus and biodiversity safeguards and co-benefits could be designed.
Relevant website	https://www.agriculture.gov.ie/farmerschemespayments/glas/ https://www.agriland.ie/everything-you-need-to-know-about-glas/ https://www.birdwatchireland.ie/LinkClick.aspx?fileticket=7yDtwZgNxAc%3D&tabid=1365

Poland Case study – Combined production of biomass briquettes and habitat conservation

Country	**Poland**
Sector	**Agriculture**
Year	2005-2011
Narrative description	The main objective of this Life-funded project was to stabilise the population of the aquatic warbler in one of the species' most important sites in Poland. This small bird relies on semi-aquatic habitats. The management of these habitats requires mowing and cutting of vegetation. Using the mowed organic material for the creation of biomass briquettes created a value chain around these activities, which increased economic viability.
Responsible authority	Polish Society for the Protection of Birds (OTOP)
Relevant legal basis	EU (Life) funded project
Policy Type	Grant
Governance Level/ Target audience	**Poland- Local** **NGOs, National park authority**
Objectives	Economically sustainable habitat conservation
Summary of reasons for success	The measure aimed to make nature conservation financially more self-sufficient. In this approach a wetland is conserved and on top of that biomass for bioenergy is produced, while still conserving the habitat of an

Poland Case study – Combined production of biomass briquettes and habitat conservation

	endangered species.
Replication potential	The measure certainly depends on certain natural framing conditions but linking the use of biomass to conservation objectives can be a good indicator and safeguard for sustainable use. In agricultural systems the use of flower strips and hedgerows can also make these landscape features a source of revenue. However, this also creates the risk of economic objectives dominating over nature conservation. Here too, the sustainable use should be secondary to conservation to ensure win-win scenarios.
Relevant website	http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.showFile&rep=file&fil=LIFE05_NAT_PL_000101_LAYMAN.pdf

Spain Case study – Sustainable rice cultivation in wetland area

Country	**Spain**
Sector	**Agriculture – Region of Valencia**
Year	2015-2020
Narrative description	98% of rice cultivation in the Autonomous Community of Valencia takes place in the Natural Park of l'Albufera, which is one of the most representative coastal wetlands of the Mediterranean basin, with an area of more than 21 hectares, 67% of which are devoted to rice cultivation. In a wetland environment it is necessary to ensure sustainable practices, both during cultivation and in the absence of cultivation. Traditionally, the usual practice for treating rice straw has been its widespread burning, "fangueo" or abandoning the straw in the ground without crushing or burying. The best practice to be carried out is the removal of the rice straw before the post-harvest flood for its later use. Another good practice is its incorporation into the soil immediately after the harvest and before the post-harvest flood. The emission reductions obtained with the removal of rice straw compared to "fangueo" or burning are 6.5 and 4.8 tonnes CO2eq / ha, respectively. As for the incorporation into the soil immediately after the harvest and before the post-harvest flood reductions would be 3.9 and 2.2 tonnes of CO2eq / ha, respectively. The rice straw removed from the crop can be seen as net-zero compatible. The rice straw can be reused for biogas production, composting, paper production and even building materials.
Responsible authority	Valencian Agency of Development and Agrarian Guarantee (Agencia Valenciana de Fomento y Garantía Agraria)
Relevant legal basis	it is implemented pursuant to EU Regulation 1305/2013.
Policy Type	**Incentive, 440€/ha**
Governance Level/ Target audience	**Regional/ farmers**

Spain Case study – Sustainable rice cultivation in wetland area

Objectives	**Reduction of GHG emission associated with business-as-usual rice straw management practices (burning or "fangueo") through the introduction of sustainable agricultural practices.**
Summary of reasons for success	The different uses that can be made of rice straw give it economic value. Thus, the farmers can sell it to third parties obtaining economic benefits with a product that, in the past, only caused them problems.
Replication potential	The measure could easily be implemented in other Member States with rice production, such as Italy, Greece, Portugal or France.
Relevant website	NO information available

Buildings

Austria Case study – Improving Energy Efficiency of apartment blocks in Vienna

Country	**Austria**
Sector	**Buildings**
Year	2016
Narrative description	The measure was carried out for an apartment block built in 1974. The heating system was renewed in 2008 and the windows replaced. However, due to the age of the building, major maintenance work was still required. The roof and the façade had been damaged and need reinstating. The measures recommended for these buildings were roof, external wall and basement ceiling insulation. Two packages including these measures and the maintenance work were presented and discussed at the residents' general assembly. Through the initial vote, the owners decided that they would like the maintenance work to include energy efficiency measures. A further vote took place a few months later to decide whether to install top floor and the basement ceiling only, or in addition, to include external wall insulation. It was decided to install the top floor and basement ceiling insulation only. The projected annual savings amount to 17.9 t CO2 and 76,000 kWh The final investment costs are unknown. The measure is expected to decrease the annual fuel bill by EUR 4,180 for the whole block.
Responsible authority / organisation	The project was carried out by e7 Energie Markt Analyse GmbH and H2020 project Low Energy Apartment Future (LEAF), utilising federal funds for environmental improvements in Austria
Relevant legal basis	The measure was elegible for the "Sanierungsscheck" a subsidy programm for private citizens as part of the "Umweltfoerderung im Inland - UFI" which is part of the implementing measures of Art. 7 EED.

Austria Case study – Improving Energy Efficiency of apartment blocks in Vienna

Policy Type	one-time direct subsidy
Governance Level/ Target audience	**National**
Objectives	Combine energy efficiency improvement of the building at the same time as carrying out required maintenance work.
Summary of reasons for success	"This case study demonstrates the significant energy saving potential for these typical 1970 ’s apartment blocks with non-existent or poor insulation on the façade, roof and basement ceiling. In many cases, the windows or heating system have already been renewed, resulting in building insulation appearing less cost effective. Available funding helped to persuade the residents to agree to implementing insulation to some extent. This decision was enabled by the mechanisms of resident meetings and voting."
Replication potential	The subsidy scheme "Sanierungsscheck" has been continued since 2009 in Austria. The post-war building stock of the 50suntil the 70s shaped entire neighborhoods and represents a major structural and financial challenge.
Relevant website	http://www.lowenergyapartments.eu/wp-content/uploads/2016/03/LEAF_Case_study_showcase_Austria_D8.4_Feb16.pdf

Bulgaria Case study – Energy-efficient reconstruction of street lighting system

Country	**Bulgaria**
Sector	**Buildings and public infrastructure**
Year	2010 - 2020
Narrative description	Before the intervention of Dobrich municipality, the street lighting system was old, contained toxic chemicals and harmful filaments and was very inefficient, resulting in high energy costs for the municipality. After the intervention with the change to high-pressure sodium vapour lamps and LED in the street lighting system, substantial energy and financial savings could be leveraged for the municipality. Furthermore, the new system depreciates at a much slower rate, does not burn out quickly, doesn't contain harmful chemicals and filaments and also gives off less heat. Their brightness can also be adjusted when pedestrians walk by for example. GHG emissions reduced: 3,798 t/y Energy savings: 2,260 MWh/y Financial aspects / cost of realisation / benefits: Investment cost of 1 million EUR Annual return on investment: 8,9% over 10 years
Responsible authority	Municipality of Dobrich
Relevant legal basis	Municipal council decision to use municipal budget and 25% national grant for public lighting renovation, a grant put in place through the 2004 Energy Efficiency Act and the Energy Efficiency and Renewable Sources national fund
Policy Type	Public intervention & subsidy

Bulgaria Case study – Energy-efficient reconstruction of street lighting system

Governance Level/ Target audience	Local
Objectives	The project for the energy-efficient reconstruction of Dobrich streetlighting system was implemented step-by-step with municipal budget and 25 % national grant for public lighting renovations. The key objective was to change existing lamps with new high-pressure sodium-vapour lamps (6350 lamps - 50,70,100, 150W and 1000 LED - 24 and 36 W). Also, the municipality changed part of the existing cable network and renewed the commutation equipment. As additional optimization of the existing system, new lines with LED were also developed.
Summary of reasons for success	National grant for public lighting renovation from Bulgarian government was key for municipality to undertake investment and obtain a quick win & reap a low hanging fruit in implementing energy efficiency measures; Recommendation for SE Europe countries to put in place similar national funds for supporting such measures in municipalities
Replication potential	Measure can be scaled up and replicated to municipalities across the EU, and can also be taken a step further with involvement of an ESCO through Energy Performance Contracting: see for example the work done by the EU Intelligent Energy Europe programme funded "Streetlight EPC project": http://www.streetlight-epc.eu/
Relevant website	https://www.pilsetumerupakts.eu/zi%C5%86as-un-pas%C4%81kumi/zi%C5%86as-un-pas%C4%81kumi/zi%C5%86as/1440-covenant-of-mayors-cities-help-your-peers-replicate-your-cost-effective-good-practices.html

Croatia Case study – NEWLIGHT: up-scaling investments in Energy Efficiency

Country	**Croatia**
Sector	**Buildings**
Year	2015 – 2018
Narrative description	The cost related to the operation and maintenance of public lighting systems in Croatian cities and municipalities can amount up to 7% of the total local authority budget. This is associated with shortfalls in terms of efficient regulation of the lighting, maintenance costs and a delay in modernisation investments. The phasing out of less efficient high pressurised mercury lamps and high-pressure sodium lamps with high mercury content as part of the EU Ecodesign framework gave impetus to an investment in the lighting infrastructure. Investments are planned in 57 local authorities, which have joined the project in a process successfully facilitated by REGEA, the Croatian Energy Efficiency Agency. The modernisation of public lighting systems are aimed at replacing lights by more energy-efficient technologies such as LED and installation of the power control (dimming), with the potential to achieve energy and cost savings of 60%. With these measures, REGEA expects to modernise around 34 000 lighting points, reduce energy consumption by 19 GWh and CO2 emissions by 5000 tonnes. 0,79 Mio EUR of financing for the preparation phase of NEWLIGHT were provided through the EIB/ELENA. For the works, the investment is estimated at over 20 Mio EUR for the reconstruction of 34.000 lighting points and luminaries. The financing combined favourable loans drawing on the EFSI (Juncker Fund) and measures from the Cohesion funds as a subsidy for the ESCO renumeration. The availability of financing for technical assistance during the preparatory phase of the project was critical for the development and success.

Croatia Case study – NEWLIGHT: up-scaling investments in Energy Efficiency

	Auxiliary operations such as reconstruction of lighting poles and replacement of power cables were also carried out and constitute a co-benefit of the measure. The measure also was intended to develop an EPC/PPP market in Croatia and increase competitiveness of domestic ESCO providers.
Responsible authority	North-West Croatia Regional Energy Agency
Relevant legal basis	Art. 5 EED & implementation of Ecodesign requirements.
Policy Type	Obligation on public authorities in combination with EU funds
Governance Level/ Target audience	Municipality
Objectives	Replacing luminaries by more energy-efficient technologies such as LED and installation of the power control (dimming)
Summary of reasons for success	The combination of different available EU funds for technical assistance, financing and operational support to foster market development as well as the positive impact on the energy bills can be named as reasons for success. It is also important to note that the implementation of the Ecodesign framework helped to get this programme started.
Replication potential	The project is replicable for all municipalities that have access to cohesion funding.
Relevant website	http://publenef-project.eu/wp-content/uploads/2017/01/GP2-TEA-REGEA-Eng.pdf

Finland Case study – Energy Service Contracting for energy renovation of municipal buildings in Vantaa

Country	**Finland**
Sector	**Buildings**
Year	2011 – 2023
Narrative description	The city required a savings guarantee of 100% in the final call for tender, as a non-negotiable element. This meant that if the savings were not realised, the ESCO-provider would pay the difference to the city. In the case that the energy savings are bigger than stated in the bid, the extra savings are to be divided equally between the city and the provider. On this basis, the city launched a call for tender and selected the applicants based on the price offered, the payback time (an average of six years was indicated), the amount of saved energy, the effectiveness of the measures, and the reduction in greenhouse gases emissions. The tender was launched in 2011, then the contract signed with the successful bidder in November 2013. All the investments were started in 2014 and made by the end of 2015. The selected provider committed to guaranteeing 4,300 MWh of annual energy savings, i.e. 30,100 MWh during the contract period. With the electricity and heat energy price at the time, this meant that the municipality would save approximately €245,000 per year, and within the whole contract period approximately €1.7 million not including the transfer price. With the total energy cost of the buildings estimated at €1.3 million per year, the annual savings amounted to approximately 18%. During the whole contract period, the greenhouse gases emitted by the public buildings will be reduced by 7,500 tonnes of CO2 equivalent. The consumption figures will be verified from electricity and district heat meters, checked once a year. All refurbishment work in all 14 buildings has been completed.
Responsible authority	City of Vantaa and the ESCO tendered

Finland Case study – Energy Service Contracting for energy renovation of municipal buildings in Vantaa

Relevant legal basis	"Energy Efficiency Agreement signed between the Finnish Ministry of Employment and Economy and the city of Vantaa."
Policy Type	Public-Private Partnership and subsidy
Governance Level/ Target audience	Local
Objectives	The municipality of Vantaa used Energy Service Contracting (ESCO) and a national grant to improve the energy efficiency of 14 of its public buildings, in a way that does not entail any costs for the municipality as the expenses will be covered with the savings produced by the efficiency gains.
Summary of reasons for success	The participants to the tender issued by Vantaa were given detailed initial information about the energy audits of three buildings, on the basis of which they were able to select and suggest energy-saving measures. The number of different measures was not determined in advance, in order to give the suppliers freedom to choose the ones worth investing in. Because of the required savings guarantee of 100%, companies were not able to risk really innovative solutions. The measures mainly consisted of electrical and building automatization, heating and ventilation/air conditioning. However, good news was that the energy savings proposed by the providers were bigger than estimated by energy audits. This strengthened the opinion of the municipality about the usefulness of this type of competitive tendering.
Replication potential	This measure can be disseminated and scaled up nationally or EU-wide, for example through dedicated networks like eu.esco or as concrete example provided alongside the new Eurostat guidelines that favour ESCO solutions to accelerate investments in the refurbishment of public buildings.

Finland Case study – Energy Service Contracting for energy renovation of municipal buildings in Vantaa

Relevant website	"http://smartnclean.helsinkibusinesshub.fi/projects/esco-procurement-i Covenant of Mayors profile of Vantaa: http://bit.ly/2ERS4yi ESCO procurement leaflet of Vantaa: https://www.motiva.fi/files/9182/ESCO_Procurement_by_the_City_of_Vantaa_Curiosity_and_Persistency.pdf"

Hungary Case study – improving Energy Efficiency of apartment Blocks in Budapest

Country	**Hungary**
Sector	**Buildings**
Year	2016
Narrative description	This multi-storey residential building situated in Budapest was built in 1966. The building has 36 dwellings, all of which are under private ownership. The building's communal areas are owned by a housing association. The building is constructed of very thin concrete walls and a flat roof without insulation. The block is serviced by district heating. In the last few years the residents decided to install thermostatic radiator valves (TRVs), to give greater control over the temperature of their rooms. They now want to take this further and try to improve the energy efficiency of the building fabric. The residents decided to become involved in the LEAF project to find technical and financial solutions to improve the efficiency of their building. The main reasons for this were high energy bills and a lack of information about the possible measures and associated savings. A survey carried out with the residents highlighted a willingness to improve comfort. They also explained that damp and mildew had appeared after the renovation of the heating system. Residents were also very interested in possible financial state support. The survey showed an annual CO2 reduction potential of 112 t CO2, reducing energy consumption by 450.000 kWh and reducing the annual fuel bill by EUR 16,650.00.
Organisation	Energiaklub and H2020 project Low Energy Apartment Future (LEAF)
Relevant legal basis	None
Policy Type	Awarenes raising
Governance Level/	**Local**

Hungary Case study – improving Energy Efficiency of apartment Blocks in Budapest

Target audience	
Objectives	assess energy efficiency potential and find technical and financial solutions to improve the energy efficiency of the buildings
Summary of reasons for success	The project was successful in awareness raising but not directly carrying out works. Despite the attractive potential savings associated with these measures the residents decided to postpone the retrofit. This was largely due to the high investment costs required to install the measures and a lack of financial assistance. At the time this project was carried out there were no financial support available in Hungary for residential buildings. Many residents are not able to finance retrofit from their own assets, and bank loans are a high risk to the owners. This was compounded by a recent trend in decreasing energy prices which reduce the potential financial savings and therefore residents' incentive.
Replication potential	There are more than 4 million registered apartments in Hungary. Assuming a similar energy performance as in other EU countries, around 97% of them do require retrofits.
Relevant website	http://www.lowenergyapartments.eu/wp-content/uploads/2016/03/LEAF_Case_study_showcase_Hungary_D8.4_Feb16.pdf

Ireland Case study – Biomass District Heating -Tralee

Country	**Ireland**
Sector	**Buildings**
Year	2008 - to date
Narrative description	Tralee Town Council is the administrative centre for Tralee (with a population of almost 23,000), the capital town of County Kerry and Ireland's 7th largest town. It is a bustling commercial, tourism and educational centre, the seat of local government, and a regional transport hub. Kerry County Council has been at the forefront of promoting the development of district heating in Ireland, with its Mitchels/Boherbee 1MW biomass heating projects in Tralee playing and important demonstration role. This project was the first community biomass district heating project in the country which supplied heat to new and existing residential and non-residential buildings. Ireland lacks in both political and organisational frameworks for DH: there is no regulation to directly support it and no national or local organisation with a mandate and authority to develop it. Notwithstanding these barriers, Kerry brought the project to fruition, and the Council is now examining Phase II of this project, which would extend biomass district heating to 53 of the largest energy users in Tralee.
Responsible authority	Kerry County Council
Relevant legal basis	n.a.
Policy Type	public investment
Governance Level/ Target audience	**Local level**
Objectives	switch existing fossil fuel based individual heating systems to smart biomass district heating

Ireland Case study – Biomass District Heating -Tralee

Summary of reasons for success	The expected greenhouse gas emission reductions depend on the sustainability of the biomass used for the district heating. While environmental impacts to air can be reduced by keeping the facility in an optimised operation, other no-emission technologies like heat-pumps can achieve better air quality improvements. The main issue on this measure is the availability of sustainably sourced biomass. The project costs of € 2 M was funded by a combination of a block grant for heating system for new construction, a grant for energy efficiency upgrades to existing buildings and houses addressing fuel poverty. Parts of the project contributed to reducing energy poverty by renovating existing buildings.
Replication potential	Biomass district heating and cooling must take into consideration potential impacts and limitation on air quality. Furthermore, the supply of sustainable biomass needs to be assessed locally.
Relevant website	https://urbanecologycmu.wordpress.com/2015/11/03/biomass-heating-system-tralee-ireland/

Italy Case study – Energy Efficiency Interventions for public buildings and lighting systems in Turin

Country	**Italy**
Sector	**Buildings**
Year	2013-Ongoing
Narrative description	Turin's public building stock accounts for 4% of the city's CO_2 emissions. Alongside the public buildings stock, the city's public lighting system was also identified as a key area for energy efficiency intervention. Starting in 2013, the 'Torino LED' project substituted 55,000 public lighting bulbs with LEDs, which has resulted in 70% energy savings in 2019. Turin plans to extend this project further to the city's traffic signs. Turin has also introduced in its building code energy and environmental requirements for thermal roof insulation, façade improvements and minimum NOx standards for heating systems, when these are undergoing major renovation. These standards were e.g. applied for the energy requalification of the municipal police offices, which will lead to -30% in electricity consumption and -20% in heating and air conditioning consumption. The city has also partnered with the University Politecnico of Turin, to gather all information about energy consumption and costs in its public building stock. The databases created are supporting the administration and energy management office in making more informed choices to improve the energy efficiency of public buildings. Furthermore, the collaboration with the university led to the project 'Scuole 2.0', which will introduce energy consumption monitoring systems in 150 schools.
Responsible authority	Municipality of Turin and University Politecnico of Turin
Relevant legal basis	TAPE: Turin Action Plan for Energy (Covenant of Mayors Sustainable Energy Action Plan)
Policy Type	Public intervention

Italy Case study – Energy Efficiency Interventions for public buildings and lighting systems in Turin

Governance Level/ Target audience	**Local / citizens**
Objectives	Assess energy efficiency potential and identify weak spots in the city's public buildings energy systems Data collection on energy consumption and costs to make more efficient technical and policy decisions Raise awareness on the impact of consumers' behavioural change on energy saving (i.e. in Scuole 2.0 project)
Summary of reasons for success	A key factor in Turin's energy efficiency interventions in its public buildings and lighting systems has been its partnership with the University Politecnico of Turin. The university's researchers were instrumental in gathering the relevant data to improve the energy efficiency of the public building stock, and also supported the city in implementing an energy management system for the entire stock, that is based on ICT and building management systems to detect, manage, control and monitor energy consumption. As a result of the fruitful collaboration with the university, the city plans to extend the research results also to its private buildings.
Replication potential	Energy efficiency interventions in public buildings and lighting systems are among the 'low-hanging fruits' for public authorities to improve energy efficiency, leading to significant savings, cost reduction and other associated benefits (e.g. air quality, thermal comfort) in a short period of time. Replication potential is high and can be even further increased by making use of the know-how in data collection on energy consumption and costs from local universities and research centers (as was the case in Turin).
Relevant website	Energy efficiency standards for public buildings renovation: http://www.comune.torino.it/ambiente/energia/efficienza/allegato-energetico-ambientale.shtml 'Torino LED' project: http://www.affaritaliani.it/economia/iren-led-per-torino-al-via-il-progetto-per-sostituire-lampade-semafori-617358.html Renovation of municipal police offices through European funds and EU project PROBIS: https://www.probisproject.eu/the-city-of-torino-supporting-public-procurement-of-building-innovative-solutions/

Italy Case study – Energy Efficiency Interventions for public buildings and lighting systems in Turin

Poland Case study – Joint Public Procurement to boost solar energy on buildings in South-East Poland

Country	**Poland**
Sector	**Buildings**
Year	2012-2016
Narrative description	Niepolomice and five other South-East Polish municipalities – Miechow, Skawina, Wieliczka, Myslenice, Zabierzow – joined forces to procure and install renewable energy systems (e.g. PV panels, solar thermal collectors, heat pumps) in the public and residential buildings on their territories. They obtained 60% co-funding from the Swiss-Polish Cooperation Programme (aid granted to new EU Member States to reduce economic and social disparities with other EU countries), and covered the remaining part through the payments of citizens who had renewable energy systems installed (30%) and 10% through their municipal budgets. Citizens that joined the programme by installing PVs or solar thermal collectors on their buildings, benefitted from a 70% subsidy for the installation. Oftentimes, PV modules were integrated with heat pumps, thereby enabling a significant reduction in energy costs and emissions. In the case of the swimming pool in Niepolomice, a smart energy monitoring system was also installed, providing real-time information about the renewable electricity produced, emissions reduced and cost savings achieved. The total value of the joint green public procurement project led by Niepolomice and its five partnering municipalities was EUR 19,3 million. More than 4,000 households and 40 public buildings were equipped with solar energy in the course of the project.
Responsible authority	Municipalities of Niepolomice, Wieliczka, Skawina, Miechow, Myslenice and Zabierzow
Relevant legal basis	Swiss-Polish Cooperation Funding Programme
Policy Type	Public intervention

Poland Case study – Joint Public Procurement to boost solar energy on buildings in South-East Poland

Governance Level/ Target audience	**Local / citizens**
Objectives	Diversifying energy sources used on the territory by increasing share of renewables Raising awareness about renewable energy through information and educational campaign Improve quality of life of citizens through better air quality and environment
Summary of reasons for success	Citizens were first skeptical about the benefits of the project, in particular concerning cost and efficiency. The municipalities addressed their concerns through an informational and educational campaign, which also involved renewable energy system installation programs for households. The encouraging feedback from the first households that had joined the project acted as a multiplier effect that led other citizens to participate as well. In addition to this, the quick reduction seen in energy bills was also key in citizens supporting the project. The large number of renewables installations was also perceived as increasing the touristic attractiveness of the South-East Poland region.
Replication potential	The replication potential of this example from South-East Polish municipalities is high, and benefits from a co-funding source (e.g. EU structural funds, national programmes such as National Fund for Environmental Protection and Water Management in Poland) to complement limited funding availability in municipalities. Coupling financial incentives (e.g. installation subsidy) with trainings to install renewable energy systems are critical in gaining citizen's support alongside the price factor (decrease in energy bill).
Relevant website	More information: http://www.razemdlaklimatu.eu/images/dobre_praktyki/Niepolomice_en.pdf

Portugal Case Study – Almada Carbono Menos

Country	**Portugal**
Sector	**Buildings**
Year	2009 – ongoing
Narrative description	Before the creation of the revolving fund, municipal investment in improving the energy efficiency of public buildings was not moving forward fast enough to comply with the ambitions of Almada's Sustainable Energy Action Plan under the Covenant of Mayors - Europe. Therefore, Almada used the instrument of a revolving fund in combination with the internal contracting mechanism to accelerate public investment in retrofitting its municipal buildings. The most important innovation of this instrument of combining a revolving fund with internal contracting is the "shared benefits" approach, which encompasses different sharing schemes linking the fund and the "client department" based on the characteristics of the project. This ensures that the fund is replenished and gives extra motivation for different departments to invest in energy efficiency. A non-compliance procedure is also included, meaning that a client department can lose the shared benefit or even have a penalty imposed on their budget, if they fail to operate the system correctly. GHG/energy savings: 953 tons CO2 emissions avoided each year between 2009-2016 3,000 MWh in energy consumption reduced each year between 2009-2016 Financial aspects/cost of realisation / benefits gained: 375,000 EUR financial savings for the city between 2009-2016 (nearly 10% of energy expenses) Total investment of 1,6 million EUR 68 energy efficiency measures realized

Portugal Case Study – Almada Carbono Menos

Responsible authority	Municipal departments of Almada's administration
Relevant legal basis	Municipal council decision
Policy Type	Public intervention
Governance Level/ Target audience	**local**
Objectives	Almada's revolving fund "Almada Carbono Menos" aims to reduce the municipality's carbon footprint by financing, in particular, investments for energy efficiency in its public buildings.
Summary of reasons for success	Combining a revolving fund with internal contracting to invest in energy efficiency of public buildings is a successful approach, because it enables faster implementation of projects, stimulates municipal staff to change their behaviour (to be more efficient as they are rewarded for it in their department), strengthens cross-linked and integrated thinking on all aspects of energy use (investments in energy and cost savings) and finally enables the centralisation of all monetary allocations for energy efficiency improvements in a sustainable fund that replenishes itself thanks to energy efficiency actions in buildings.
Replication potential	This approach can be easily replicated for funding energy efficiency investments in public buildings in other municipalities across Europe, provided that they are not hampered in their investment by overly stringent public debt rules. In fact, the EU-funded Intelligent Energy Europe project INFINITE Solutions contributed to replicate this approach already in other municipalities and universities in Italy, Croatia and France
Relevant website	http://www.energy-cities.eu/spip.php?page=infinitesolutions_en http://www.energy-cities.eu/Internal-Contracting http://www.energy-cities.eu/IMG/pdf/guidebook_intracting_web.pdf Almada presentation at Covenant of Mayors Investment Forum 2018:

Portugal Case Study – Almada Carbono Menos

https://ec.europa.eu/energy/sites/ener/files/documents/1.1_climate_revolving_fund_almada_21feb2018_c_0.pdf

Scotland Case study – Improving Energy Efficiency of apartment blocks in Telford

Country	**Scotland**
Sector	**Buildings**
Year	2015 - 2016
Narrative description	Telford is an area in the north of Edinburgh made up of around 300 properties built during the 1950/60s. The majority of the buildings are three stories with two flats on each floor with some terraced housing also present. Improving the energy efficiency has historically been a challenge due to the mixed tenure nature of the flats and the concrete construction. Two communal measures were installed into the block: external wall and loft insulation. Alongside individual gas condensing boilers were installed in two dwellings. With these investments 1.14 tCO2 per flat and 6.83 tCO2 per building have been saved, reducing CO2 emissions by 30%. The project was able to benefit from full funding and as such, the residents did not need to contribute financially towards the work. The investment costs are unknown. It was a lesson-learned that encouraging all residents to sign up to this was critical for the project's success and this was achieved by a range of communications through letters, events and doorstep engagement. To make the apartments fully compatible with a net zero pathways further actions need to be taken as the apartments are still using gas fired boilers. Further improvements of the envelope quality and a switch to renewable sources could be considered. The improvements were made in the context of the national energy poverty programme and shows the positive

Scotland Case study – Improving Energy Efficiency of apartment blocks in Telford

	interaction between climate and poverty measures.
Responsible authority	Home Energy Efficiency Programmes for Scotland (HEEPS) is a Scottish Government initiative and the responsibility for programme delivery ABS falls to local authorities.
Relevant legal basis	Home Energy Efficiency Programme
Policy Type	Technical and financial support to carry out energy performance improvements
Governance Level/ Target audience	Local Authorities are responsible for the delivery with the initial focus on the most deprived areas and the schemes draw on a range of data including indices of multiple deprivation, child poverty, the Scottish House Condition Survey and heat mapping.
Objectives	For residents, the main motivations behind improving these blocks were to reduce energy bills and improve property appearance.
Summary of reasons for success	The measure was fully funded by third-party financing and allowed low-income households to benefits of energy improvement measures without mobilising own financial resources. The home Energy Efficiency Programmes Scotland has strong political support and combines a cooperation of the Manor Estates, a charitable Housing Association, a national funding scheme and a energy saving obligation for private companies. A main factor was that energy poverty was tackled with the measures jointly with climate action.
Replication potential	Yes, the measure can be replicated for similar dwelling structures.
Relevant website	http://www.lowenergyapartments.eu/wp-content/uploads/2016/03/LEAF_Case_study_showcase_Scotland_D8.4_Feb16%E2%80%99.pdf

Slovenia Case study – Energy-efficient retrofitting of primary schools in Bilje

Country	**Slovenia**
Sector	**Buildings**
Year	2011 ongoing
Narrative description	Before the intervention, the primary schools in the Bilje area of Miren-Kostanjevica were badly insulated, very inefficient and also not well heated, causing a lot of discomfort for school children and teachers in the buildings. After the intervention, the thermal comfort was not only substantially improved for the buildings' occupants, but the municipality also made significant financial and energy savings thanks to the energy efficient retrofitting of the Bilje primary schools. GHG/energy savings: GHG emissions reduced by 53,4 t/y Energy savings: 89,7 MWh/y Financial aspects / cost of realisation / benefits Investment cost: 226,000 EUR Annual return on investment: 2.6% over 30 years (life expectancy of measure)
Responsible authority	Municipality of Miren-Kostanjevica
Relevant legal basis	Slovenian law on local energy concepts, Art. 324 EZ-1 and Art.325 EZ-1, grants for building refurbishment from MZIP (Ministry of Infrastructure and Spatial Planning)
Policy Type	Subsidy and public intervention

Slovenia Case study – Energy-efficient retrofitting of primary schools in Bilje

Governance Level/ Target audience	**Local governance with citizens (school children, teachers) as beneficiaries**
Objectives	In Miren-Kostanjevica, the energy-efficient retrofitting of three Bilje primary schools (insulation of facades, replacement or installation of windows/doors, insulation of the ceiling unheated space) has enabled the municipality to make significant financial and energy savings.
Summary of reasons for success	The national grant provided to the municipality was also key in facilitating its investments in retrofitting the primary schools in Bilje, as the technical support provided through the EU-funded Alterenergy project and the involvement of the Golea regional energy agency from Nova Gorica to provide expertise.
Replication potential	Measure can be disseminated and scaled up nationally and across EU, and its uptake in other municipalities in the Adriatic region was notably being facilitated through the EU - funded project Alterenergy - energy sustainability for small communities in Adriatic region (Instrument for pre-accession assistance): http://www.alter-energy.eu/
Relevant website	https://www.pilsetumerupakts.eu/zi%C5%86as-un-pas%C4%81kumi/zi%C5%86as-un-pas%C4%81kumi/zi%C5%86as/1440-covenant-of-mayors-cities-help-your-peers-replicate-your-cost-effective-good-practices.html

Spain Case study – Energy efficiency improvement in the lighting in Mercado de Delicias

Country	**Spain**
Sector	**Service buildings**
Year	2015
Narrative description	The municipal markets are owned and managed by the Valladolid local government and have a large amount of commercial activity and excellent customer attention. Mercado de las Delicias has been operating since 1946 meeting the demand for fresh products from the various neighbours that they supply. A large renovation of the building occurred in 2002 which gave the market a new and fresh environment. The building has a total area of 4778 square metres distributed over three floors and has a wide curved roof which is both reminiscent of old markets and facilitates natural ventilation and lighting of the building. In 2015, an energy efficiency improvement in the lighting in Mercado de Delicias programme was implemented. The “Energy efficiency improvement in the lighting in Mercado de Delicias” programme was based on an indoor lighting saving goal. To achieve this purpose, around 263 fluorescent lampshade and compact lamps were replaced by led lights: corridors, garage, storage and facades. As a result of the implementation of this programme, the building now has an automation system, with motion detector and luminosity.
Responsible authority	Municipality of Valadoid
Relevant legal basis	n.a.
Policy Type	public procurement

Spain Case study – Energy efficiency improvement in the lighting in Mercado de Delicias

Governance Level/ Target audience	Municipality level
Objectives	Improving the energy efficiency of the lighting system of the interior of Delicias Market in Valadolid
Summary of reasons for success	The energy saving effects can be considered a no-regret option. The total cost of the investment is expected to be repaid in 11 years giving it a negative marginal abatement cost. As the measures enable financial savings to the municipal public authorities of 3.780 € annually, it eases the budgetary situation in the medium-term and as a state-of-the-art municipal market it is a crucial local infrastructure for both neighbours as well as local suppliers of fresh food. The measures are considered to be BAT and due to the smartness of the system it allows to: (i) Generate alarms due to intrusion and (ii) ensures constant regulation thanks to photocells, constantly graduating the lighting levels to deliver natural light.
Replication potential	Similar market halls and commercial facilities exist in other parts of Spain and the Iberian peninsula as well as other countries with comparable climatic conditions and the tradition of municipal markets.
Relevant website	http://www.ingernova.es/node/208

Spain Case study – Tackling energy poverty through a run for energy and energy audits in Cornellà de Llobregat

Country	**Spain**
Sector	**Buildings**
Year	2015-Ongoing
Narrative description	3000 people in Cornellà de Llobregat are energy-poor. This number is on the rise, mainly due to the effects of the economic crisis on income, the power market situation in Spain and poor housing conditions. Faced with this problem, the city decided in 2015 to reframe its traditional popular public run, which takes place within the framework of local festivities and the EU energy week, into a "Run for energy" to create awareness of energy poverty among its participants and collect funds for interventions in vulnerable households. It contracted the non-profit Ecoserveis Association, specialized in energy poverty, to develop informational material for the run. The municipality transforms the energy used by participants during the run and other related activities (e.g. riding electric cycles) into kWh for vulnerable households. The amount resulting from this symbolic transformation is then allocated by the city to carry out energy audits in vulnerable households. The interventions done consist notably in individual energy diagnosis and training, billing optimization and installation of low-consumption materials (e.g. insulation, LEDs). The consumption of the households audited is done by the municipality's Energy Efficiency Office to determine to what extent the saving measures have been effective and have decreased energy bills.
Responsible authority	Municipality of Cornellà de Llobregat and the Ecoserveis Association
Relevant legal basis	None
Policy Type	Awareness raising

Spain Case study – Tackling energy poverty through a run for energy and energy audits in Cornellà de Llobregat

Governance Level/ Target audience	Local / citizens
Objectives	Raise awareness about energy poverty among citizens Collect funds for public interventions in vulnerable households
Summary of reasons for success	A key reason for success of Cornellà de Llobregat's initiative has been to link a popular sporting event with an awareness-raising campaign for tackling energy poverty in a practical and highly visible manner (transforming calories burned into kWh). The city's strong partnership with an experienced association in communicating about energy poverty (Ecoserveis Association) further strengthened the impact of the 'Run for energy' charity race. The energy audits implemented in vulnerable households have led to substantial financial savings (ca. EUR 250 per household) and significant energy savings (e.g. 77,700 kWh in 2016).
Replication potential	This good practice has a high level of replication potential. In fact, a guide was already produced for municipal councils in the Barcelona Metropolitan Area on how to organise a charity race against energy poverty and linking the outcomes of a 'Run for energy' with concrete public interventions in vulnerable households. Replication of the example of Cornellà de Llobregat could be further increased, by also using mobile applications as a multiplier for publicizing participant's contributions in the energy poverty charity race.
Relevant website	Run for energy video: https://www.youtube.com/watch?v=2odO9ZSLRLg Run for energy factsheet: http://www.congreso.es/docu/docum/ddocum/dosieres/sleg/legislatura_12/spl_28/pdfs/34.pdf Cornellà de Llobregat European Green Leaf 2019 profile: https://ec.europa.eu/environment/europeangreencapital/wp-content/uploads/2019/EGLA_Cornella_A5_brochure_ENG_Final.pdf

Transport

EU-wide Case study - GreenYourMove (GYM)

Country	Czech Republic; Greece; Romania; Netherlands; Slovakia
Sector	Transport
Year	2015 - 2019
Narrative description	The project's goal is to reduce greenhouse gas emissions in the transport sector – focusing on public transport and citizens' commutes – by increasing the know-how and the expertise of the cities to exchange on public transport measures that could improve efficiency of urban and regional mobility. Improving the way that urban and regional travel takes place has a positive impact on the environment and climate, but also boosts the competitiveness of the project developers at national and international level. The project expected outcomes are: • A database covering 70% of Greek public transport network for the 1st time. • Novel co-modal energy consumption and GHG emission calculation models for European public transport means. • An improved modelling and solution approach for the environmental co-modal vehicle routing problem, which is the basis for energy efficient sustainable transport. • Demonstration of the first national co-modal environmental public transport planner in Greece in 16 major cities and of a pan-European journey planner service via a web platform and a smart phone application replicated in at least 4 journey planners in EU countries (e.g. Czech Republic, Romania, Slovakia). • Became a useful tool for Greeks, tourists visiting Greece and students move in another city for studying. The project has created several job positions including environmental experts and engineers; communications and IT experts; etc. The expected impacts are: change the culture of mobility for a more sustainable one; Achieve emissions reductions of about 2980 Mt CO2eq; ease up urban mobility and raise awareness about environmentally friendly mobility.

EU-wide Case study - GreenYourMove (GYM)

Responsible authority	University of Thessaly
Relevant legal basis	N/A
Policy Type	Public intervention; awareness campaign.
Governance Level/ Target audience	Local and Regional / citizens.
Objectives	GreenYourMove (GYM) main objective is the development and promotion of a co-modal journey application to minimize greenhouse gas (GHG) emissions in Europe. GreenYourMove develops a multi-modal transport planner (both routing & ticketing system) considering all kinds of urban public transportation (urban and sub-urban buses, metro, tram, trolley, trains), where the user gets alternative routes combining more than one transport modes if necessary. The routes are the environmentally friendliest ones, since emissions are calculated for different scenarios.
Summary of reasons for success	Everyone (with a smartphone) can access the app. This type of service is generally lacking, it's difficult to plan such journeys when they include different types of public transport services, often operated by different companies.
Replication potential	It could easily be replicated at national and EU level, by connecting cross-border train services for instance or connecting different modes of transport within a country and cross-border.
Relevant website	https://www.greenyourmove.org/

ASPIRE – Advanced logistics platform with road pricing and access criteria to improve urban environment and mobility of goods

Country	Italy, Croatia, Sweden.
Sector	Transport
Year	2017 -2020
Narrative description	The main innovation of LIFE ASPIRE is the implementation of a policy which awards or penalizes transport operators on the basis of different factors (i.e. vehicle emissions and dimension, duration of the stay, trips frequency, utilized time window, use of new logistics services (LSs), etc. As operational instrument to manage this innovative policy, LIFE ASPIRE will implement in Lucca a Logistics Credit Management Platform (LOCMAP). LOCMAP will also manage two new LSs (Load/Unload Parking Lots and Cargo-bike Sharing) and will integrate the existing access control system to control commercial vehicles (CVs) entrance/exit in the Limited Traffic Zone (LTZ). Cleaner CVs are rewarded by LOCMAP with high credit points.
Responsible authority	LUCENSE SCaRL, Italy Grad Zadar, Croatia Kiunsys Srl, Italy MEMEX Srl, Italy City of Stockholm, Sweden
Relevant legal basis	Urban Environment - COM(2013)913 - "Together towards competitive and resource-efficient urban mobility " (17.12.2013) Climate Change & Energy efficiency - Directive 2009/33 - Promotion of clean and energy-efficient road transport vehicles (23.04.2009) Air -Directive 2001/81- National emissions ceilings for certain atmospheric pollutants (23.10.2001) /COM (2013/0918) - A Clean Air Programme for Europe (18.12.2013)

ASPIRE – Advanced logistics platform with road pricing and access criteria to improve urban environment and mobility of goods

Policy Type	Voluntary agreement; awareness campaign.
Governance Level/ Target audience	National / transport operators
Objectives	The implementation of LIFE ASPIRE activities and measures will enable to: • Reduce the current levels of freight traffic by decreasing the total number of commercial vehicles in last mile deliveries operations in the inner historic centre of Lucca (in particular in the LTZ); • Reduce the current levels of environmental pollution due to commercial vehicle emissions; – Reduce the related energy consumptions; – Reduce the related noise pollution; • Reduce risks for historic buildings due to vibrations resulting from heavy traffic; • Improve the safety for pedestrian; • Promoting the adoption of low/zero emission vehicles by transport operators; • Foster the transport operators to use the optimized logistics services provided by the local Urban Consolidation Centers (UCC), thanks to the new enforcement and access policy; • Provide new eco-logistics services for transport operators in last mile deliveries (Load/Unload parking lots and Cargo-bike Sharing), both managed by the innovative LOCMAP; • Improve the urban environment and, consequently, the quality of life for residents, visitors and tourists. The estimated savings in the urban environment of Lucca, achievable at the end of LIFE ASPIRE project (ex-post situation), as compared to Business-As-Usual scenario (BAU 2016), will be the following: CO: 1.080 Kg/y, equal to -11,6%; NOx: 360 Kg/y, equal to -10,6%; PM: 53 Kg/y, equal to -12,6%; CO2: 138 Ton/y, equal to -10,7%.
Summary of reasons for success	Cities should be interested in this measure as it tries to tackle the problems of the last mile, which can lead to emissions reductions in the urban area.

ASPIRE – Advanced logistics platform with road pricing and access criteria to improve urban environment and mobility of goods

Replication potential	It could be easily replicated in different cities as the problem is similar in many cities affecting urban CO2 and air quality.
Relevant website	http://www.life-aspire.eu/

U-MOB Life

Country	Spain, Poland, Italy, Netherlands
Sector	Transport
Year	2016 -2021
Narrative description	Universities are important poles of attraction for frequent travellers; thousands of daily trips are made towards and from European universities. Therefore, the mobility generated by universities should be taken into account in the planning of transport system in cities. Universities have their own management bodies that make decisions regarding the territorial management of campuses, the infrastructures and services within the campuses, the work/study schedules of university population, and other important issues that affect the mobility of thousands of people. Moreover, universities have a key role in the education of the citizens and professionals of the future; they are a powerful engine of change. The integration of sustainable mobility practices in the education of students encourages the future change. The project works to create a network to exchange best practices and facilitate dialogue about sustainable mobility practices among universities. Specifically, the project will: • Reduce CO2 emissions • Consolidate sustainable mobility • Develop best practices at universities • Create the figure of a 'sustainable mobility manager The project estimates that each campus in the network will require a sustainable mobility manager working half-time, meaning the creation of 5 full-time equivalent jobs; and The project estimates 600 000 people to be affected by the end of the project
Responsible authority	Novotec Consulting
Relevant legal basis	N/A
Policy Type	Awareness campaign

U-MOB Life

Governance Level/ Target audience	Local & national / citizens, municipalities.
Objectives	The main objective of U-MOB LIFE project is the creation of a university network to facilitate the exchange and transfer of knowledge about sustainable mobility best practices among European universities. This network will serve as a tool for CO2 emissions through better university community mobility.
Summary of reasons for success	The issue of climate change is of great concern for young people, therefore implementing and sharing ideas about sustainable mobility seems to be an initiative with the potential to stick in among the participants, and likely to be shared among other students an networks.
Replication potential	It can easily be replicated as universities across Europe share similar characteristics therefore best practices can be easily exchanged.
Relevant website	https://u-mob.eu/

Velocitta- Better use of Bicycle Share Sytems

Country	Spain, Italy, Poland, UK and Hungary
Sector	Transport
Year	2014 - 2017
Narrative description	The project aims to support the development of bike sharing schemes via communication and awareness campaigns, using as well organisational & operational adjustments as drivers. Many cities in Europe have bike sharing schemes (BSSs), but there are still barriers for these to be widespread in a substantial way, being the main barriers the economic investments to be done upfront, the set-up of the urban infrastructure, safety and the willingness of users. However, the benefits or proper BSSs are numerous: less pollution, reduction of congestion, health and well-being, image of the city, etc. The key success factors for this project include: keep the scheme affordable, easy to use, accessible and flexible; keep awareness campaigns on a targeted manner; address sectors of society such as schools, to boost safety as well; ability of the scheme to solve problems when reported by the users; make the BSSs part of an integrated mobility network in interaction with other transport options (bus, metro, etc). In all the cities of scope, the registration of users has increased and has led to big energy savings due to modal shift.
Responsible authority	Lambeth municipality; Southwark Council; Krakow municipality; GoodBike Padova; City Cike Szeged; BiciBur
Relevant legal basis	N/A
Policy Type	Public intervention; voluntary agreement; awareness campaign.
Governance Level/	Local governments; residents, students, commuters, tourists.

Velocitta- Better use of Bicycle Share Sytems

Target audience	
Objectives	• To encourage citizens, tourists and employees to use an energy efficient and sustainable transport mode for their urban travel journeys. • To change the travel behaviour of the public with two complementary approaches: - Utilisation of user segmentation techniques to overcome perceptual and/or attitudinal barriers; - Adoption of the most effective available operational solutions with regard to financial organisation and political involvement to improve the performance of the BSSs.
Summary of reasons for success	The project targets groups that are likely to use bikes, such as students or linking the use of bikes to tourism where tourists are encouraged to discover the cities by bike. It also encourages bike sharing as part of the urban development plans for the cities so there are no potential barriers in future planning. it's integrating a transport mode for commuting, leisure, etc.
Replication potential	The project developed a guideline for cities to implement successful bike sharing schemes. This can be used by municipalities to replicate such scheme in different cities, given that such schemes exist in more and more cities and its popularity is growing.
Relevant website	http://velo-citta.eu/

Get Real

Country	Germany, EU.
Sector	Transport
Year	2016 - 2019
Narrative description	If no action is taken, the gap between official and real fuel consumption figures will grow wider than the average 42% it has already achieved. The project will develop several actions to deliver on the objectives, which are mainly to raise awareness about the real vs the official fuel consumption and work on the legislations that would solve this problem. The activities include: • Provide background information to help consumers and policy-makers aware of the issue. The materials will be provided in different languages and distributed among the networks. • Development of a fuel consumption app, which provides information about the actual fuel consumption of current car models for all drivers. • Perform emission and fuel consumption tests with representative new cars. Public will be informed about existing loopholes and manipulations. • Disseminate the results and outcomes of the activities in media, events, experts talks, workshops and conferences.
Responsible authority	DUH, T&E
Relevant legal basis	N/A
Policy Type	Standard; Regulation; awareness campaign.
Governance Level/ Target audience	National, EU / citizens and policy-makers

Get Real

Objectives	The project goal is to inform the general public about the existing gap between actual fuel consumption figures and official manufacturer data for passenger cars. The main idea is to ensure that the manufacturer's data correspond to reality. Climate-damaging emissions must be reduced in real terms, not just on paper. The project will: • Create awareness of the problem among car drivers and politicians • Promote the exchange of experience between all the major players in Europe regarding the topic of additional fuel consumption • Support the process with regard to the implementation of laws and political decisions • Bolster consumers. In the future, they should be able to make an informed purchasing decision and be able to defend themselves against the "undisclosed" fuel consumption values.
Summary of reasons for success	Citizens are informed, although it requires an interest from the user to go and check this information. The use is easy as an app will tell consumers the real fuel consumption and emissions of current car models for all drivers.
Replication potential	It could easily be replicated at national contexts and EU level.
Relevant website	https://www.get-real.org/front-page-en/

100% renewables for buildings and transport in Kaposvár

Country	**Hungary**
Sector	**Buildings and transport**
Year	2014-Ongoing
Narrative description	Kaposvár is considered as a pioneer and role model among Hungarian municipalities for a renewable and sustainable development. The municipality has the second highest number of sunshine hours in Hungary, an advantage which the municipality is capitalizing on by creating an energy supply based on 100% renewable energy by 2050, as laid out in its 2050 Smart City strategy. In order to achieve this target, the municipality is focusing both on using all the viable locally available renewable energy resources, and on maximizing its energy efficiency. The bulk of its actions in this regard is focused on its buildings and transport sectors: installing PV plants on public buildings, powering local buses with biogas produced by the local sugar factory, and using the factory's biogas to also heat the public swimming pool and spa. Moreover, Kaposvár's public and private transport vehicles are being increasingly electrified, as electric buses and 170 electric bicycles were integrated in the local transport system. The electric vehicles are powered by the local district heating CHP unit. In the public lighting sector, the municipality switched to energy efficient LEDs and intelligent lampposts (measuring air pollution and traffic), thereby cutting its annual spending on public lighting by 37%.
Responsible authority	Municipality of Kaposvár
Relevant legal basis	2050 Kaposvár Smart City Programme
Policy Type	Public intervention
Governance Level/	**Local / citizens**

100% renewables for buildings and transport in Kaposvár

Target audience	
Objectives	Using locally available renewable energy sources and improving energy efficiency to become energy autonomous Achieving local economic growth in a green and sustainable manner
Summary of reasons for success	The citizens of Kaposvár are continuously and actively being involved by the municipality in its decision-making processes, thereby ensuring public support and buy-in for its target to rely on 100% renewable energy by 2050. In addition to this, partnerships with local businesses (e.g. the local sugar factory supplying biogas for transport and buildings) ensure a win-win situation for both the municipality and the businesses. Moreover, the forward-looking and integrated 2050 Smart City programme of Kaposvár is being broadly backed within the city administration and across political boundaries, which is fundamental in driving its implementation.
Replication potential	Replication potential of Kaposvár's example is high, and requires the early and active involvement of citizens and local businesses, as well as the political will to prioritize (i.e. mapping and capitalizing on the potential) locally available, abundant renewable energy sources.
Relevant website	Profile of Kaposvár: https://www.eurosolar.de/en/index.php/sections-eurosolar/hungary/779-city-of-kaposvar

Venice Case Study - Integrated mobility plan

Country	Italy
Sector	Transport
Year	2008, under review in 2014.
Narrative description	The Urban Mobility Plan is the framework under which different projects for sustainable mobility are organized. The Plan, which began in 2008 and is now under revision, expected to substantially change the way people move into Venice, favoring further public transport and bicycle use. In a few years the first two lines of electric trams have been realized and over 100 km of safe bike lanes have been installed as well. Within this Plan, the Venice administration also led the construction of some new "park and ride" facilities, which allow people to park their cars and get on a bus, tram or a bike from the bike sharing facilities. Venetian citizens and tourists prefer to use public transportation or walking/biking rather than private vehicles due to the city's unique infrastructure and limited access for motorized vehicles. However, the Plan aims to further reduce the carbon footprint of the city's transport sector through a combined set of measures ranging from the tramway and EV charging station infrastructure to interventions such as bike and car sharing schemes. As a result of the measures already implemented, today the modal split in Venice tells us that only 40% of people use private transport, while about 20% use the bike, 12% use public transport while 23% goes by foot.
Responsible authority	Agire – Energy Agency of Venice.
Relevant legal basis	N/A
Policy Type	Public intervention
Governance Level/ Target audience	Local / citizens, companies, municipalities.
Objectives	Reduction of greenhouse gas emissions through cleaner transport systems, changes in citizen behavior and smart

Venice Case Study - Integrated mobility plan

	mobility systems, to be facilitated by the Venice municipality by monitoring potential, projects and funding opportunities.
Summary of reasons for success	The plan includes a list of projects, identifies funding and is implemented and monitored by a dedicated team. The indicators for the reduction of CO2 have been identified as a priority within the plan and a key factor by which the city must assess scenarios and make decisions. The plan highlights how the interplay of individual projects creates a multiplier effect in terms of emissions reductions.
Replication potential	It's a rather simple plan as it's essentially an integration of different experts cross-checked with funding opportunities to assess whether some plans are feasible and implementable, or not. Such assessment team can be set up virtually everywhere, and combines experts with policy-makers.
Relevant website	https://www.c40.org/case_studies/venice-integrated-mobility-plan

Milan Case study – area C reduces traffic pollution and transforms the city center

Country	Italy
Sector	Transport
Year	2012
Narrative description	Area C is a road pricing measure launched by the Municipality of Milan in January 2012 to improve the quality of life of those who live, work, study and visit the city. Area C is the restricted traffic zone in Milan's center that requires car drivers to pay a congestion charge. The area subject to the congestion charge is called Cerchia dei Bastioni, a Limited Traffic Zone (LTZ) of 8.2 km2, 4.5% of the whole territory of the Municipality of Milan. Citizens were directly involved in developing Area C. In June 2011, they were asked to vote in a public referendum on limiting traffic and increasing the uptake of low-emission vehicles in the city center. A 79% majority voted in favour of such a measure. Access to Area C is limited on Monday, Tuesday, Wednesday and Friday from 7:30 to 19:30, and Thursday from 7:30 to 18:00. Cars entering Area C are detected by a system of 43 electronic gates (7 of which are reserved for public transport vehicles), equipped with ANPR (Automatic Number Plate Recognition) technology. A daily entrance ticket costs €5, which covers all accesses made by the same vehicle during that day. There are various types of other entrance tickets for residents, service vehicles, and for parking garages, for example. Mopeds, motorcycles, electric cars, vehicles for people with special needs, public utility and public transport service vehicles, taxis, electric and hybrid vehicles cars are exempt from the charge.
Responsible authority	Municipality of Milan
Relevant legal basis	Road pricing

Milan Case study – area C reduces traffic pollution and transforms the city center

Policy Type	Public intervention
Governance Level/ Target audience	Local / citizens, municipalities.
Objectives	To reduce traffic in the city center by introducing a congestion toll. It will improve the local emissions, air quality, noise levels and city environment, as well as promoting cleaner vehicles in the city and other modes of transport such as cycling and public transport.
Summary of reasons for success	The measure is aimed at demand management of the traffic in the center of town, in order to reduce noise, air pollutants and GHG and consequently to improve the quality of life of citizens and visitors.
Replication potential	Such plans can be and have actually been implemented in many cities in Europe, such as London or Brussels, and the potential to replicate is rather high as the measure is very straightforward. Political will is necessary to take up initiatives of this nature, which might include strong communication and awareness campaigns.
Relevant website	https://www.c40.org/case_studies/milan-s-area-c-reduces-traffic-pollution-and-transforms-the-city-center

Case study – Oslo, the electric vehicle capital of the world

Country	Norway
Sector	Transport
Year	2008 - ongoing
Narrative description	Transport accounts for 50 % of greenhouse gas emissions in Oslo. It is also the main source of local air pollution in the city. By enabling a shift from fossil fueled vehicles to electric vehicles, local emissions can be reduced and the local air quality can be improved. Electric vehicles also help reduce noise in the city, since the engine makes almost no noise compared to traditional internal combustion vehicles. The City of Oslo wants to encourage city residents to drive an electric vehicle, even if they do not have a private garage and are dependent on on-street parking. On-street charging points would also be available to commuters, in order to make it possible to switch to electric vehicles for those commuting into the city. The City Council decided in 2007 to establish 400 charging points from 2008-2011. In late 2011, the programme was deemed a success, and expanded to establish 100 new charging points in 2012, and then to reach 900 in total by the end of 2014. The City Council also created an incentive to increase the number of private charging points. They did this by expanding the existing “Climate- and Energy Fund”. The fund now supports private charging points being established in parking garages, shopping centers, apartment buildings and workplaces, in order to help establish charging stations also outside of public streets. These charging stations are funded up to 60% (maximum 10 000 NOK / 1200 EUR / 1700 USD per charging point). In addition to access to charging points, electric vehicles also has a series of other benefits in Norway and Oslo, such as: • No purchasing tax or VAT on electric vehicles

Case study – Oslo, the electric vehicle capital of the world

	• Free pass on toll roads • Access to use bus and taxi lanes • Free parking on municipal parking spaces Since the programme started in 2008, the number of registered electric vehicles in Oslo has increased from 2,000 in 2012 to 6,000 by May 2014. There has also been a 100% increase in the number of electric vehicles passing through the Oslo central toll ring since 2012. Across Norway, the number of electric vehicles has increased from 9,500 in 2012 to 30,000 in May 2014. There has hardly been any complaint from the public, even though the programme has meant converting public on-street parking spaces to become reserved for electric vehicles only. That the electricity for the vehicles has thus far been provided by the city has also been widely supported by the public. (This policy may change as the technology develops sufficiently to allow for the city to readily charge or bill customers for the electricity.)
Responsible authority	City of Oslo, Agency for Urban Environment
Relevant legal basis	
Policy Type	Public intervention
Governance Level/ Target audience	Local / citizens, municipalities.
Objectives	Instalation of a network of public charging points for electric vehicles to encourage citizens to use this kind of vehicle and reduce GHG emissions, improve air quality, reduce noise, etc.
Summary of reasons for success	Facilitating the infrastructure in the city to influence consumer choices.
Replication potential	It can be replicated in cities, with proper funding.

Case study – Oslo, the electric vehicle capital of the world

Relevant website	https://www.c40.org/case_studies/the-electric-vehicle-capital-of-the-world

Warsaw case study - purchase of bus stock (130 low-floor, low-emission buses) with associated infrastructure

Country	Poland
Sector	Transport
Year	2017 -2020
Narrative description	The fuel consumption of a diesel bus amounts to around 49 dm3/100 km, with CO2 emission of 1300 g/km. This means total CO2 emissions, in life-cycle cost of such a bus (assuming 800,000 km/10 years), amount to as much as 1,040t. Therefore, with 130 e-buses in the Warsaw project, the resulting total reduction of on-road CO2 emissions will equal 135,200t, which is a very significant number. **Financial savings** Estimated fuel costs (800,000 km/10 years) for one diesel bus amount to 417,233 USD, while for an e-bus it is 100,195 USD. For 130 vehicles this amounts to 54,240,290 USD/13,025,365 USD, representing an advantage of 41,214,925 USD for e-buses. Their disadvantage is their purchase price: (130×580,076 USD)-(130×290,038 USD)=37,705,004 USD. This means a total advantage of 3,509,921 USD for electric vehicles. Taking into account the total costs of the project/co-funding, the total advantage of the project when it comes to the budget rises to 36,882,198 USD. **Key impact** Within the duration of the project, the avoided emissions of non-methane volatile organic compound will amount to 20,987t/year. The avoided emissions of NOx will equal 124,133t/year, while of SO2 – 49,407t/year and of PM2.5 – 0.139 t/year. The combined avoided emissions for 10 years of bus would amount to: 209,87t of NVMOC, 1,241,33t of NOx, 494,07t of SO2 and 1,39t of PM 2.5. In turn, environmental costs (including both health costs, material damages and environmental damages) saved due to reducing the emissions described above over the first full 10 years of the project's duration (2020-2029) will vary from 3,761,799 USD/year to 4,831,833 USD/year. In total these 10-year savings will amount to 42,863,220 USD.

Warsaw case study - purchase of bus stock (130 low-floor, low-emission buses) with associated infrastructure

Responsible authority	City of Warsaw
Relevant legal basis	N/A
Policy Type	Public intervention
Governance Level/ Target audience	Local/citizens
Objectives	The Warsaw electric buses project includes: replacement of 10% of the vehicle stock of Warsaw MZA municipal bus operator with 18m articulated electric buses; and creating associated infrastructure, including the construction of aerial chargers at the ends of selected bus lines, and the adaptation of bus depots. In the long run the project will assist the Poland-wide trend towards electric mobility, limiting risks related to CO2 emissions generated by fossil fuels consumed in the transportation sector worldwide. The project will also massively reduce the amount of pollutants such as NOx and SO2, which are generated by diesel buses. It will also lead to a massive reduction in noise produced by standard vehicles.
Summary of reasons for success	It's a simple way to ensure cleaner air and less GHG emissions in the city centers. Needs political willingness and investment but it's very straightforward.
Replication potential	It's simple, therefore easily replicated in urban contexts. A large share of cities use buses as public transport modes.
	https://www.c40.org/case_studies/warsaw-electric-buses-2017

Warsaw case study - purchase of bus stock (130 low-floor, low-emission buses) with associated infrastructure

Moving towards a sustainable transport system in Arad

Country	**Romania**
Sector	**Transport**
Year	2005-Ongoing
Narrative description	Arad is known as the city of trams and bicycles in Romania. Its tram network is only surpassed by the capital Bucharest, while it holds the longest urban network of cycle lanes in the country (135 km) and has the highest national rate of bicycle use (8,2%). Since 2005, the municipality has developed a series of public interventions to further improve the sustainability of its urban transport system. Between 2005-2014, Arad revamped a large part of its tram infrastructure (23 km) with a grant from the European Bank for Reconstruction and Development (EBRD), modernizing notably its tram depot, implementing an e-ticketing system and procuring six new energy efficient trams with improved access for citizens with reduced mobility. In addition to these widespread investments in its tram network, the Romanian municipality also invested in its bus infrastructure by procuring electric buses and other buses using ecological sources (e.g. local biogas) and extended its cycle network with EU INTERREG funding to the Hungarian town of Gyula it is bordering. Arad's actions in improving the sustainability of its tram infrastructure has resulted in estimated annual CO_2 savings of 10,603 tons.
Responsible authority	Municipality of Arad
Relevant legal basis	Arad Sustainable Urban Mobility Plan 2010-2020
Policy Type	Public intervention
Governance Level/	**Local / citizens**

Moving towards a sustainable transport system in Arad

Target audience	
Objectives	Extend the cycle network to the cross-border region Revamp the tram infrastructure to make it more accessible and user-friendly Greening the bus transport system through procurement of ecological vehicles
Summary of reasons for success	The complementary European funding sources (e.g. EBRD, EU INTERREG programme) were critical in enabling Arad to fund the revamp and extension of its tram and cycle infrastructure in particular. The benefits of the tram projects (e.g. e-ticketing system, more accessible trams, improved service) have triggered higher interest from citizens in using trams within the urban transport system. Moreover, Arad granted subsidies to prevent a rise in ticket prices after the tram modernization, which alongside the improved service, is an additional factor in attracting a larger number of citizens to the tram network.
Replication potential	The replication potential of Arad's public interventions in the sustainability of its urban transport system is high, and benefits from a sound Sustainable Urban Mobility Plan (as it is in place in the Romanian municipality). In the urban context, measures boosting use of cycling, trams and buses are no-regret measures that result in sustained and significant emission reductions and energy efficiency improvements. While they require high investments at first, ultimately they pay off quickly.
Relevant website	Arad Sustainable Urban Mobility Plan 2010-2020: https://www.polisnetwork.eu/uploads/Modules/PublicDocuments/raport_strategic_si_paed_in_municipiul_arad.pdf Arad Sustainable Urban Transport System Grant from EBRD: https://www.ebrd.com/work-with-us/projects/psd/arad-urban-transport-project.html

Madrid Central

Country	Spain
Sector	Transport
Year	2018 - Ongoing
Narrative description	“Madrid Central” is a Low Emissions Zone implemented in certain areas of the metropolitan area of Madrid. The measure is part of the General Plan for Air Quality and Climate change and gives priority to pedestrians, cyclists and public transport. It covers 472 Ha in Madrid’s inner belt and eliminates the traffic in the center of the city, giving some exemptions to residents, individuals with reduced mobility and/or special needs, and security and emergency services – which can access the area of application of Madrid Central. There are furthermore exemptions for certain types of vehicles based on their environmental and climate performance, which are allowed to the city without restriction, at certain times or not at all depending on such performance. The plan will reduce traffic by 37% compared to current rates, reduce CO2 emissions by 14% and reduce NOx emissions by 38% - levels for this air pollutant are illegal as the city hasn’t complied with the law since 2010. Other benefits include less noise, less greenhouse gas emissions and the promotion of public space for citizens to enjoy a cleaner and more sustainable urban landscape.
Responsible authority	Municipality of Madrid
Relevant legal basis	City plan for air quality and climate change.
Policy Type	Public intervention
Governance Level/ Target audience	Local / citizens, municipalities.
Objectives	To reduce traffic in the city center and therefore to improve the local emissions, air quality, noise levels and city

Madrid Central

	environment. Also, to promote the use of cleaner vehicles and other modes of transport rather than the private vehicle, such as walking, cycling and public transport.
Summary of reasons for success	It's 'easy' to implement, although a strong political will is necessary. It has the potential to be successful as it is straightforward and doesn't require a high investment. Furthermore, the benefits can be observed in a short time after the application of the measure.
Replication potential	Such plans can be and have actually been implemented in many cities in Europe, such as London or Brussels, and the potential to replicate is rather high as the measure is very straightforward. Political will is necessary to take up initiatives of this nature, which might include strong communication and awareness campaigns.
Relevant website	https://www.madrid.es/portales/munimadrid/es/Inicio/Movilidad-y-transportes/Incidencias-de-Trafico/Madrid-Central-Informacion-General/?vgnextfmt=default&vgnextoid=a67cda4581f64610VgnVCM2000001f4a900aRCRD&vgnextchannel=2e30a90d698b1610VgnVCM1000001d4a900aRCRD&rm=60d75ae1b0f64610VgnVCM1000001d4a900aRCRD#

Join the conversation

www.planup.eu