European Court of Auditors' work on energy and climate in the European Union

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Vilnius, 28 April 2017

Outline

1. ECA publications on energy and climate
2. ECA's Landscape Review of Energy and Climate
3. Recent ECA energy audits covering Lithuania

1. ECA publications on energy and climate

ECA reports on energy and climate (1/3)

Greenhouse gas emissions

- The EU emissions trading system (2015)
- The EU institutions' greenhouse gas emissions (2014)

Energy

- EU assistance to Ukraine (2016)
- **Decommissioning nuclear plants in Bulgaria, Lithuania, Slovakia** (2011, 2016)
- **Security of energy supply and internal energy market** (2015)
- Renewable energy in East Africa (2015)
- Renewable energy (2014)
- Energy efficiency (2012)
- Intelligent Energy for Europe Programme (2008)

Transport

- Maritime transport (2016)
- Sustainable biofuels (2016)
- Rail freight transport in the EU (2016)
- Inland waterway transport in Europe (2015)
- Urban public transport (2014)
- Marco Polo: shifting traffic off the road (2013)
- Transport infrastructures in seaports (2012)
- Transport on trans-European rail axes (2010)

Source: European Court of Auditors

ECA reports on energy and climate (2/3)

Agriculture, forestry and biodiversity

- Natura 2000 network (2017)
- Food waste (2017)
- Rural infrastructure (2015)
- EU support to timber-producing countries (2015)
- Biodiversity in ERDF (2014)
- Integrating water policy objectives into the Common Agricultural Policy (2014)
- Preventing and restoring damage to forests caused by fire (2014)
- Improving the economic value of forests (2013)
- LIFE programme (2013 and 2009)

Water and waste

- Waste water treatment plants in the Danube river basin (2015)
- Water quality in the Danube river basin (2015)
- Municipal waste management infrastructure projects (2012)
- Drinking water supply and basic sanitation in Sub-Saharan countries (2012)
- Water supply (2010)
- Waste water treatment projects (2009)

Climate finance and spending

- At least 1 euro in 5 to be spent on climate change (December 2016)
- Climate finance in the context of external aid (2013)

Source: European Court of Auditors

ECA reports on energy and climate (3/3)

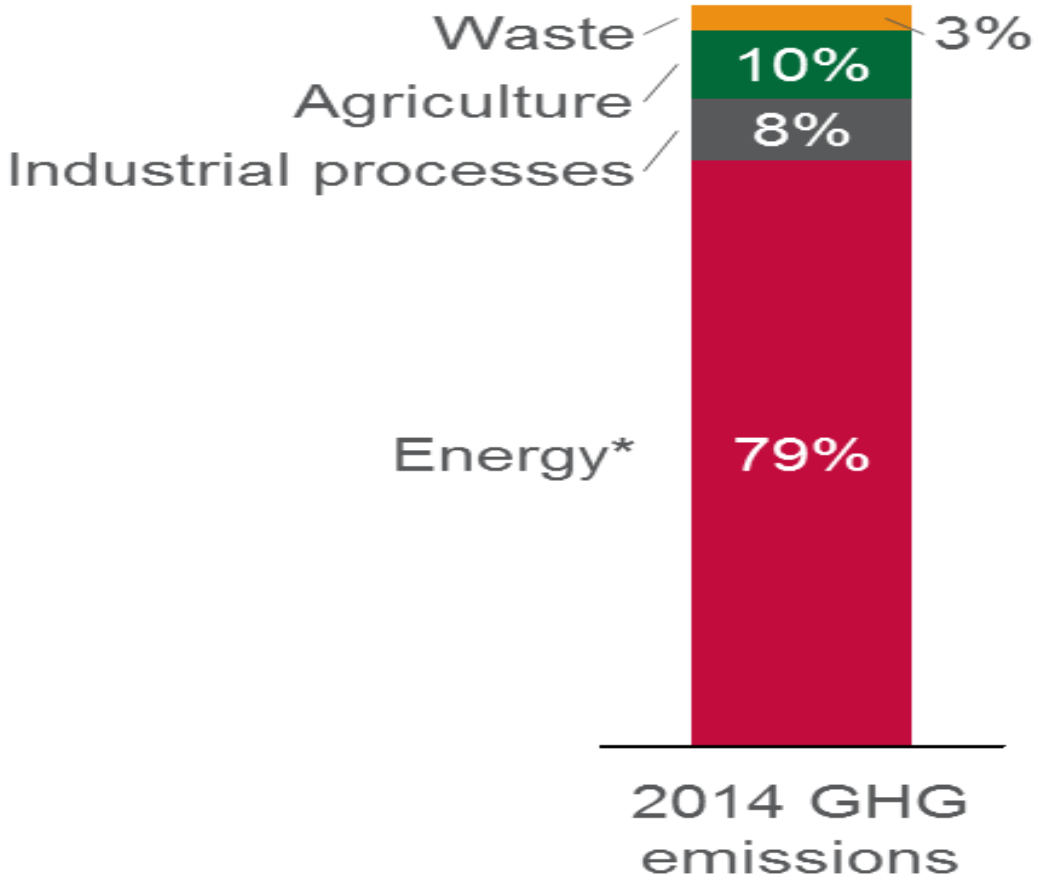
Forthcoming reports

- Drinking Water Supply (due end 2017)
- Greening of the Common Agricultural Policy (due end 2017)
- Renewable energy in rural areas (due early 2018)
- Air quality (due 2018)
- Financial instruments for Climate Action (due 2018)
- Flood prevention (due 2018)

- **Landscape Review of EU energy and climate** (due Summer/Autumn 2017)

2. ECA's Landscape Review of Energy and Climate

2014 EU emissions by source



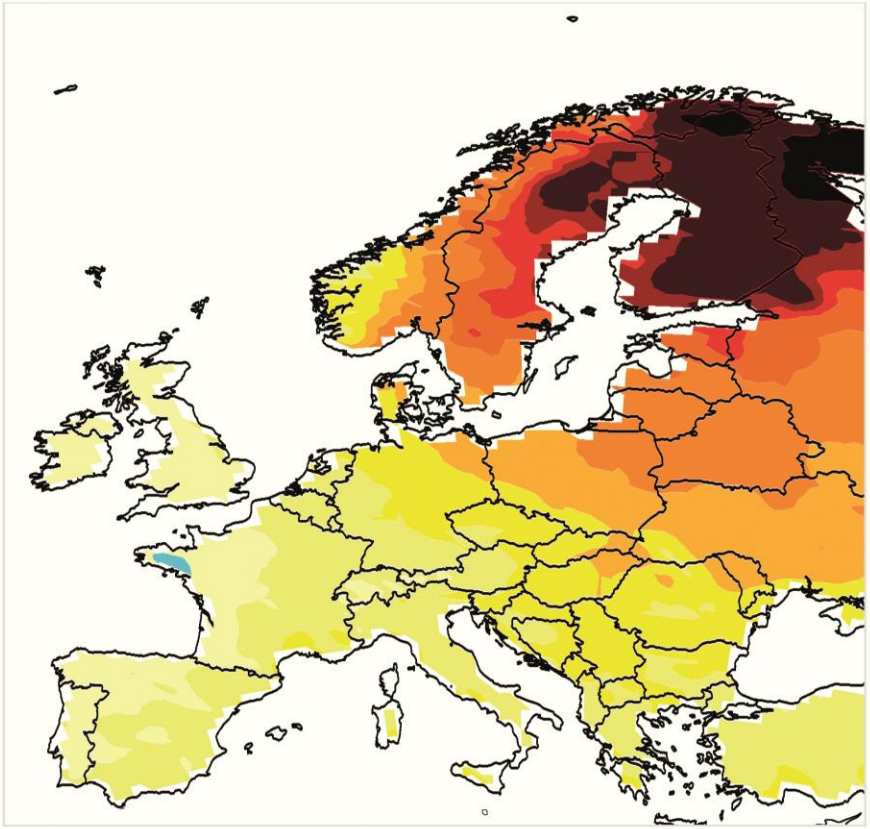
* Including energy usage in international shipping and aviation.

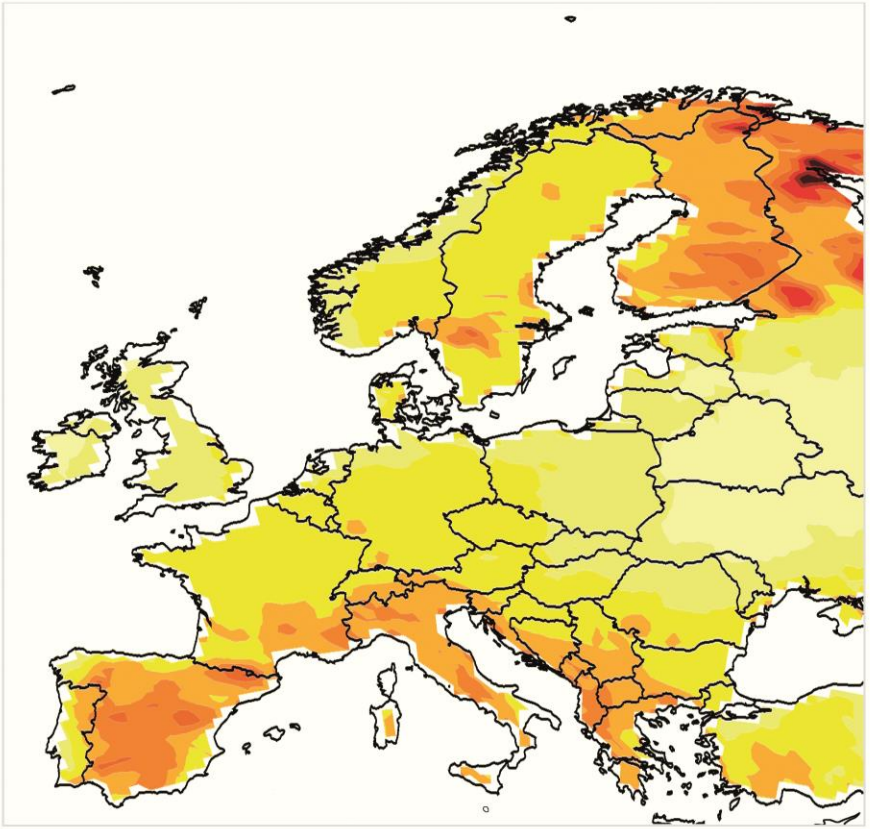
Source: *Annual European Union greenhouse gas inventory 1990–2014 and inventory report 2016*, EEA, 2016.

2°C scenario: *Temperature* increase 2071-2100 compared to 1961-1990 (°C)

Winter

Summer

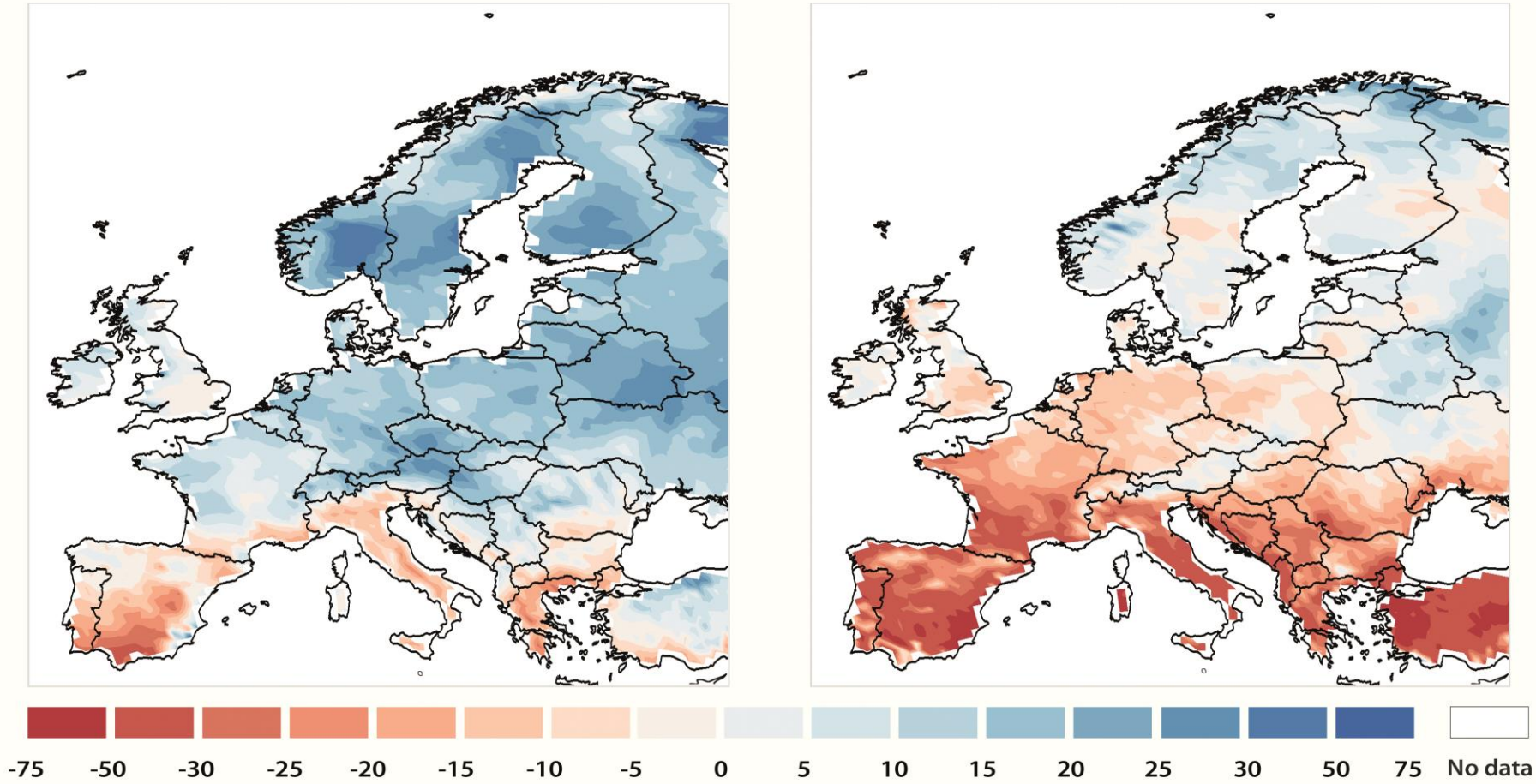




Source: Climate Impacts in Europe, the JRC PESETA II project, 2014

2°C scenario: *Precipitation* change in 2071-2100, compared to 1961-1990 (%)

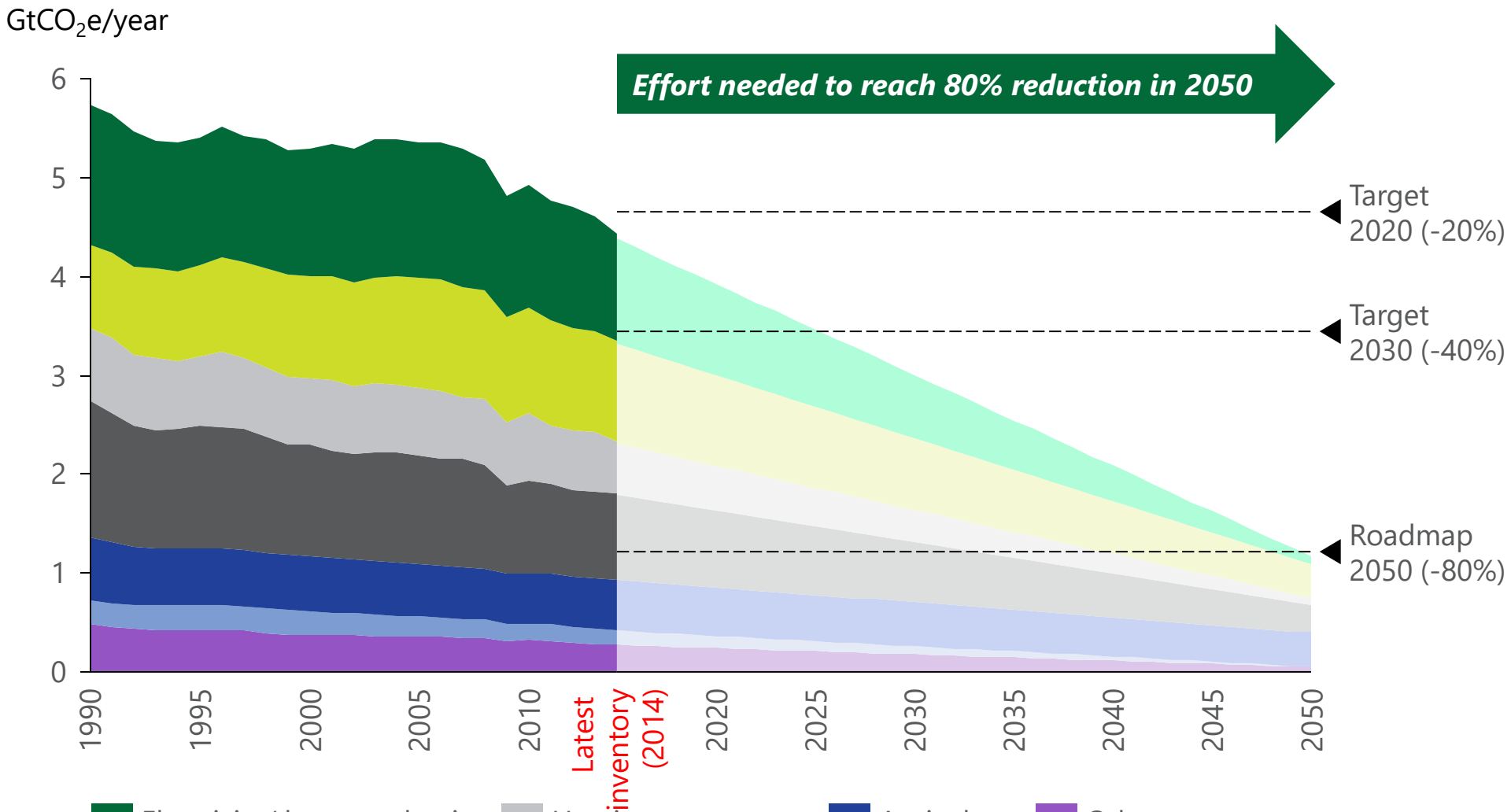
Winter **Summer**



Source: Climate Impacts in Europe, the JRC PESETA II project, 2014

All EU sectors need to reduce emissions

Total greenhouse gases emissions, including international aviation and indirect CO_2, excluding LULUCF – EU-28



Source: EEA, EU greenhouse gas inventory, 2016 inventory data; Eurostat; DG Clima

Purpose of landscape reviews

- *[Landscape reviews] consider broad themes on the basis of the **Court's research and accumulated knowledge and experience** […].*

- *[They] serve as an **important basis for:***
  - ***consultation and dialogue with the ECA's stakeholders and***
  - ***for future audit work of the ECA**.*

- *They enable the Court to **submit observations on matters which are not necessarily susceptible to audit per se** but are nonetheless important for public accountability and the ECA's audit mission.*

Source: Landscape review of EU accountability and public audit arrangements, ECA

Approach


1. Review 60+ EU instruments
2. Interviews:
• EU/ other key institutions
• Germany (October)
• Spain (November)
• Poland (December)
3. ECA and EU SAIs' 200+ reports
4. Survey of EU SAIs

When: Publication planned for Summer/Autumn 2017

Spring-Summer 2016	• Preliminary work • Task scoping • Adoption of Task Plan
Autumn 2016	• Policy review • Audit reports review • Member States visits, meeting with EU institutions
Winter 2016 – Spring 2017	• Report drafting • Report adoption
Summer/ Autumn 2017	• **Report publication** • Communication campaign, including conference

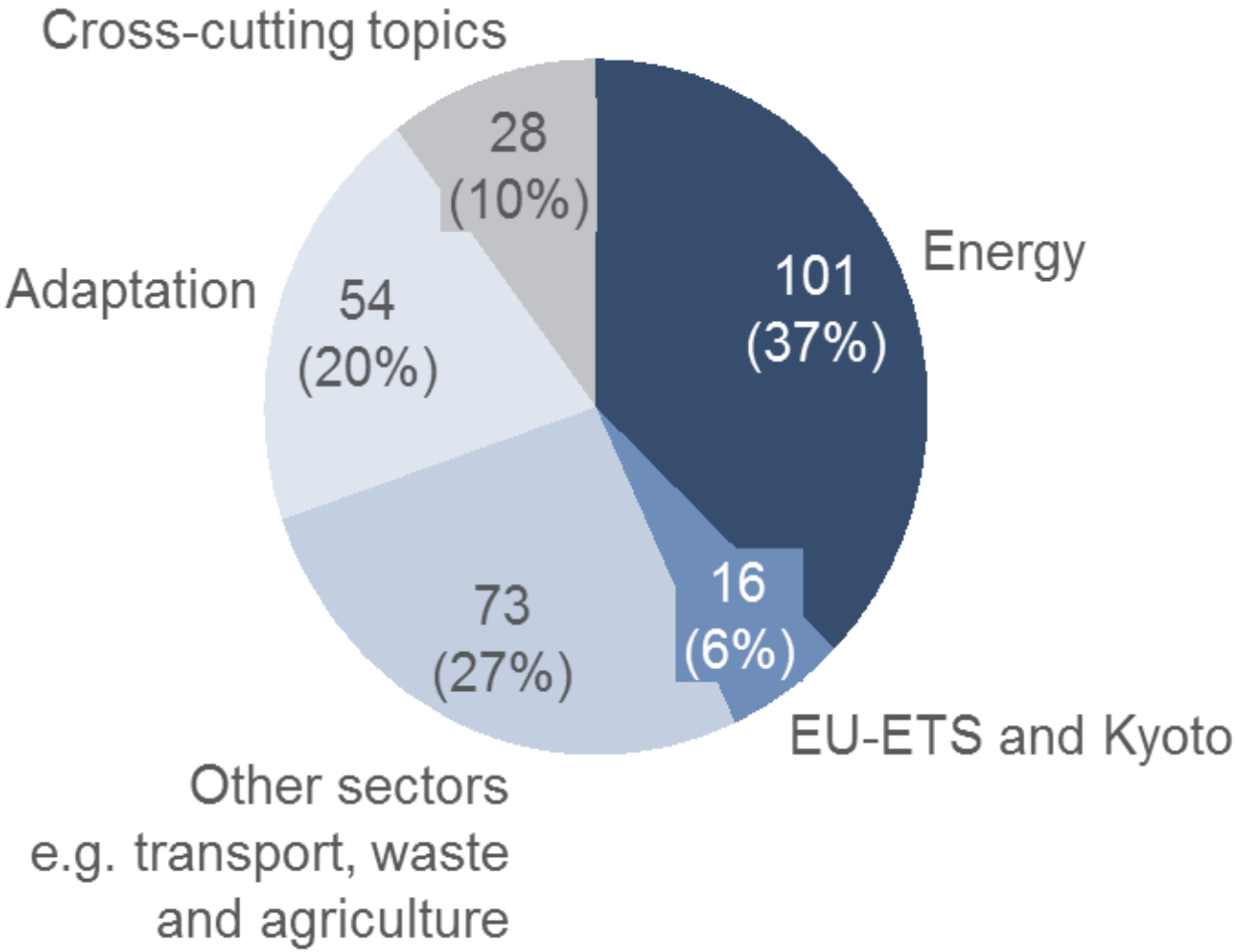
Landscape Review coverage

1. Energy and Climate – what the EU is doing

2. What the ECA and EU SAIs are doing in Energy and Climate

3. Main challenges, tensions and issues

What the ECA and EU SAIs are doing in Energy and Climate



What the ECA and EU SAIs are doing in Energy and Climate

- Some areas have received less audit coverage so far:
  - Adaptation
  - The third phase of the EU ETS
  - Emissions from road transport
  - Emissions from agriculture
  - EU and national greenhouse gas inventories

Main challenges, tensions and issues

1. Energy and climate governance
2. Energy transition
3. Evidence-based policy-making and implementation
4. Adaptation
5. Financing
6. Research and innovation
7. Involving EU citizens

3. Recent ECA energy audits covering Lithuania

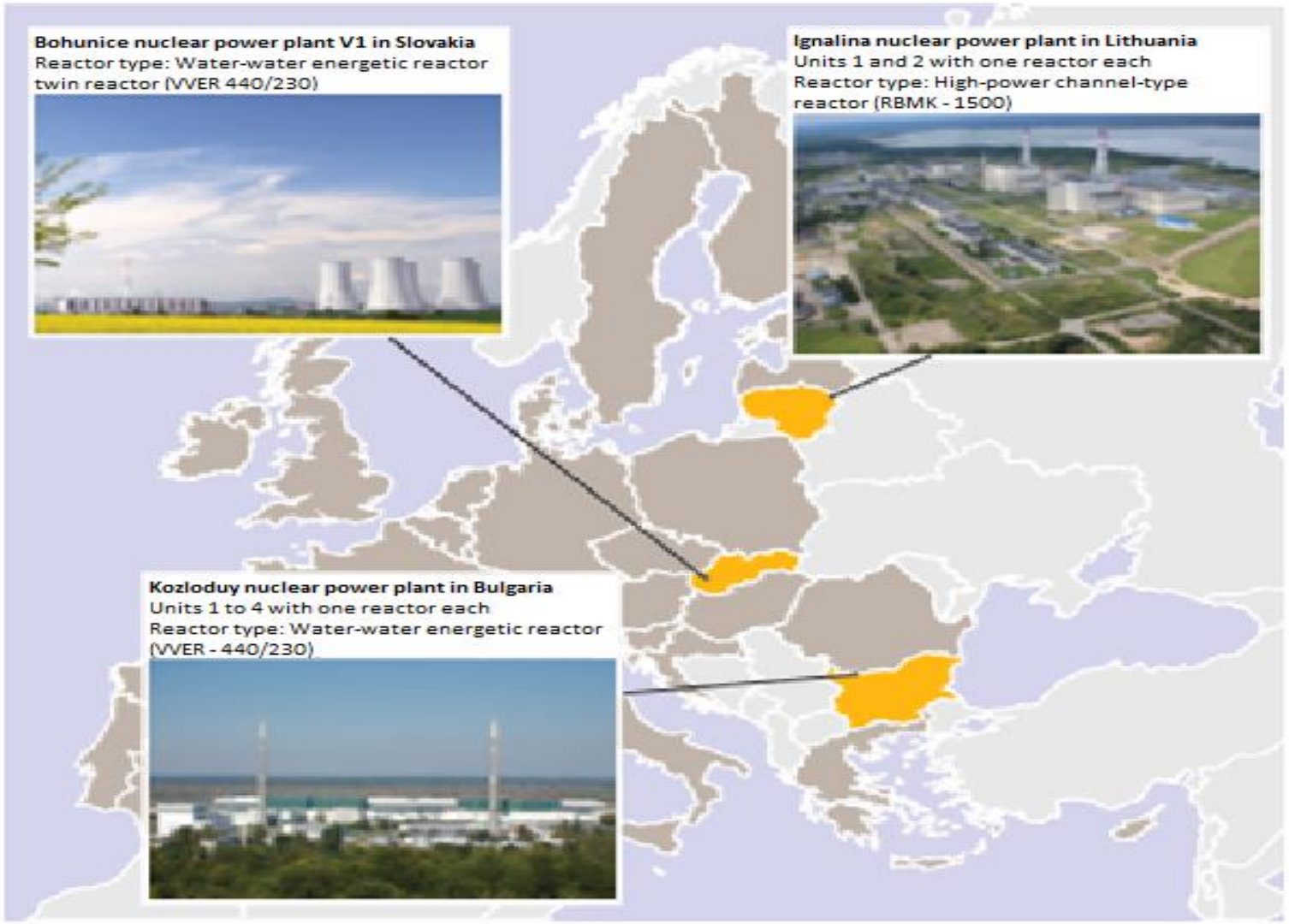
(a) EU nuclear decommissioning assistance programmes in Lithuania, Bulgaria and Slovakia: some progress made since 2011, but critical challenges ahead

(b) Improving the security of energy supply by developing the internal energy market: more efforts needed

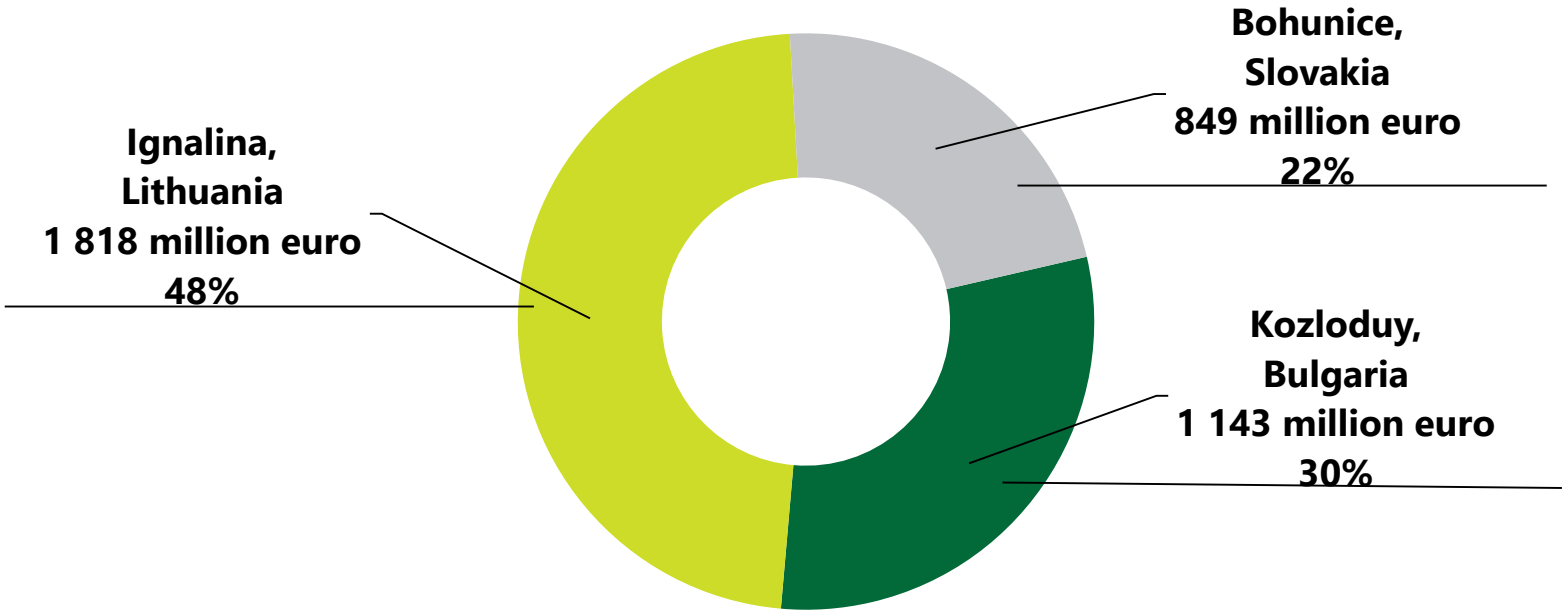
EU **nuclear decommissioning** assistance programmes in **Lithuania, Bulgaria and Slovakia**: some progress made since 2011, but critical challenges ahead

(Special Report 22/2015)

Sites in Lithuania, Bulgaria, Slovakia covered by the EU's NDAPs



EU decommissioning support – 2.96 billion euro by 2020



(million euro)	Decommissioning	Mitigation	Total
Lithuania	1 553	265	**1 818**
Bulgaria	731	412	**1 143**
Slovakia	671	178	**849**
Total	**2 955**	**845**	**3 800**

Main audit question

… to determine whether progress has been made in the implementation of the EU's nuclear decommissioning assistance programmes for Lithuania, Bulgaria and Slovakia since 2011[1]

[1] *ECA report 16/11: "EU financial assistance for the decommissioning of nuclear plants in Bulgaria, Lithuania and Slovakia: achievements and future challenges"*

Our audit…….

- did not cover
  - compliance of project expenditure with fund-specific rules
  - public procurement procedures
  - radioactive security or safety of installations
- in no way sought to
  - make a case for or against nuclear energy
  - draw conclusions on the energy supply mix in the EU

Approach

- visited sites in Lithuania, Bulgaria and Slovakia
- interviewed
  - Member State officials
  - nuclear plant operators and waste management license holders
  - regulatory authorities
  - European Commission officials
  - Implementing body officials, including from EBRD
- assessed progress of 17 EU-funded key decommissioning projects, including data on delays and cost overruns
- identified emerging practice improvements and forward thinking
- visited world's first civil nuclear waste geological repository, Finland

Findings: Progress since 2011

- **Some progress** made in decommissioning since 2011
  - key components dismantled in the plants' **non-controlled areas**
- **But critical challenges** lie ahead for all three Member States

  e.g. dismantling the **reactors**
- **Commission's "expected outputs" for irreversible closure** not all met
- Dedicated EU funding programmes have **not created the right incentives**

Expected outputs indicating irreversible closure

Expected output	Ignalina, Lithuania	Kozloduy, Bulgaria	Bohunice, Slovakia
NPP safely maintained in **post-shutdown mode** until complete de-fuelling	**Partially achieved**	**Achieved**	**Achieved**
Decommissioning licence is in place	**Not achieved**	**Partially achieved**	**Achieved**
Design for dismantling of reactor core/primary circuit is complete	**Partially achieved**	**Partially achieved**	**Partially achieved**
Dismantling in the reactor building **has started**	**Partially achieved**	**Partially achieved**	**Partially achieved**

As at 31 December 2015. For more details, see Table 3 on page 27 of the report

Findings: Waste Management

- **Waste management infrastructure:** some progress, but:
  - many key infrastructure **projects experienced delays** in 2011 to 2015
    - longest delays in Lithuania, where the decommissioning end date has, since 2011, been postponed by a further 9 years to 2038.
  - **challenges with major projects** in each Member State e.g.:
    - Lithuania – Interim storage for spent fuel assemblies
    - Bulgaria – National disposal facility for low/ intermediate-level waste
    - Slovakia – Decontamination of the primary circuit

- Work on potential **final disposal solutions for high-level waste and spent nuclear fuel** still only at conceptual stages

Findings: 2015 costs and financing gap

[million euro]	Ignalina, Lithuania	Kozloduy, Bulgaria	Bohunice, Slovakia	Total
Estimated costs	3 376	1 107	1 239	**5 722**
National financing, allocated[1]	262	348	476	**1 086**
EU financing, allocated	1 553	731	671	**2 955**
Financing gap	1 561	28	92	**1 681**

[1] Allocated national financing may be made up of dedicated funds set up for decommissioning, committed public expenditure or other national sources.

Source: Member States authorities, updated final decommisssioning plans and 2015 annual work programmes, and, for Slovakia due to update, the draft 2016 annual work programme.

Findings: Financing Decommissioning

- **Decommissioning financing gap**
  - in Lithuania gap now risen to 1.56 billion euro
  - 28 million euro in Bulgaria, 92 million euro in Slovakia

- Member States **co-financing remains very limited**
  - full EU financing only in '*well-founded exceptional cases*'
  - but no Commission clear guidelines yet

- **Staff levels have declined**
  - but some EU funds still used, e.g. in Lithuania for staff working on plant maintenance

Findings: costs, including final disposal

- estimated decommissioning cost will be **at least 5.7 billion euro**
- **double that with cost of final disposal to 11.4 billion euro**

[million euro]	Ignalina, Lithuania	Kozloduy, Bulgaria	Bohunice, Slovakia	Total
2015 cost estimate, excluding high-level waste and spent nuclear fuel disposal	3 376	1 107	1 239	**5 722**
Cost estimate for final disposal of high-level waste and spent nuclear fuel from the eight reactors	2 610	1 590	1 466	**5 666**
Cost estimate, including high-level waste and spent nuclear fuel disposal	**5 986**	**2 697**	**2 705**	**11 388**
National financing	262	348	476	**1 086**
EU financing	1 553	731	671	**2 955**
Financing gap	**4 171**	**1 618**	**1 558**	**7 347**

Findings: Reporting and Accounting

- Commission's assessment of financing and decommissioning plans, under ***ex ante* conditionalities,** was inadequate

- **future costs of nuclear decommissioning and final disposal**
  - not always recognised as provisions
  - and/or included in notes to accounts

- **Commission reply said it would publish**:
  - by Oct '16: Commission's Assessment of the ex-ante conditionalities
  - by end '16: Assessment of National Programmes in all 28 Member States

Recommendations: summary

1. Ensure **progress** in decommissioning
2. Solutions for the final **disposal** of spent nuclear fuel
3. Respect **polluter pays principle**
4. Increase **national co-financing** in the 2014-2020 period
5. **Discontinue dedicated funding** for nuclear decommissioning after 2020
6. EU funding **only for cost of decommissioning**
7. Improving **Commission oversight**
8. **Accounting** treatment

Recommendations

1. **The three Member States concerned should:**

(a) further improve their project management practices in order to have the necessary waste and spent fuel management infrastructure in place when planned;

(b) take steps to build up their own technical capacity, so as to achieve a better balance between in-house and external expertise;

(c) find better ways to exchange best practices and technical knowledge, both among themselves and with the wider nuclear decommissioning community in the EU and beyond. **The Commission** should facilitate this in a cost-effective way.

Recommendations

2. (a) The Commission should, together with all relevant EU Member States, explore options for the disposal of spent fuel and high-level waste, including any regional and other EU-based solutions, duly considering safety, security and the cost-effectiveness of the alternatives. The Commission should include a review of this matter in its first report to the European Parliament and the Council on the implementation of the radioactive waste directive.

(b) The three Member States should, in parallel, progress with their plans for final disposal, in order to establish more complete cost estimates and financing plans for the disposal of spent fuel and radioactive waste, as required by the radioactive waste directive.

Recommendations

3. **The three Member States** should recognise their own role in ensuring that the polluter pays principle is respected, and be prepared to use national funds to cover decommissioning costs, as well as the cost of final disposal, both in the current financing period and thereafter.

4. **The Commission** should seek increases in national co-financing during the 2014-2020 financing period. It should define clearly, for example in a Commission decision, the 'well-founded exceptional' conditions under which projects can be fully financed by the EU under the nuclear decommissioning assistance programmes.

Recommendations

5. **Dedicated funding programmes for nuclear decommissioning in Lithuania, Bulgaria and Slovakia should be discontinued after 2020**.

   If a clear need for the use of EU funds beyond 2020 is established, in one or more of these three Member States, any future EU funding proposed by the Commission and agreed by the legislator should include the right incentives to pursue decommissioning, including by being:

   time limited and

   based on appropriate levels of Member State co-financing.

   One way to do this would be to consider widening access to the European Structural and Investment Funds to allow nuclear decommissioning activities to be covered, fulfilling these conditions.

Note: Lithuanian authorities drew our attention to their Accession Treaty protocols (see paragraph 83 and footnote 42 of our report)

Recommendations

6. **The Commission** should allow EU financing under the nuclear decommissioning assistance programmes to be used to finance only the costs of staff working fully on decommissioning activities.

7. **The Commission** should complete its assessment of the *ex ante* conditionalities.

8. **The Commission** should work together with all relevant Member States so that all future costs associated with nuclear decommissioning and the final disposal of spent fuel are accounted for properly, in a transparent manner, consistent with relevant accounting standards.

Improving the **security of energy supply** by developing the **internal energy market**: more efforts needed

(Special Report 16/2015)

EU funds for energy infrastructure 2007-2020

	Sector	TEN-E	EEPR	CEF Energy	ESIF	Total
2007-2013	Electricity	81	905		498	1 484
	Gas	64	1 363		814	2 241
	TOTAL	**145**	**2 268**		**1 312**	**3 725**
2014-2020	Electricity and Gas			5 350	2 000*	**7 350**
Total 2007-2020		**145**	**2 268**	**5 350**	**3 312**	**11 075**

* Indicative figure presented to the audit team by DG Regional and Urban Policy.

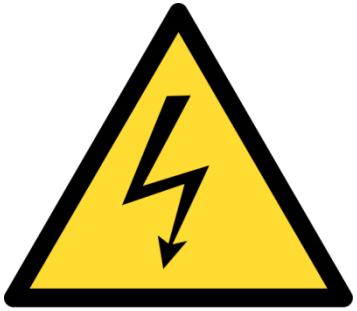
Source: European Court of Auditors, based on DG Regional and Urban Policy databases, EEPR implementation reports

What is Security of Energy Supply?

- Security of energy supply (SES) definition:
  - **the uninterrupted availability of energy sources at an affordable price**[1].

- Main requirements for a functioning single market are:
  - **sufficient supply;**
  - **sufficient interconnection capacities;**
  - mutual **respect of market regulation by all Member States**.

[1] International Energy Agency definition



Main audit question

… to determine whether implementation of internal energy market policy measures and EU spending on energy infrastructure have provided security of energy supply benefits effectively.

Audit scope and approach

- Policy measures and funding from 2007
- Case studies in 4 regions based in and around:
  - Lithuania, Estonia and Sweden (BEMIP)
  - Poland
  - Bulgaria
  - Spain
- 15 examples of EU co-financed projects
  - total investment 3.86 billion euro
- Interviews Member States and EU officials

Main conclusions I: Market regulation

- The **EU's objective of completing the internal energy market by 2014 was not reached as:**

  - problems remain with the implementation of the EU legal framework for the internal energy market.

  - important differences in how Member States organise their energy markets can hold back the further development of the internal energy market.

  - though some progress in joining the patchwork of local, national and regional markets in Europe has been made, there remains a long way to go.

Main conclusions I: Market regulation

- Market regulation - **references to Lithuania:**

  - European Commission's review of Lithuania's **implementation of EU energy legislation** (Table 2)

  - Regarding the Lithuanian **national regulatory authority** :
    - Parliament's role regarding the energy regulator (Box 1)
    - government's role in gas and electricity transmission tariffs (Box 2)
    - participation in ACER working groups (Annex III)

Main conclusions II: Energy Infrastructure

- **Energy infrastructure in Europe is generally not yet designed for fully integrated markets** and therefore does not currently provide effective security of energy supply as:

  - the infrastructure within and between many Member States is not yet suited for the internal energy market;
  - there is no overall EU-level needs assessment to provide the basis for prioritising investments in EU energy infrastructure;
  - developing cross-border infrastructure requires cooperation amongst neighbouring Member States;
  - Some of the existing infrastructure is not used to its full potential.

Main conclusions II: Energy Infrastructure

- Energy infrastructure - **references to Lithuania:**
  - "Independence": the LNG terminal in Klaipeda (Box 6)
  - Lithuania below the 10% electricity interconnection ratio, at the time of the audit (Table 5)
  - alternatives to gas pipeline construction, such as LNG terminals, being considered in Member States including in Lithuania (paragraph 80)
  - Lithuania part of the Baltic Energy Market Interconnection Plan (BEMIP), although certain commitments are not yet realised (Box 9)
  - LitPol project - challenges of cross border cost allocation (Box 11)

Main conclusions III: EU financial support

- **Financial support from the EU budget in the field of energy infrastructure has made only a limited contribution** to the internal energy market and security of energy supply as**:**

  - the EU has several funding instruments to support energy infrastructure projects, but none have the internal energy market as a primary objective;

  - EU co-financed energy infrastructures have a limited impact on the internal energy market.

Main conclusions III: EU financial support

- EU financial support - **references to Lithuania:**
  - **Projects in Lithuania** amongst those reviewed for the audit (Table 6):
    - Latvia-Lithuania **gas** interconnector
    - Jurbarkas-Klaipeda **gas** pipeline
    - Klaipeda-Kiemenai **gas** capacity enhancement
    - GIPL **gas** interconnector between Lithuania and Poland
    - Nordbalt **electricity** interconnector
    - LitPol **electricity** interconnector
  - Lithuania one of six Member States planning to use **ESIF** for energy projects (paragraph 108)
  - **GIPL**: will enable new gas trade opportunities (paragraph 112a)
  - **NordBalt**: potential to impact electricity markets significantly (Box 14)
  - **LitPol**: potential held back by limitations in Polish electricity network (Box 15)

Recommendations: summary

1. Completing **non-conformity** checks
2. **NRAs** and ACER
3. **Transparent trading**
4. Approving and implementing **network codes**
5. **Market and infrastructure development models** for electricity and gas
6. Optimal **use of existing infrastructure**
7. Drawing up a comprehensive **EU-level infrastructure needs assessment**
8. Refine the use of lists of **Projects of Common Interest**
9. Functioning of **energy market as a condition** for EU energy project financing

Recommendations

1. With the internal energy market not yet having been completed, the **Commission should complete its assessments** and open any necessary infringement procedures against Member States by the end of 2016.

2. (a) Member States should make sure that their **National Regulatory Authorities** (NRAs) are independent and do not face restrictions to the scope of their role. The NRAs should have sufficient resources available for their activities, including allowing them to participate fully in EU-level cooperation activities

   (b) The Commission should assure that the **Agency for Cooperation of Energy Regulators** (ACER) has the necessary powers to obtain from key institutions in the Member States the information it needs to carry out the tasks assigned to it.

Recommendations

3. The Commission should promote widespread development of **transparent trading mechanisms** for both gas and electricity. This should include facilitating and supporting the establishment of exchanges in Member States where they do not currently exist or where Business-to-Business trading mechanisms dominate.

4. The Commission should expedite the process of comitology, with a view to securing approval of the electricity **network codes** by the end of 2015. It should encourage ACER and the European Networks of Transmission System Operators (ENTSOs) to support early implementation of network codes by the Member States in the framework of regional cooperation initiatives.

Recommendations

5. The Commission should:

   (a) consider establishing **electricity interconnection objectives** based on market needs, rather than on fixed national production capacity;

   (b) reassess the potential costs and benefits of the **gas target model**, and consider, in the light of uncertain demand, whether there are alternatives to the extensive construction of gas pipelines, such as the installation of strategically placed Liquified Natural Gas (LNG) terminals to serve one or more national markets using internal energy market-compatible solutions. This should be based on a comprehensive EU-level needs assessment (see recommendation 7).

Recommendations

6. The Commission should:

(a) identify cross-border **energy infrastructure that is not being used** to its full potential to support the internal market, either because it is tied up in long-term bilateral contracts, or because its technical capacities, such as reverse flows, are not being used;

(b) work with stakeholders in the Member States in order to **improve the extent to which such infrastructure is actually used** continuously for the benefit of the internal energy market; and

(c) explore the benefits for setting up **regional Transmission System Operators (TSOs)** as a means to encourage and manage efficiently energy flows across borders, making the most of existing infrastructure.

Recommendations

7. The Commission should:

(a) draw up a **comprehensive EU-level energy infrastructure needs assessment** for the development of the internal energy market, this should function as a reference for the other documents such as Ten Year Network Development Plans (TYNDPs);

(b) put in place, to support the needs assessment, a **capacity to model energy markets** including a broad range of demand projections, either in-house or in ACER;

(c) work with the ENTSOs for electricity and gas so that the needs assessment functions as an **input for internal energy market-related infrastructure planning** in the EU, including TYNDPs.

Recommendations

8. The Commission should **refine its planning procedures**, in particular the prioritisation and funding of Projects of Common Interest (PCIs), in the light of a comprehensive EU-level energy infrastructure needs assessment (see recommendation 7).

9. The Commission should make legislative proposals on how to make its decisions to select energy infrastructure projects for **funding subject to** the proper and continuous functioning of the energy market in the Member States.