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1. Introduction

This Workshop Report summarises the presentations, discussions and outcomes of the joint POLFREE-DYNAMIX Final Conference, at which the key results of these sister projects were presented. The Final Conference took place on the 15th and 16th February 2016, at the Diamant Conference and Business Centre in Brussels. 134 participants from a range of backgrounds, including academia, policy-making and industry took part in the conference (see Annex II for the full list).

The Conference was organised into six Sessions, focussing on a different elements of resource efficiency and the circular economy, and exploring answers to the questions the two projects sought to address. Each session contained a combination of keynote presentations, panel sessions and audience Q&As. The Agenda may be found in Annex I.

In the following Sections, the key messages presented and discussed during the different sessions of the conference are summarised in chronological order.

2. Session 1 – Creating Resource Efficient Futures in Europe

Francois Wakenhut, Head of Unit F1 (Resource Efficiency & Economic Analysis) at DG Environment (European Commission), presented first on 'Policy Frameworks for Resource Efficiency in Europe: State of Affairs and Avenues for the Future'.

EU policy towards resource efficiency is driven by the Europe 2020 strategy (particularly the Resource Efficiency Flagship Initiative, and the Roadmap to a Resource Efficient Europe), the 7th Environmental Action Programme (which contains a thematic objective to turn the EU into a resource-efficient, green and competitive low-carbon economy), and the (reformed and simplified) Circular Economy Package, released in December 2015 (which contains an Action Plan with over 50 actions, 4 legislative proposals on waste that are currently with the European Council and Parliament, and a list of follow-up Initiatives). Adopting a circular economy would likely bring several benefits, including job creation, up to 7% GDP growth by 2030 and up to €600bn in savings for businesses in the EU (or 8% annual turnover), with a reduction in annual GHG emissions of 2-4%. As such, a circular economy is in line with the Commission's overall priorities. It also helps the EU to meet its various international commitments (such as GHG reduction). The priority sectors for improving resource efficiency for the Commission at present are biomass and bio-based products, plastics, food waste, critical raw materials and construction and demolition materials.

In order to measure progress against the various actions proposed under the Circular Economy Package, a monitoring framework will be developed by Eurostat (in co-operation with the European Environment Agency, and in consultation with Member States).

In the audience Q&A, three key questions arose. The first asked what was meant by 'simplification' of the Circular Economy Package. The response was that this was not meant as an exercise to lower standards against the first iteration of the Package, but to make it more immediately implementable. The second asked, given that resource efficiency and GHG emission reduction are often dealt with as separate issues, how might they be brought closer together? The response was that this is in fact already the case in some areas, such as legislation and instruments designed to improve energy efficiency. The third and final questioner asked whether the Commission has a preferred instrument mix design to encourage resource efficiency and a Circular Economy. Mr. Wakenhut claimed that a diverse mix is required, with regulations playing a strong part. Behavioural change is essential, but instruments to deliver it may only be introduced partially at the EU level, as such issues are often subject to the Subsidiarity Principle. Additionally, much may still be improved regarding policy consistency, which is a substantial element of the Commissions current 'better regulation' agenda.

Paul Ekins, Professor of Resources and Environmental Policy, Director of the Institute for Sustainable Resources at University College London (UCL ISR) and co-ordinator of the POLFREE project, then presented on 'Visions, Scenarios and Pathways to a Resource-Efficient Europe'.

Professor Ekins opened his presentation stating that absolute decoupling of economic growth and human wellbeing from resource use and environmental impact is necessary, in order to deliver a more sustainable society, able to "do more with less". The POLFREE project created a 'Vision' for what such a resource-efficient, decoupled economy may look like in the future. The "Vision" includes numerical

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targets and was based on a review of existing studies. The four key overarching targets for 2050 are: a reduction in CO₂ emissions of 80% from 1990 levels, a reduction in EU cropland footprint of 30% from 2005 levels, a reduction of raw material consumption (RMC) to 5 tons per capita, and a water exploitation index (WEI) of below 20% in all Member States¹.

Professor Ekins then suggested that the presence of numerical targets in policy is often an indicator of whether or not politicians and policy makers consider an issue to be important. At present, such targets in EU resource efficiency policies are few and far between. The European Commission should therefore introduce new targets, such as the four developed by POLFREE and presented above, in order to signal that advancing resource efficiency is a core policy objective.

In the audience Q&A, three questions arose. The first asked whether there are trade-offs between the use of different types of resources (i.e. if the use of one resource decreases, might another increase in its stead). The response was yes, and particularly so for low-carbon technologies, which uses many types of raw materials that fossil fuel technologies do not. It is therefore very important to take the full lifecycle into account. The second asked where the POLFREE target of 5t RMC came from. The response was that this target came primarily from the International Resource Panel (IRP) database. However, the target is adaptable, and only includes primary materials (i.e. not secondary). By 2050, most infrastructure will be built using recycled materials. The third question asked whether businesses could be leaders in driving the transition to a resource-efficient economy. The response was 'yes', but firms may only operate within the market context they are given. Change is needed to facilitate it businesses to be leaders.

¹http://www.polfree.eu/publications/publications-2014/POLFREE_Del._2.2_28.03KSC_FormatMay2014.pdf

3. Session 2 – Policy Mixes for Resource Efficiency in Europe: Approaches and Results of POLFREE and DYNAMIX Projects

Martin Hirschnitz-Garbers, Senior Fellow at Ecologic Institute and co-ordinator of the DYNAMIX project, gave a presentation on ‘Policy mixes for resource efficiency: new solutions, new challenges?’.

Dr. Hirschnitz-Garbers highlighted that ‘wicked’ environmental problems are difficult to solve due to incomplete, contradictory and changing requirements that are not clearly identifiable or predictable. Wicked environmental problems have diverse root causes, and have a multitude of actors along international value chains - each of which are subject to different multi-actor, multi-level governance systems. Policy ‘mixes’ must therefore be instituted to address such problems, in order to effectively drive the transition towards resource efficiency.

A policy mix may be defined in many different ways, however the DYNAMIX project defines it as ‘an adaptive, time-dynamic combination of mutually supportive (maximising synergies and minimising conflicts) policy instruments that is able to achieve set policy objectives in changing contexts and avoids/mitigates negative side-effects’. A policy mix must therefore consider political processes, institutional contexts, strategic and long-term orientation and vertical and horizontal integration. It must also be internally coherent and consistent, and at a minimum achieve the absence of contradictions/conflict (weak consistency), and ideally ensure synergetic effects and positive interactions (strong consistency). A conceptual approach to developing such a policy mix may follow a six-stage process:

1. Setting objectives and targets
2. Build a theoretical causal model of the problem
3. Select promising instruments to meet objectives and targets
4. Undertake *ex-ante* assessments of the effectiveness, impacts, transaction costs, feasibility and acceptance of the instruments
5. Decide on whether other instruments are required (instead of or in addition to those previously identified). This step may lead require a return then to Stage 3.
6. Prepare final policy mix for implementation, enforcement and monitoring.

It is relatively straightforward to address steps 1-4/5, but it is difficult to assess political processes (Stages 5-6). It is not easy to robustly assess cumulative effects, actual *ex ante* side effects (beyond GDP/sectoral changes), effects of mitigating measures, and time sequencing. Overall, pro-active, more strategic policy packaging depends on successful cross-departmental, multi-layered and polycentric governance.

Henning Wilts, Acting Director of Material Flows and Resource Management at Wuppertal Institute for Climate, Environment and Energy, presented second, on the ‘Findings of POLFREE on policy mixes: approaches, results and recommendations’.

EU Member States vary widely in their policy instruments and mixes to encourage resource efficiency, however there are some clear commonalities. There are largely unexploited potentials, particularly with regard to eco-innovation and related investments. There is a lack of ambitious goals and a general uncertainty on what a focussed transformation to a resource efficient economy could mean, and the role of

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national key sectors and their quantitative and qualitative contribution to path dependencies are largely unexplored.

The POLFREE project assessed nine different policy instrument mix case studies in order to determine the potential impact and effectiveness of, and barriers to, these instruments in practice². Some key conclusions may be drawn from these case studies regarding the reasons why, if resource-efficiency is a win-win concept, we don't see faster process. These are:

- The more ambitious an instrument, the lower the immediate profitability for the actors involved
- There is a trade-off between the predictability of an instrument and its flexibility
- There is a trade-off between the level of specificity of an instrument and its depth (i.e. the level of inclusion of upstream and downstream actors).

The case studies also produced three key priority recommendation for an effective resource efficiency and circular economy policy landscape:

1. Set incentives for a more resource efficient product design by instituting extended producer responsibility.
2. Set specific ecodesign requirements that make reuse and repair of products economically viable.
3. Establish waste targets that focus on the production of high quality secondary resources (a recycled content quota).

Martin Nesbit, Senior Fellow and Head of Environment and Climate Governance Programme at the Institute for European Environmental Policy (IEEP), gave a presentation on 'DYNAMIX: Results of a qualitative assessment of policy mixes'.

The DYNAMIX project used a combination of separate approaches in order to qualitatively assess different policy mixes, including environmental, social, economic, governance (including legal and public acceptability issues). The aim was to secure a range of approaches to identify key lessons. Such lessons may be summarised as follows:

- **Consistency.** Policy mixes must be more than a bundle of loosely associated individual instruments. Consistency requires forward-looking road-mapping, and overarching clarity of objectives and how instruments will be introduced or adjusted to meet those objectives.
- **Flexibility.** Implementation of policy mixes needs to reflect the challenge of uncertainty in terms of wider economic and political context, and the success and impacts of component instruments. It is important to have clarity on, and broad political support for, overarching targets and their justification.
- **Volume control.** Delivering a resource efficient economy requires new approaches. This can create challenges in terms of fairness of allocation of instruments, and public acceptability. For resource efficiency, this potentially implies greater governmental influence over inputs to the production process.
- **Social impacts.** Significant social benefits are possible through new skill formation, but potentially very negative impacts through unemployment in industries that are no longer required in a resource-efficient economy. It is

² Minimisation of food waste losses along the value chain, zero energy and material efficient buildings, mobility, electrical production and distribution, industrial symbiosis, product service systems, ecodesign product standards, phasing out environmentally harmful subsidies, and internalisation of externalities.

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important to recognise and tackle these issues in policy design and accompanying measures.

- **Paradigms.** There is a significant gap between the behaviour required to deliver resource efficiency, and behaviour currently exhibited and seen as acceptable. Single issues can capture public attention, and become proxies for wider disaffection. Policy makers need to be willing to use policy sequencing in ways that promote positive developments over time.

4. Session 3 – Grand Challenges of Implementing Ambitious Policy Mixes

During this session, three ‘flash inputs’ from three experts on policy makers, businesses and civil society were presented, in order to highlight the requirements for effective resource efficiency policy mixes from different perspectives.

:

- **Policy Makers (Francois Wakenhut**, Head of Unit F1 (Resource Efficiency & Economic Analysis) at DG Environment (European Commission).
 - o Environmental policy is about how to deal with the transition and dichotomy between short-term costs for clearly definable agents, and long-term diffuse benefits for society as a whole. We have issues such as market barriers, cultural trends and electoral cycles, any combination of which may lead to path dependency and lock-ins.
 - o Milestones are better than targets - the latter require impact assessments, and reduces the chance of the instrument being introduced.
 - o Member States are very important – all think differently, and have different perspectives and priorities. This often means that targets and other aspects of instruments are set at lowest common denominator. The EU can guide Member States in the transition by offering support such as best-practice sharing.
 - o Policy makers must listen to stakeholders in the elaboration of policies, and take into account social and economy impacts not to alienate particular groups of stakeholders.
- **Businesses (Christian Hagelüken**, Director of EU Government Affairs, Umicore)
 - o Policy mixes must create a level playing field, reward front-runners, accelerate the transition, and consider social and international implications. Harmonised deployment and enforcement would also be beneficial
 - o The policy landscape must create an attractive business case to provide economic drivers. This includes a level playing field (fair competition) and investment security (rewarding frontrunners), as mentioned above, but also incentives to create critical mass, such as green public procurement, research funding, information campaigns, and ‘moral’ pressure.
 - o Policy should seek to optimise the overall system, considering interaction and integration along the full value chain.
 - o A ‘coalition of the willing’ would be beneficial to foster, through dialogue and co-operation.
- **Civil Society (Carsten Wachholz**, Circular Economy Policy Officer, European Environmental Bureau
 - o Policy mixes should follow a value chain approach. Instruments that operate sector by sector, or even product by product, are likely to be the most appropriate.
 - o Leveraging synergies between existing instruments should be the first priority.
 - o A key priority should be the introduction of monitoring schemes, to allow the measurement of the effect of policy instruments on markets. This can provide information on how to adjust policies to improve effectiveness and reduce negative impacts.

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- Four key instrument types should be priorities: (a) differentiation of taxes and economic instruments, (b) sustainable procurement practices based on verifiable standards, (c) extended producer responsibility and labelling schemes providing incentives for market differentiation, and (d) legally binding minimum requirements for resource efficiency of products and services, including mandatory information disclosure.

The “flash input” presentations provided participants with “food for thought” for the following breakout sessions. Participants were split into three thematic groups and asked to discuss and to come up with the three most important elements they believe were required to answer the question: “ what are the key success factors to achieve policy mixes on resource efficiency, according to the policy making, business and civil society perspectives, respectively?”

The results of each of the sessions were then reported to the wider conference by rapporteurs. There results were:

- **Policy makers** (rapporteur: Martha Bicket, PSI): (a) Engage stakeholders, (b) focus on job creation, (c) have political courage.
- **Business** (Ton Bastein, TNO): (a) improve understanding of material flows, (b) focus on resource management and legislation that produces viable business cases, and (c) long-term stability and credibility enforced across the EU to increase investment.
- **Civil society** (Francesca Montevercchi, WU-Wien): (a) build local resilience, (b) align practices, convenience and environmental concerns, (c) access reliable information and build consensus.

5. Session 4 – Modelling Ambitious Policies for Resource Efficiency

Bernd Meyer, Professor and Senior Advisor at GWS, presented first in this session, on ‘modelling scenarios for the transition to a resource efficient economy’.

The modelling work undertaken by POLFREE delivered four key results: (a) ‘business-as-usual’ will strongly endanger the services of nature and induce lower growth and employment, (b) global cooperation on policy measures to keep global warming below 2 degrees and to boost resource efficiency, would not only keep human activities within planetary boundaries, but also be beneficial for green growth and jobs (both globally and in the EU), (c) if global cooperation cannot be achieved, the EU should become a global frontrunner, as this would stimulate a first-mover advantage with positive economic consequences, and (d), changing the values and behaviour of civil society has a significant potential to reduce resource use.

POLFREE employed two economic models linked to the bio-physical model LPJmL to generate insights into the effect of different policy measures (or no measures) for resource efficiency (GINFORS and EXIOMOD). Both economic models assess the interconnections between the environment and economy with sector-level detail, but with different theoretical basis (Neo-Keynsian and Neoclassical, respectively). For various reasons, the results discussed here are those produced by the GINFORS-LPJmL coupling. POLFREE used these models to examine four scenarios:

- **Global Cooperation.** All countries co-operate through international agreements introducing harmonized economic and regulatory policy instruments with a year by year rising intensity to pursue decarbonisation and a resource-efficient global economy. The four key targets described on pg.5 and pg.6 are met globally by 2050.
- **EU Goes Ahead.** The EU achieves the above targets alone, with non-EU countries enacting only very moderate climate policy.
- **Civil Society Leads.** Similar to EU goes ahead, although instead, civil society drives resource-efficiency through voluntary changes in preferences and behaviour. Policies are introduced to facilitate such changes.
- **Business-as-Usual.** The EU maintains the existing policy landscape, whilst the rest of the world institutes little to no environmental policy instrumentation.

Five key conclusions were generated, alongside the four key results presented above:

- **Conclusion 1.** Different modelling approaches may produce very different projections. Whilst in the GINFORS model the above targets were achievable, in the EXIOMOD model, they were not (due to different structures, economic foundation and parameterisations).
- **Conclusion 2.** The ‘business-as-usual’ scenario produces a high degree of global warming (5-6 degrees), high resource extraction and consequently prices (including for food), and produces low economic growth and employment.
- **Conclusion 3.** Global Cooperation achieves environmental targets whilst reducing resource extraction and prices against BAU. It produces rising investment and lower costs, producing increased GDP and employment.
- **Conclusion 4.** EU Goes ahead achieves environmental targets in the EU only. There are no substantial reductions in global resource demand and prices against

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BAU, however the EU achieves higher investment and lower costs, and realises a first mover advantage, increasing GDP and employment against BAU in the EU.

- **Conclusion 5.** Civil Society Leads produces lower consumption, GDP and investment than EU Goes Ahead, but produces higher employment.

Andrea Bigano, Senior Researcher at FEEM, presented second, on 'Aiming for absolute decoupling in Europe: modelling results'.

The objective of the DYNAMIX modelling team was to apply a set of different but complementary modelling tools to integrate the qualitative outputs from the project with quantitative evidence on the cost and effectiveness of policy mixes discussed. Four models were employed (ICES, MEMO, MEWA and ILCD). The first three are computable general equilibrium (CGE) models, whilst the fourth is an LCA model. Four general conclusions may be drawn:

- Material taxation may be highly effective in reducing extraction rates, however they may have a depressing effect on GDP growth. Proper recycling of revenues is therefore highly important.
- Substantial technological innovation is also required to avoid substantial costs. Policies should therefore be designed to stimulate such innovation.
- Effective environmental policy does not necessarily guard against issues such as economic 'leakage'. International coordination would be the most desirable pathway.
- Some policy instruments, such as those restricting the use of pesticides, or the use of virgin materials and consumption of meat, have a sectoral rather than systemic relevance, and are thus limited in their system-level impact.

Paul Ekins, Professor of Resources and Environmental Policy, Director of the Institute for Sustainable Resources at University College London (UCL ISR) and co-ordinator of the POLFREE project, presented third on 'Modelling resource efficiency'. Ten overarching conclusions and insights from such an activity were presented:

- Increasing resource efficiency can substantially reduce resource-related costs and associated environmental impacts.
- Where these resource efficiency increases come about through pure market processes, economic growth will be the result. Indeed, increased economic efficiency is one of the principal drivers of economic growth.
- The increased economic growth will reduce the resource and environmental benefits of increased resource efficiency through the rebound effect, unless this is counteracted through policy.
- Where resource efficiency does not come about through pure market processes, then the economic implications of increasing it, perhaps through public policy, are less clear. It means that there are market failures or other barriers to resource efficiency.
- If there are externalities, and these are appropriately internalised through public policy, then economic efficiency and human well-being will increase, but whether monetary economic output (GDP) does so will depend on the externality and the policy measure used to internalise it.
- Removing barriers to resource efficiency may involve costs, and these costs may be high enough to offset the cost benefits of increased resource efficiency. In these cases, increasing resource efficiency will not result in increased economic efficiency and net economic benefits.
- Whether increased resource efficiency will lead to increased output and employment depends on the nature of the macroeconomic modelling being

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employed, with assumptions about unemployed resources, and the way the labour market is modelled, being especially important.

- Most attempts to model the economic implications of increased resource efficiency, where this is not driven by markets, are not able to take account of the costs of removing the barriers to resource efficiency to a very limited extent or not at all.
- Modelling results in these cases effectively show the macroeconomic benefits of increasing resource efficiency if the barriers to such an increase could be removed without cost.
- These considerations argue for caution in interpreting the results of studies of the macroeconomic outcomes, whether for output or employment, of scenarios that increase resource efficiency.

Following these presentations, a panel session took the stage with the objective of responding to the challenges of ambitious policy mixes for resource efficiency'. A summary of each of the panellists' presentations is as follows:

Christian Hagelüken, Director of EU Government Affairs, Umicore

- Any new policy must not conflict with existing instruments
- One size does not fit all. There must be balance between general and specific policy instrumentation focussing on specific industries, products and/or processes
- Regulation can come from the EU, but there must be careful consideration of how harmonised the required implementation at Member State level is.
- New policies must be simple and easy to implement, to reduce resistance and delays. The focus must move beyond developing theory, to practice.

Carsten Wachholz, Circular Economy Policy Officer, European Environmental Bureau

- An important focus now should be to find methods of connecting outcomes from research projects, such as the modelling results discussed above, to policy-relevant lessons
- Research should show that there is a business case for resource efficiency, at least for the first movers. The next step would then be to find a way to make resource efficiency the default option.
- Much of the attention in environmental policy is paid to climate change policy rather than resource-efficient policy. A priority action should be to establish a link between the two (e.g. embodied energy)
- A key foundation to a successful policy landscape is the establishment of a procedure to trace material flows. This could enable policy instrument fine-tuning.

Jocelyn Bleriot, Executive Officer at the Ellen MacArthur Foundation

- We need to establish a compelling, common view for a resource efficient economy. We must present a strong business case
- It is important to state cost of not achieving resource efficient resource efficiency, as well as the cost and benefits of doing it.
- Pricing in externalities through economic instruments not really feasible at EU level, as there are many procedural and political barriers, but Environmental Taxation Reform (ETR) approaches are becoming more mainstream
- There is lots to learn from multi-stakeholder, co-creation process in COP21 and SDGs. This allows us to move away from business vs. policy, etc.
- A sectoral approach to policy may be needed.

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Rene Kemp, Professor at Maastricht University

- Based on research conducted by POLFREE, people hold a desire to be resource-efficient, but usually not for environmental reasons.
- The use of policy mixes, rather than individual policies, are fundamentally right to stimulate more resource-efficient behaviours and investments
- Resource-efficiency policy needs something else to drive it forwards aside from cost savings and job creation. An example may be to make resource efficiency a source of EU income (e.g. material taxes, or a floor price in the EU ETS). Such policy would become desirable and more salient to policy makers. It may allow for a reduction in contributions to the EU budget by Member States.

Peter Börkey, OECD Environment Directorate

- We need to have simple and clear messages for the promotion of resource efficiency and associated policies. Perhaps the focus should be on co-benefits of resource efficiency.
- We need to break the task down into manageable pieces, rather than a holistic approach all the time, and use incremental steps.
- Better co-ordination between government departments in Member States is needed, as well as across different jurisdictions.
- Global trade and investment – need to get relative prices right through economic instruments. There are many obstacles, but it is not impossible. For example, instrument may be introduced at the local rather than national or EU level (e.g. pay as you throw schemes evidence shows 20-30% reduction in waste).

A short Q&A with the audience followed these presentations. Four questions were posed. The first asked that, as there is currently no focus in resource efficiency policy in reducing the deficit in public accounts in Europe, how can this be changed? The panel agreed that this should be a focus. However, as resource efficiency creates more jobs, and the tax system still focuses on labour, significant additional revenue would likely be generated. The second questioner asked the panel to respond to the statement that existing models are useless, and have false, or overly simplistic assumptions. The panel responded that the drawbacks must indeed be acknowledged, however the models are useful, and they are a stepping stone to continually improve models. The third questioner stated that instruments such as taxes may be very hard to introduce, and may induce negative consequences (such as fly tipping with a pay-as-you-throw waste charge), and asked whether this may be avoided. The panel responded that indeed, effective enforcement systems must be in place, and that efforts must be made to close potential loopholes. The fourth and final questioner asked whether or not we should focus on the 'sweet' side of Environmental Tax Reform (ETR) – e.g. the reduction of labour taxation, rather than the increase in resource or negative externality taxation. The panel responded that this would be beneficial, however there is likely to be disagreement on where the revenue actually goes.

6. Session 5 – The Circular Economy Package and the Transition to a Resource Efficient Europe

Gwenole Cozigou, Director of Resource Efficiency at DG Grow, presented first on 'The new Circular Economy Package: perspectives and expectations'. This was followed by **Christoph Sharff**, Professor at CEC4 Europe and Vienna University of Technology, on 'Business reactions to the new Circular Economy Package – to what extent does it address the key challenges of business in the transition to a resource efficient circular economy?'.

The common goals of the circular economy are environmental protection, securing of raw materials, economic benefits and growth. In business terms, this means effectiveness and efficiency. However, the Circular Economy Package only addresses 7-10% of generated waste. In addition, some aspects may be unachievable, such as the 65% target for recycling of municipal waste by 2030. The recycling rate across the EU is 42% on average, but this is distorted by the very high rate in Germany (around 60%). There is a very high range of values (such as Romania at around 3%), meaning that it is highly unlikely that the 2030 target will be met in time (and even the 2020 target of 50%, set by the Waste Framework Directive). The process for shifting away from landfilling takes time, even in wealthy countries. As such, the focus should first be on improving rates in the laggard countries, which would also reduce the incentive for illegal waste exports.

There are ten priority actions for achieving the common goals of the circular economy in an effective and efficient manner:

1. Resource management instead of focussing on municipal waste: bringing the Action Plan to life
2. Get to know our starting point: harmonization of definitions, statistics, and calculation methods
3. Harmonising recycling levels between Member States instead of isolated increase in quotas
4. Optimum instead of maximum recycling targets, based on cost-benefit analysis
5. Binding minimum requirements for EPR schemes
6. Modelling of the future raw material demand in terms of quantity and quality
7. Systematic exploration of anthropogenic resource stocks in goods, buildings and infrastructure
8. Prioritization of materials and (primary and secondary) sources
9. Appropriate policies and instruments to support holistic resource efficiency
10. Evidence-based approach instead of insufficient data basis

The presentations were followed by a "business roundtable discussion" on the Circular Economy Package, with five business representatives. Each panellist gave a short presentation to answer to the following questions in a 5 minutes presentation:

- (1) What is your business/business sector already doing in terms of RE and CE?
- (2) What are the major success factors for moving towards RE and CE?
- (3) How good is the CE package for businesses?

The floor was then open for audience Q&A.

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Cristiaan Prins, Director of European External Affairs at Unilever, suggested that the Circular Economy Package should have an end goal of creating an internal market for resources from waste. In the short term, it should set stretching, yet achievable targets with harmonised calculation rates for recycling, enhance the Extended Producer Responsibility (EPR) principle, build an EU eco-design capability, support market uptake of recycled raw materials, and phase out landfilling of recoverable household waste.

Annick Carpentier, Sustainability Director at Eurometaux, suggested that the main strengths of the new Circular Economy Package includes: harmonised definition of the point of measurement, equivalent recycling conditions in the case of export, resource-efficiency requirements in ecodesign, and co-operation between Member States on the implementation of waste legislation. However, two key weaknesses are a lack of definition of 'quality recycling' and 'equivalent conditions', and a lack of a separate target for backfilling under construction-demolition. There is also insufficient ambition with regard to facilitation of waste shipment in the EU while ensuring due control, harmonisation of waste legislation and classification, industry-led voluntary certification schemes for recycling, and the fight against illegal shipments.

Patricia Vangheluwe, Director of Consumer and Environmental Affairs at Plastics Europe, believes that the 55% recycling target for plastics packaging is an ambitious one. In addition, further clarification of certain definitions and responsibilities is required. However, 'zero plastics to landfill' should become part of the long-term strategy. Consumer education and behaviour is key to achieving the Circular Economy objectives, as is strong collaboration along value chains.

Gary Crawford, Vice President of International Affairs at Viola, suggests there are three key prerequisites for success of the Circular Economy Package. These are (a) improved design of products with resource efficiency in mind, (b) gathering of data on non-hazardous commercial and industrial waste to allow the setting of separate recycling objectives for these streams over time, and (c), incentives for recycling and the development of markets for secondary raw materials. Additionally, it is essential that a broad collaborative approach is implemented to engage key stakeholders to provide input into the planned measures.

Arthur ten Wolde, Manager Public Affairs and Circular Economy at De Groene Zaak, identified seven critical success factors for the circular economy. These are: the creation of a demand pull for circular products and services, transparency throughout the value chain, enforcement of existing and new regulations, clear price incentives for consumers (VAT) and producers (EPR), mandatory green public procurement, minimum requirements for circularity in the Ecodesign Directive, and quality standards for secondary raw materials. Regarding the Circular Economy Package, whilst its basic structure provides many opportunities, it provides few targets, no economic incentives for consumers, little enforcement, and unattractive research programmes.

Two questions were posed to the panellist from the audience. The first questioner asked, what are the key elements driving the development of a circular economy? The panel responded that issues such as resource scarcity in the future, population growth and climate change pose risks to the current linear model, and that firms must engage in long term planning. Another driver is the increasing preference among consumers for low-carbon, resource efficient and ethical products. To satisfy this demand, however, we need to understand global supply chains more fully. We are beginning to see companies taking on the concept of the circular economy more fully,

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rather than it simply being in the realm of academia. This is largely driven by the increasingly clear benefits of such action. Indeed, price incentives are crucial in encouraging further action.

The second questioner asked, what could be done about businesses that are lagging behind? The panel responded that companies believe in the long-term, and most firms will move towards resource efficiency and circular models in order to stay in business. Individuals and companies would also simply stop purchasing goods and services from these companies. With a price signal, the market would operate as it should, and simply remove these companies. However, in the shorter term, stricter enforcement of existing regulations in Member States by the EU would help.

7. Session 6 – Future Direction and Recommendations to the New Circular Economy Package

Raimund Bleischwitz, Professor and Deputy Director of the UCL Institute for Sustainable Resources (UCL ISR), presented first on ‘What do policy mixes and modelling findings tell us about the new Circular Economy Package?’.

Current commodity prices do not act as drivers for resource efficiency and circular economy practices as they did in 2000-2012, although there are fundamental uncertainties about future commodity prices that means this incentive remains to some degree. POLFREE and DYNAMIX have generated a range of insights regarding for the effective transition to a circular economy. This includes the essential nature of a systemic approach to the resource ‘nexus’, linking materials with energy, water and food, the importance of addressing the lifecycle of resources, of creating markets for secondary materials, of economic incentives, and of targets.

As such, what should the next steps for achieving the Circular Economy be? This should include the establishment of a network of European industrial symbiosis initiatives and other knowledge sharing platforms, eco-design regulation for the main product groups to gradually include footprints, introduce economic incentives conducive to welfare states, encourage international co-operation to address all aspects of the supply chain, and discuss and deliberate on long-term targets.

The second part of this session saw a panel discussion on the topic ‘Does the new Circular Economy Package have the right policy instruments/mixes to achieve the transition to a resource efficient Europe?’.

Christophe Yvetot, Director of UNIDO Representational Office to the EU, suggested that attention must be paid to the global dimension of ‘closing the loop’ – we have to address whole value chain. We must deal with circular economy at all levels (from international to municipal), with a level playing field and suitable framework conditions. Standardisation would likely be a significant part of this. It is important to work together, and move beyond silos in policy making. We need to remain ambitious in our objectives for a circular economy, as a necessity. We will not achieve this if we don’t collaborate between organisations and different levels.

Natalia Matting of DG Grow (Circular Economy and Sustainable Industrial Policy), proposed that the best policy is the one that is enforced. Bearing this in mind, we need to work within political realities. Indeed, there are things missing from the current Circular Economy Package, largely due to the Subsidiarity Principle. We need to encourage policy making at the EU and Member State levels to be more complementary. There is no magic bullet in terms of policy, we need a policy mix. Such a mix needs to link with parallel issues, such as food safety.

Paul Ekins, Professor of Resources and Environmental Policy, Director of the Institute for Sustainable Resources at University College London (UCL ISR) and co-ordinator of the POLFREE project, stressed that a resource productivity target is important, although one number cannot express everything, and could be unpacked for different elements. It is comparable to CO₂ emissions and associated targets – these are required to introduce policies to advance the objective. The number one issue in policy is credibility and consistency. The Circular Economy Package needs to do three things – (a) set business framework, (b) do something to balance supply and

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demand, and (c), set appropriate economic incentives. We also need common definitions and 'level playing field' – but complex in practice, and likely to be messier than we might like. The Commission and Member States both have big roles to play, but business involvement is critical. However, they need to realise that resource-efficiency is of benefit. Whilst the Circular Economy Package has an action plan, we but need actual action.

Andreas Versmann, Policy Officer, European Economic and Social Committee is sceptical that the Circular Economy Package can deliver decoupling, but it goes in the right direction. Market-based instruments (e.g. phasing out Environmentally Harmful Subsidies) are not really present in the Package, but it is important to set incentives. In addition, it appears that the Commission has abandoned the 'Greening' of the European Semester - this could be brought back. Also, it seems that the Package is missing regulations (or has too weak regulations) that address the upper stages of the waste hierarchy. It is also important to highlight the importance of partnerships at the territorial level. A 'Coalition of the willing' is also very important, but the appropriate framework for it is missing at the EU level. It is essential to keep the circular economy on the political agenda – and move it more to the political centre ground.

Vanya Veras, Secretary General at Municipal Waste Europe, believes that the Commission has gone far in the right direction to clarify some issues, such as definitions, although some things are left to be done to remove ambiguities. Policy instruments need to be clear and specific. The Commission must be careful not to mix different policy areas together. There must be stronger ties with policy and the funding available to help implement them. The reason that we have 300 distinct waste collection systems in the UK is we don't have EPR. We should actively promote reuse and recycling by reducing and removing taxation on these things. We must also remove barriers for movement of residual waste.

To close this session, and the Conference, **Paul Ekins**, Professor of Resources and Environmental Policy, Director of the Institute for Sustainable Resources at University College London (UCL ISR) and co-ordinator of the POLFREE project, presented some final remarks. He concluded that whilst policy paralysis is possible, a 'business-as-usual' future is not an option. 'Business-as-usual' policy will not produce a continuation of the status quo; instead, it leads to a rather unpleasant world. An appropriate policy framework is critical to allow business to be resource efficient. There are four elements that emerge from the modelling that must be kept in mind, that allow a resource efficient economy to be achieved. These are (1) technical change and innovation, (2) intelligent innovation (reduces hidden and transaction costs), (3) Environmental Tax Reform, and (4), investment (recognition that we do have unemployed resources).

In their final remarks, Paul Ekins and Martin Hirschnitz-Garbers, thanked the participants for their participation in the conference, and highlighted that all POLFREE and DYNAMIX results and reports, as well as the presentations from this final conference, will be available on the projects websites (www.polfree.eu and www.dynamix-project.eu).

Annex I: Agenda



Monday, 15 February 2016

Event moderator: Gerald Berger, *Vienna University of Economics and Business*

09:15 – 10:00 Registration & welcome coffee

Opening: Introduction to the conference

10:00 – 10:30 Welcome addresses

Martin Hirschnitz-Garbers, *Senior Fellow at Ecologic Institute and Coordinator of DYNAMIX Project*

Paul Ekins, *Professor and Director of the Institute of Sustainable Resources at University College London (UCL), and coordinator of POLFREE project*

Wanda Gaj, *Project Officer, DG Research & Innovation, EC*

Session 1: Creating resource efficient futures in Europe

10:30 - 10:50 Policy frameworks for resource efficiency in Europe - State of affairs and avenues for the future

Francois Wakenhut, *Head of Unit F.1 Resource Efficiency & Economic Analysis, DG Environment, European Commission*

10:50 - 11:10 What should a Resource Efficient Europe look like? Visions, Scenarios and Pathways

Paul Ekins, *Professor and Director of the Institute of Sustainable Resources at University College London (UCL)*

11:10 - 11:30 Q&A

Session 2: Policy mixes for resource efficiency in Europe: approaches and results of POLFREE and DYNAMIX projects

11:30 - 11:50 Policy mixes for resource efficiency: new solutions, new challenges?

Martin Hirschnitz-Garbers, *Senior Fellow at Ecologic Institute and Coordinator of DYNAMIX Project*

11:50 - 12:10 Findings of the POLFREE project on policy mixes. Approaches, results and recommendations

Henning Wilts, *Acting Director Material Flows and Resource Management. Wuppertal Institute*

12:10 - 12:30 Findings and recommendations from the DYNAMIX project. Results from qualitative assessment approaches

Martin Nesbit, *Senior Fellow and Head of Environment and Climate Governance Programme, IEEP*

12:30 – 12:45 Q&A

12:45- 13:45 Lunch break and exhibition



Session 3: Grand challenges of implementing ambitious policy mixes

13:45- 14:00 Flash inputs from policy, business and CSO perspectives on policy mixes

Policy: François Wakenhut, *DG Environment, European Commission*

CSO: Carsten Wachholz, *Circular Economy Policy Officer, European Environmental Bureau*

Business: Christian Hagelüken, *Director EU Government Affairs, Umicore*

14:00-15:00 Implementation challenges and options: success factors to achieve effective policy mixes for resource efficiency from different stakeholder perspectives (Working groups)

- Policy makers (facilitator: Martha Bicket, *Research Fellow, PSI*)
- Businesses (facilitator: Ton Bastein, *Programme Manager, TNO*)
- Civil society (facilitator: Francesca Montevercchi, *Research Fellow, Vienna University of Economics and Business*)

15:00- 15:30 Facilitators reporting back to the plenary

15:30 -16:00 Coffee break

Session 4: Modelling ambitious Policies for Resource Efficiency

16:00 - 16:15 Modelling scenarios for the transition to a resource efficient economy:

Bernd Meyer, *Professor and Senior Advisor at GWS*

16:15-16:30 Aiming for absolute decoupling in Europe: modeling results

Andrea Bigano, *Senior researcher, FEEM*

16:30 – 16:45 What different approaches to modeling tell us about policies for Resource Efficiency

Paul Ekins, *Professor, UCL*

16:45-17:00 Q&A session and discussion

17:00-18:00 Panel discussion: responding to the challenges of ambitious policy mixes for resource efficiency

Christian Hagelüken, *Director EU Government Affairs, Umicore*

René Kemp, *Professor at Maastricht University*

Jocelyn Blériot, *Executive Officer at the Ellen MacArthur Foundation*

Peter Börkey, *OECD Environment Directorate*

Carsten Wachholz, *Circular economy Policy Officer, European Environmental Bureau*

18:00 End of day 1

18:00-20:00 Dinner buffet and networking



Tuesday, 16 February 2016

08:30 – 09:00 Registration & welcome coffee

Session 5: The circular economy package and the transition to a resource efficient Europe

9:00 - 9:30 **The new Circular Economy Package: perspectives and expectations**
Gwenole Cozigou, *Director Resource Efficiency, DG GROW*

9:30- 10:00 **Business reactions to the new Circular Economy Package – To what extent does the new package address the key challenges of businesses in the transition to a resource efficient circular economy?**

Christoph Scharff, *Professor, CEC4Europe / Vienna University of Technology*

10:00- 11:00 **Discussion on CEP with business representatives**

Cristiaan Prins, *Director of European External Affairs, Unilever*

Annick Carpentier, *Sustainability Director, Eurometaux*

Patricia Vangheluwe, *Director Consumer & Environmental Affairs, PlasticsEurope*

Gary Crawford, *Vice President International Affairs, Veolia*

Arthur ten Wolde, *Manager Public Affairs Circular Economy- De Groene Zaak, Sustainable Business Association Netherland*

11:00- 11:30 Coffee break

Session 6: Future direction and recommendations to the new Circular Economy Package

11:30 – 12:00 **Initiating the change – What do the policy mixes and modelling findings tell us about the new Circular Economy Package ?**

Raimund Bleischwitz, *Professor and Deputy Director of the Institute of Sustainable Resources at University College London (UCL)*

12:00- 13:00 **Panel discussion: does the new CE package has the right policy instruments/ mixes to achieve the transition to a resource efficient Europe?**

Christophe Yvetot, *Director of UNIDO Representational Office to the EU*

Natalia Matting, *Circular Economy, Sustainable industrial policy- DG Growth EU*

Paul Ekins, *Professor and Director of the Institute of Sustainable Resources at University College London*

Andreas Versmann, *Policy Officer, European Economic and Social Committee*

Vanya Veras, *Secretary General, Municipal Waste Europe*

13:00 – 13:15 **Closing of the DYNAMIX and POLFREE joint conference, final remarks**

Paul Ekins, *UCL*

Martin Hirschnitz-Garbers, *Ecologic Institute*

Annex II: List of Participants

#	Last name	First name	Country	Institution
1	Salla	Ahonen	FI	Confederation of Finnish Industries (EK)
2	Patrizio	Antonicoli	BE	CEI-Bois
3	Marek	Antosiewicz	PL	IBS
4	Andrada	Armaşu	BE	AESGP - Association of the European Self-Medication Industry
5	Robert	Ayres	FR	Emeritus Professor of Economics, Political Science, Technology Management
6	Bettina	Bahn-Walkowiak	DE	Wuppertal Institute for Climate, Environment and Energy
7	Yulia	Barabanova	BE	IFOAM
8	Ton	Bastein	NL	TNO Innovation for Life
9	Lucie	Beaurain	BE	UNIDO
10	Gerald	Berger	AT	Vienna University of Economics and Business
11	Wojciech	Bialozyt	PL	WISE
12	Martha	Bicket	UK	PSI
13	Andrea	Bigano	IT	FEEM
14	Monika	Bitz	DE	EVS
15	Raimund	Bleischwitz	UK	UCL
16	Jocelyn	Bleriot	UK	Ellen MacArthur Foundation
17	Laurent	Bontoux	BE	JRC- EC Directorate-General Joint Research Centre
18	Peter	Borkey	FR	OECD
19	Francesco	Bosello	IT	FEEM
20	Werner	Bosmans	BE	DG ENV
21	Marie	Bourgeois	BE	SPW Wallonie
22	Isabelle	Brose	BE	European Confederation of Woodworking Industries
23	Emilia	Budisova	SK	Ministry of Environment of the Slovak republic
24	Maciej	Bukowski	PL	WISE Institute
25	Annick	Carpentier	BE	EUROMETAUX
26	Michael	Carus	DE	Nova - Institute
27	Eduin	Castillo	BE	UNIDO
28	Leila	Cedidi	DE	Verband Kommunalen Unternehmen - VKU
29	Yash	Chadha	UK	INLECOM
30	Anne - Gaelle	Collot	BE	Chemical Industries Association
31	Gwenole	Cozigou	BE	DG Grow
32	Gary	Crawford	FR	Veolia
33	Nadine	De Greef	BE	FEAD- European Federation of Waste Management and Environmental Services
34	Fabrice	Dehoux	BE	Federal Council for Sustainable Development Belgium
35	Marc	Dijk	NL	ICIS, Maastricht University
36	Martin	Distelkamp	DE	Gesellschaft für Wirtschaftliche Strukturforschung mbH

37	Johannes	Drielsma	BE	Euromines
38	Paul	Drummond	UK	UCL
39	Fabio	Eboli	IT	FEEM
40	Paul	Ekins	UK	UCL
41	Tomas	Ekvall	SE	IVL
42	Dirk	Fincke	BE	UEPG – European Aggregates Association
43	Florian	Flachenecker	UK	UCL
44	Henning	Friege	DE	N3 Nachhaltigkeitsberatung Dr. Friege & Partner
45	Wanda	Gaj	BE	DG RES
46	Arianna	Gamba	BE	CSR Europe
47	Leonor	Garcia	BE	Plastics Europe
48	Peter	Gersen	NL	The Ex'tax Project
49	Meike	Gierk	DE	Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
50	Gustavo	Gonzales-Quijano	BE	COTANCE - "Working for the Leather Industry in Europe"
51	Femke	Groothuis	NL	Ex'tax Project
52	Julie	Guerin	FR	FNADE - Fédération Nationale des Activités de la Dépollution et de l'Environnement
53	Iain	Gulland	UK	Zero Waste Scotland
54	Beata	Guzik	BE	Yunity.org
55	Christian	Hagelüken	DE	UMICORE
56	Klara	Hajdu	HU	CEEWeb for Biodiversity
57	Jean-Pierre	Hannequart	BE	ACR+
58	Ludwig	Hermann	DE	OUTOTEC
59	Friedrich	Hinterberger	AT	SERI
60	Martin	Hirschnitz-Garbers	DE	Ecologic
61	Robert	Horn	UK	Stanford University
62	Birgit	Horvath	AT	Lebensministerium
63	Mayeres	Inge	BE	VITO
64	Keith	James	UK	WRAP
65	Heike	Janning	DE	RSAG AöR
66	Jacek	Jaśkiewicz	PL	Atmoterm
67	Simon	Johnson	UK	DEFRA
68	Jean-Paul	Judson	BE	FEVE- The European Container Glass Federation
69	Pawel	Kazmierczyk	DE	EEA (European Environmental Agency)
70	Rene	Kemp	NL	Maastricht University
71	Ulrich	Koch	DE	AWA Entsorgung GmbH
72	Manfred	Kriek	DE	AWA Entsorgung GmbH
73	Mihkel	Krusberg	EE	Ministry of Environment
74	Alexandra	Lange	FR	Ecoemballages
75	Guenther	Langer	DE	Waste Management Corporation Munich
76	Susanne	Langsdorf	DE	Ecologic

77	Peter	Laybourn	UK	International Synergies Limited
78	Odile	Le Bolloch	IE	Environmental Protection Agency
79	Harry	Lehmann	DE	Umweltbundesamt (Federal Environmental Agency)
80	Jemma	Mae De Leon	UK	ALDERSGATE GROUP
81	Eugenia	Mansutti	BE	Eurocities
82	Natalia	Matting	BE	DG GROW
83	Ina	Meyer	AT	WIFO
84	Bernd	Meyer	DE	GWS
85	Marc	Meyer	DE	Gesellschaft für Wirtschaftliche Strukturforschung mbH
86	Leonidas	Milios	SE	International Institute for Industrial Environmental Economics
87	Francesca	Montevecchi	AT	Vienna University of Economics and Business
88	Attila	Morotz	BE	Lightning Europe
89	Maximilian	Müller	DE	VDI Zentrum Ressourceneffizienz GmbH (VDI ZRE)
90	Martin	Nesbit	UK	IEEP
91	Alexander	Neubauer	DE	Verband Kommunalen Unternehmen - VKU
92	Doris	Nicklaus	FR	Ministry of Sustainable Development
93	Bruno	Oberle	CH	Ecole Polytechnique Federale de Lausanne
94	Guido	Odendahl	DE	Umweltbundesamt (Federal Environmental Agency)
95	Christina	Overmeyer	DE	Verband kommunaler Unternehmen
96	Umberto	Pisano	AT	Wu - Wien
97	Denise	Pohl	BE	Federal Public Service
98	Nicole	Polsterer	BE	FERN
99	Christiaan	Prins	BE	UNILEVER
100	Helena	Prochazkova	BE	IFOAM
101	Jean-François	Renault	DE	Projectträger Jülich
102	Ariadna	Rodrigo	BE	EU parliament
103	Gabriele	Salvo	IT	Freelance
104	Christophe	Scharff	AT	CEC4Europe / Vienna University of Technology
105	Alexander	Schraml	DE	Kommunalunternehmen des Landkreises Würzburg
106	Paul	Schreurs	BE	Government of Flanders
107	Kate	Scott	UK	Leeds University
108	Arjen	Sevenster	BE	The European Council of Vinyl Manufacturers (ECVM)
109	Ben	Shaw	UK	PSI
110	Aleksander	Sniegocki	PL	WISE Institute
111	Malgorzata	Soltan	PL	Ministry of the Environment
112	Lukasz	Sosnowski	PL	Ministry of Environment
113	Gertjan	Storm	BE	European Partners for the Environment
114	Adrian	Tan	FR	Ernst & Young
115	Arthur	ten Wolde	NL	De Groene Zaak
116	Chris	Thornton	BE	Phosphorus Platform
117	Mike	Van Acoleyen	BE	ARCADIS
118	Steven	Van de Broeck	BE	CEFIC

119	Stijn	van Ewijk	UK	UCL
120	Jens	van Helt	DE	VKU (Verband kommunaler Unternehmen)
121	Patricia	Vangheluwe	BE	Plastics Europe
122	Robin	Vanner	UK	PSI
123	Vanya	Veras	BE	Municipal Waste Europe
124	Marten	Verheugt	BE	CSR Europe
125	Andreas	Versmann	DE	EESC - European Economic and Social Committee
126	Carsten	Wachholz	DE	EEB
127	Francois	Wakenhut	BE	DG ENVIRONMENT
128	Urte	Wiemken	DE	BSR - Berliner Stadtreinigung
129	Anke	Wilden-Beck	DE	Grüneberg
130	Henning	Wilts	DE	Wuppertal Institute for Climate, Environment and Energy
131	Christophe	Yvetot	BE	UNIDO
132	Anastasia	Zabaniotou	GR	Aristotele University of Thessaloniki
133	Jana	Zurkova	BE	RREUSE
134	Anna	Zygierewicz	BE	EU parliament