Energy Efficiency Coordination Group

Policy design for meeting EED targets

9 March 2017, Vienna
Policy design for meeting EED targets – workshop objectives

For a successful NEEAP top-down targets (overall Article 3 and subordinate Articles 5 and 7) need reconciliation with bottom-up calculation from individual measures → these provide the plan for EE action

Transposition of minimum regulatory requirements from EPBD and EED will achieve some of the targeted energy savings for Article 3 but gaps requiring additional initiatives will remain

This workshop aims to assist the policy formation process needed to identify, select and plan for a coherent set of EE measures that hold the potential to cost effectively bridge the gap
Policy design for meeting EED targets - contents

- **Top-down targets**
  - Basis of calculation for Articles 3, 5 and 7
  - Estimates for Energy Community Contracting Parties

- **Long-list of measures from 3rd NEEAP**
  - Current and planned measures
  - Bottom-up calculation methodologies

- **Linking of measures to targets**
  - Addressing double-counting
  - Eligibility for and alignment with Article 7 targets

- **Policy design for fulfilling gaps**
Policy design for meeting EED targets

Top-down targets
Top-down targets: a reminder

**Article 3 – the primary target**

- Contracting Parties to set *indicative EE target* expressed in terms of an *absolute level* of primary and final energy consumption in 2020.
- The Primary Energy Consumption of the Community should be no more than 187 Mtoe in 2020 and Final Energy Consumption no more than 133 Mtoe.
- Represents 20% (47 thousand ktoe) reduction on Baseline forecasts for EnC8.

Inclusion of Ukraine
Top-down targets: a reminder

- **Approach to target setting (if setting undertaken by Contracting Parties)**
  - Develop Business-As-Usual baseline for primary energy consumption
  - Involves modelling projected energy demand based on socio-economic, technical and demographic development
  - Interactive effects with NREAP
  - Apply 20% reduction to BAU baseline to identify absolute level
  - Assess gap with respect to ESD commitments (9% of reference period final energy consumption by 2018)

- **Or adopt Energy Community Secretariat calculations from PRIMES modelling?**
  - Will need historical baseline for estimating individual measure savings

What approach has been taken by EnC8 in their 3\textsuperscript{rd} NEEAPs?
Top-down targets: a reminder

Two top-down subordinate targets: Article 5 and Article 7

Article 5

- 1% of floor area of heated/cooled central government buildings renovated per year
  - Building size threshold of 500 m² until 1 Jan 2019 then 250 m²
  - Calculated as percentage of area not meeting EPBD standards at start of each year
  - Or alternative measures

Article 7

- Must adopt an EEO scheme or alternative measures to meet:
  - New savings equivalent to 0.7%/annum of reference quantity (2013-2015)
  - Cumulative target (so 7% of reference period in aggregate)
  - Exclusions apply
  - Savings must be additional to other EED/EPBD obligations

Careful of double-counting

Measures must be linked to Article 3, Article 5 and Article 7 targets
Policy design for meeting EED targets

3rd NEEAP long-list of measures
Long-list of measures

- Contracting Parties have identified a preliminary list of preferred measures in 3rd NEEAPs
  - Have bottom-up calculations of estimated savings by measure been used in setting 2020 indicative target?
  - Do gaps remain?
  - Are measures aligned with Article 5 and Article 7 targets?

- Example measures (end-use only):

<table>
<thead>
<tr>
<th>Residential</th>
<th>Tertiary (public &amp; services)</th>
<th>Industry</th>
<th>Transport</th>
<th>Horizontal</th>
</tr>
</thead>
</table>
| • Building regulations  
• Energy renovation/retrofit incentive programmes  
• Awareness programmes  
• Incentives for EE appliances/products  
• Energy poverty programmes | • Public procurement policy  
• Building regulations  
• Energy renovation/retrofit incentive programmes  
• CHP/district heating  
• Tax incentives | • Voluntary agreements  
• Energy Management Systems  
• CHP/district heating  
• Tax incentives | • Modal shift/infrastructure  
• Electric Vehicles  
• Improved fuel economy  
• Eco-driving | • Carbon/EE taxes  
• EEO schemes / EE Fund  
• ESCO support framework  
• Smart-metering  
• Training programmes |
Energy saving calculations: Bottom up case by case

- **Bottom up – cumulative from individual measures, case by case**
  - Baseline - calculation relative to ‘business as usual’ (BAU) trajectory
  - Eligible measures
    - Commencement period
    - Lifetime of measures
    - Substantiveness/ measurability and verifiability of savings
    - (Some savings difficult to quantify – promotional/ informational/ developmental measures)
  - Credit for early actions that have lasting effect, e.g. building standards
  - Consideration of rebound effects
  - Consideration of interactive/ reinforcing effects between different measures
  - Avoiding double counting – calculate savings from measures that target the same end-use sequentially
  - Case by case calculation methodologies
Primary guidance

EE savings assessed and calculated using bottom up methods compliant with Commission guidance

▶ Commission document:

- PRELIMINARY DRAFT EXCERPT-

RECOMMENDATIONS ON
MEASUREMENT AND VERIFICATION METHODS
IN THE FRAMEWORK OF
DIRECTIVE 2006/32/EC ON
ENERGY END-USE EFFICIENCY AND ENERGY SERVICES

Puts forward recommended methods/formulae for calculation/measurement and verification of EE savings – both ‘Top Down’ and ‘Bottom Up’
Other reference guidance

- **Bottom up calculations:**
  **EMEEES** methodologies
  [www.emeees.eu](http://www.emeees.eu)
  Numerous case examples. Takes account of:
  - Avoiding double counting
  - Technical interactions between measures
  - ‘Free rider’ effects
  - Multiplier effects
  - Lifetime of measures
  - Treatment of early action

- **Top down indicators:**
  **ODYSSEE-MURE** methodologies
  [http://www.indicators.odyssee-mure.eu](http://www.indicators.odyssee-mure.eu)
  Data tools: key indicators facility, benchmarking, decomposition, energy saving, and indicator scoreboard
Policy design for meeting EED targets

Linking of measures to targets
EE measure policy classes

- For purposes of assessing policy mix, useful to view from perspective of end user
- ENSPOL suggested use of “Policy Class” for Article 7 but also useful as general framework:

<table>
<thead>
<tr>
<th>EE Measure category</th>
<th>Policy class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy/CO₂ taxes</td>
<td>Taxation</td>
</tr>
<tr>
<td>Energy Efficiency Obligations</td>
<td>Purchase subsidy</td>
</tr>
<tr>
<td>Grants &amp; Tax rebates</td>
<td>Purchase subsidy</td>
</tr>
<tr>
<td>Loans &amp; On-bill finance</td>
<td>Access to capital</td>
</tr>
<tr>
<td>Regulations &amp; Voluntary agreements</td>
<td>Minimum Standards</td>
</tr>
<tr>
<td>Standards and norms</td>
<td>Underpinning measurement standards</td>
</tr>
<tr>
<td>Energy labelling schemes</td>
<td>Information &amp; feedback</td>
</tr>
<tr>
<td>Information, advice, feedback</td>
<td>Information &amp; feedback</td>
</tr>
</tbody>
</table>

Adapted from: ENSPOL (2015) Energy Saving Policies and Energy Efficiency Obligation schemes - D5.1 Combining of EEOs and alternative policies

Which measures are pre-requisites for meeting minimum EnC requirements?
Criteria for selecting suitable policies

- Close to 500 policy schemes in Member States just for Article 7
  - Assess using policy class and category

- Account for interaction
  - Complementarity between policies to be considered
  - But “optimization” of mix is difficult to ascertain
  - Which sectors to target with what?

Potential criteria for selection:
- Addresses identified barriers
- Scalability
- Market transformation potential
- Cost-effectiveness
- Complementarity
- Political and cultural acceptance
- Verification and eligibility
- Complexity
Article 7 EU MS – policy instruments notified

- EEOSs, 21, 4%
- Energy Efficiency National Fund, 4, 1%
  - (a) Energy or CO2 taxes, 10, 2%
  - (b) Financing schemes or fiscal incentives (including grants), 184, 38%

- (f) Training and education in reducing end-use energy consumption, 26, 6%
- (e) Energy labelling schemes, 6, 1.3%
- (d) Standards and norms mandatory and applicable in MS under EU law[1], 25, 5%
- (c) Regulations or voluntary agreements, 46, 10%

- i) Any other policy measures, and/or category not clear, 157, 33%

Article 7 EU MS – contribution of energy savings

### Policy categories - complementarity

<table>
<thead>
<tr>
<th>Energy Efficiency Obligations</th>
<th>energy or CO2 taxes</th>
<th>grants</th>
<th>loans</th>
<th>on-bill finance</th>
<th>tax rebates</th>
<th>Regulations</th>
<th>voluntary agreements</th>
<th>standards and norms</th>
<th>energy labelling schemes</th>
<th>information, advice, billing, feedback, smart metering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Efficiency Obligations</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>energy or CO2 taxes</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grants</td>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>loans</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>on-bill finance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tax rebates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>voluntary agreements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>standards and norms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>energy labelling schemes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Policy categories – maturity of product/service

Policy categories – cost and complexity

Obligation schemes - D5.1 Combining of EEOs and alternative policies
Eligibility of energy savings

Aside from double-counting calculation methodologies should consider

- **Free riders:** must be in addition to business-as-usual case, can use:
  - Annual sales charts for step-change
  - S-curve plots
  - Maximum market penetration

- **Rebound effect:** occurs where improved EE is used to access more energy services:
  - Direct effect should be considered in setting baseline
  - Indirect effect not considered in EED target

Further requirements for eligibility of energy savings for Article 7 compliance

- **Additionality:** savings must be above and beyond other Energy Community minimum requirements

- **Materiality:** actions of OPs must be demonstrably material
Policy design for meeting EED targets
Policy design for bridging the gap
Applying findings to policy design for EnC8

- **Outside of regulations required through EPBD and Eco Design:**
  - EEO schemes, other financing schemes and energy/CO₂ taxes are the three major mechanisms delivering energy savings in EU Member States

- **Eco Design is not an obligation for EnC8:**
  - Savings would therefore be considered additional (assumed eligible for Article 7)
  - But is market transformation best done through regulation or financial incentives or both? → depends on market maturity

- **What policy package is complementary?**
  - Information and feedback measures complement all other policy options
  - Energy taxes also do but unlikely to stimulate investment decisions alone
Applying findings to policy design for EnC8

**What policy package is complementary (cont.)?**

- Purchase subsidies and access to capital measures:
  - overlap each other → avoid targeting same end-user/product
  - Should only be offered for savings above and beyond regulations or voluntary agreements
  - Purchase subsidies used for lower cost, simpler measures; access to capital for higher cost, more complex measures
- Voluntary agreements may precede regulations (while market remains immature) or go above and beyond but not overlap

**Most appropriate policy measure also depends on:**

- Product and end-user targeted and their associated barriers to EE uptake
- Practicality/cost of implementation (eg voluntary agreements suit very large users)
- Political and social acceptability
How feasible is the EEO-only approach for Article 7 targets?

- **Principle constraint is politically acceptable levy on energy prices**
  - Most EEO schemes internationally impose <1% increase in retail price
  - By focusing on most cost effective measures experience is utilities have achieved savings at cost of <3 €c/lifetime-kWh saved
  - Our work in Croatia (under EU targets), Serbia and Montenegro suggests a 100% EEO to meet Article 7 likely to require retail price increase >2%

- **Other issues with lack of EE experience in utilities and concern over direct funding for utilities**

Alternative measures are likely required to achieve targets for EnC8
Process for “filling the gap” – workshop questions

- **Look at existing measures – which are eligible for contributing towards Article 7?**
  - Must be additional to any other EED/EPBD minimum requirements
  - Careful of double-counting
  - Note difficulty in quantifying information-focused measures
  - What end-use sectors and EE products/services do these measures target?

- **Outline options for filling the gap**
  - Where do the greatest barriers to EE remain?
    - Which product(s)/services(s) address these needs?
    - Which end-users are targeted
  - Which proven EE policy measures address these product/user combinations?
  - Is there overlap with existing or already planned measures?
  - If so are the measures complementary or can existing measure be scaled up?
  - How does the proposed measure score against other selection criteria?

- **Iterative process!**