



# European Construction Sector Observatory

Policy measure fact sheet

**Luxembourg**

Eco-Technology Action Plan (ETAP)

Thematic Objective 3

February 2018



## In a nutshell

<b>Implementing body:</b>	Luxembourg Ministry of the Economy
<b>Key features &amp; objectives:</b>	Action Plan that aims to stimulate and support the large-scale uptake of Eco-Technologies in the construction sector through the implementation of measures on energy efficiency, renewable energy and the building of public-private partnerships.
<b>Implementation date:</b>	2009 – 2016
<b>Targeted beneficiaries:</b>	Construction companies
<b>Targeted sub-sectors:</b>	Residential, industrial, institutional, commercial and civil engineering, eco-technology.
<b>Budget (EUR):</b>	Not disclosed

The ETAP provided an overall strategic framework to stimulate the development and uptake of sustainable and innovative technologies, and encourage companies to adopt business models based on circular economy principles.

In 2009, the Ministry of Economy published the 'Eco-Technology Action Plan' (ETAP) with a view to fostering the large-scale uptake of clean technologies across all economic sectors, including the construction sector<sup>1</sup>. The ETAP provided an overall strategic framework to stimulate the development and uptake of sustainable and innovative technologies, and encourage companies to adopt business models based on circular economy principles.

The ETAP led to the implementation of several dedicated measures that include the creation of public-private partnerships, such as the EcoInnovation Cluster, and the setup of tailored support schemes, such as the support scheme for the protection of the environment and the 'Fit 4 Circularity' programme.

Despite its cross-sectoral approach, the construction sector was considered to be one of the government's priority sectors, because of its economic importance and the central role it is playing to help the country to meet its climate and environmental objectives. For example, the construction sector accounted for 5.4% of Luxembourg's GDP in 2017<sup>2</sup>, and in 2014, the construction sector represented the largest share of waste production in the country, and had the highest per capita construction and demolition waste volume in Europe<sup>3</sup>. In addition, considering the country's limited territory, the construction sector faces a relative scarcity in locally sourced feedstock for building materials, which increases the need for material substitution or recycling<sup>4</sup>.

Overall, the ETAP has proved very successful in many regards. Its main achievement lies in the development of a very dynamic and collaborative ecosystem, steered by the dedicated EcoInnovation Cluster. This public-private partnership provides an effective platform for knowledge exchange, networking and cooperation across cluster members. Within the construction sector, these interactions have subsequently led to the implementation of highly innovative testbed construction projects in the field of the circular economy.

## 1

# General description

The Eco-Technology Action Plan (ETAP) is a general strategy that was adopted by the Ministry of the Economy in 2009. It aimed to stimulate the production of eco-technology products and to support research and development in the clean technologies field, in order to achieve greater sustainability and economic diversification.

One of the key features of the ETAP was its cross-sectoral approach which set similar objectives across diverse business fields, and aimed to facilitate collaboration and exchange of best practices between organisations from different economic sectors. The ETAP was based around the development of three fields of capacity<sup>5</sup>:

- The rational use of natural materials;
- The development and uptake of innovative materials;
- The promotion and development of a circular economy<sup>6</sup>.

The ETAP was based around the development of three fields of capacity: the rational use of natural materials, the development and uptake of innovative materials, and the promotion and development of a circular economy.

Table 1: Key ETAP objectives and actions

Key objectives	Main actions
Development of a strong Clean-tech ecosystem	• Creation of the EcoInnovation Cluster, which is a dedicated public-private partnership
Supporting environmental protection	• Adoption of a dedicated grant funding scheme to incentivise companies across all economic sectors.
Facilitating the transition towards a circular economy	• Launch of the 'Fit 4 Circularity' programme, which is a support scheme open to all SMEs that are willing to adopt business models based on circular economy principles.

Sources: Ministry of the Economy, Interviews<sup>7</sup>

For the **first objective**, the Ministry set-up the **EcoInnovation Cluster** in 2010, under the management of the national innovation agency, Luxinnovation.

The EcoInnovation Cluster is a public-private network which supports the various actors of the clean-tech sector, including construction companies, with the goal of creating and developing new and sustainable business opportunities, mainly through collaborative R&D and innovative projects.

Its main objectives are to: diversify the activities of businesses in Luxembourg; promote networking between public and private actors at national and international level; and contribute to the development of new environmental solutions in the field of eco-technologies and sustainable construction.

The main activities of the EcoInnovation Cluster consist in ensuring the networking of cluster members, organising thematic workshops to identify potential projects as well as to disseminate relevant information through regular newsletters. For instance, NEOBUILD<sup>8</sup> and the Luxembourg Institute of Science (LIST) are among the key players specialised in environmental innovation in the construction sector that are actively involved in the EcoInnovation Cluster. NEOBUILD is a private-sector initiative supported by the Ministry of Economy that aims to foster the emergence of innovative sustainable construction technologies for SMEs, to contribute and manage their development in the country<sup>9</sup>. LIST is a research and technology organisation carrying out research and experimentation work related to the uses of BIM, as well as smart and bio-based construction materials<sup>10</sup>.

For the **second objective**, the Luxembourg government adopted a new support scheme for the protection of the environment and the rational use of natural resources (i.e. Régimes d'aides à la protection de l'environnement et à l'utilisation rationnelle des ressources naturelles) in 2010<sup>11</sup>.

This cross-sectoral instrument aimed to financially support all companies in Luxembourg, including those from the construction sector, that are willing to invest in eco-technologies and eco-friendly processes or materials, by covering from 10% to up to 100% of their investment costs. Table 2 outlines the various types of support and eligibility criteria.

Table 2: Overview of the 2010 Support Scheme for the Protection of the Environment

Key Eligible Investments		
<ul style="list-style-type: none"> <li>• Investments enabling companies to exceed EU environmental protection norms.</li> <li>• Investments in the field of energy efficiency.</li> <li>• Investments in renewable energy sources.</li> <li>• Investments in waste recycling and re-use.</li> <li>• Investments in environmental studies</li> </ul>		
Examples of maximum financial support as % of total eligible costs		
	SME's	Large companies
Exceeding EU environmental protection norms	60%	40%
Energy efficiency	50%	30%
Renewable energy sources	60%	45%
Waste recycling and re-use	55%	35%
Environmental studies	70%	50%

Source: Ministry of the Economy<sup>12</sup>

For the **third objective**, the Ministry of Economy launched the 'Fit 4 Circularity' Programme in 2015.

It is a support scheme dedicated to helping SMEs that are willing to make a more substantial commitment to sustainable development practices and to implement a circular economy approach. The programme is managed by Luxinnovation and provides companies with guidance from external consultants in designing and implementing eco-innovative projects and processes. Table 3 presents the key features of the programme.

Table 3: Key features of the 'Fit 4 Circularity' Programme

<b>Eligibility</b>	All SMEs willing to adopt new business models based on circular economy principles
<b>Phase I: Diagnosis</b>	
<b>Object</b>	Analysis of the company's potential and definition of a tailored roadmap by an external consultant
<b>Duration</b>	4-6 months
<b>Support</b>	50% of the costs, up to EUR 10,000
<b>Phase II: Implementation</b>	
<b>Object</b>	Implementation of the roadmap by the company through innovation and pilot projects
<b>Duration</b>	6-24 months
<b>Support</b>	Up to 50% of the implementation costs partly covered by the 'Research & Development Support Scheme'

Source: EcoInnovation Cluster<sup>13</sup>

## 2

# Achieved or expected results

Overall, the ETAP and its related initiatives and instruments have proved to be successful in ensuring the development and uptake of clean technologies in the country across all sectors, and in particular in the construction sector.

## Hollerich eco-district

- Project started in 2013 by the EcoInnovation Cluster and the City of Luxembourg;
- The aim is to transform around 4 hectares located in the vicinity of the capital as a pilot eco-district, comprising the building of hundreds of new houses;
- 100% of the thermal needs, 20% of the electrical needs should be self-produced on-site;
- 50% of building materials will come from a 150km radius around the site;
- The implementation phase of the project has started in October 2017.

Source: EcoInnovation Cluster<sup>14</sup>

Overall, the ETAP and its related initiatives and instruments have proved to be successful in ensuring the development and uptake of clean technologies in the country across all sectors, and in particular in the construction sector. Although no recent and comprehensive quantitative data is readily available, several elements highlight and demonstrate the success of this strategy, as shown in Table 4.

Table 4: Examples of successful Eco-innovation projects in the construction sector in Luxembourg

Project	Key achievements/expected results
<b>Ncube houses</b>	<ul style="list-style-type: none"> <li>• Developed by Naturhome, a company specialised in building wooden houses;</li> <li>• Developed the 'Ncube house': an innovative concept of highly energy performant wooden houses built with sustainable and reusable materials;</li> <li>• Houses are firstly designed by customers through an online platform;</li> <li>• Overall costs are reduced by around 25% thanks to innovative and sustainable organisation processes;</li> </ul>
<b>City of Wiltz</b>	<ul style="list-style-type: none"> <li>• Since 2015, several pilot projects are being implemented by the EcoInnovation Cluster in the small city of Wiltz (6,500 inhabitants) as testbeds for the large adoption of circular economy principles;</li> <li>• Construction of a positive-energy building, including six dwelling units, made of completely reusable materials;</li> <li>• Building of around 250 homes along circular economy principles on a brown-field site;</li> <li>• Integration of a course on circular economy at the university of Wiltz in the field of architecture;</li> </ul>

According to the European Innovation Scoreboard 2017, Luxembourg is classified as a strong Innovator across all economic sectors, including in the construction sector. For instance, one Luxembourg construction firm, Braas Monier<sup>15</sup>, active in the manufacturing of sustainable roof tiles, ranks within the top 1,000 EU companies by R&D according to the 2017 EU R&D Scoreboard<sup>16</sup>.

Taking stock of the success of the EcoInnovation Cluster, the Ministry of the Economy and the agency Luxinnovation decided to set-up the 'Wood Cluster' in 2016 along similar lines. This public-private platform aims to increase the use of wood as a sustainable material at the local and regional level, and in particular in the construction sector. It also aims to support the activities of the EcoInnovation Cluster thanks to its more specialised focus. For instance, members of both clusters actively cooperate in the frame of the 'Hollerich eco-district' project<sup>17</sup>.

There is no readily available data regarding the impact of the support scheme for the protection of the environment in the construction sector in particular.

However, it is noteworthy that although this support scheme was implemented between 2010 and 2016, the government decided to adopt an updated version of this instrument at the end of 2017 and which should be put in operation in early 2018<sup>18</sup>.

The 'Fit 4 Circularity' programme has already yielded some positive results in the construction sector. For instance, Astron, a company specialised in manufacturing steel buildings, was one of the first companies to receive support. Thanks to external guidance, the company now uses recyclable steel for its multi-storey car parks<sup>19</sup>. This transition has allowed the company to launch a new sector of activity and to become more independent from movements in the price of steel<sup>20</sup>.

Finally, the ETAP proved to be a key stepping stone towards the design and ongoing implementation of Luxembourg's 'Third Industrial Revolution' (TIR) project in 2016, which was led by the Ministry of Economy, and was steered by the Economist Jeremy Rifkin. This project notably aimed to develop and implement a long-term vision for a fully decarbonised and circular economy, defined through a large-scale public participation process and the strong collaboration between all relevant stakeholders<sup>21</sup>. One of the five key pillars of the TIR vision notably lies in achieving a sustainable building sector. The existing mobilisation of public and private actors specialised in clean technologies in the construction sector, notably involved in the EcolInnovation Cluster, ensures a strong stakeholder participation in the discussion of the TIR working groups on 'Future buildings' and 'Renovation Strategy'<sup>22</sup>.

## 3

## Perspectives and lessons learned

The ETAP and its related measures have been broadly welcomed by all parties. The collaborative approach between all relevant public and private stakeholders within the frame of the EcoInnovation Cluster, and replicated in other projects can be overall considered as one of the greatest strengths of the ETAP. However, tailored support schemes, such as the 'Fit 4 Circularity' programme, have been also welcome and considered as highly needed in order to ensure the large-scale uptake of clean technologies by all construction companies in the medium and long-run, and not only by the ones already at forefront in terms of eco-innovation.

From an **implementation perspective**, the government considers that the ETAP has been a substantial success<sup>23</sup>.

In particular, it effectively managed to structure and mobilise a dynamic ecosystem formed by companies leading in sustainable innovation in all economic sectors (i.e. not only in the building sector). This has been pivotal to ensure a cross-sectoral collaboration which proves key for achieving a circular economy. The ETAP therefore greatly facilitated the transition towards the ongoing activity within the TIR working groups, including in the construction sector in particular. In this regard, the ETAP has overall successfully set the first strategic framework for the support and promotion of eco-innovation and clean technologies in the building sector.

However, it is noteworthy that further efforts need to be made in order to ensure that construction companies uptake ecotechnologies and adopt business models based on circular economy principles at a wider scale.

Indeed, companies involved in the EcoInnovation Cluster are considered as leaders in their field, and further focus should be brought to less-innovative construction companies. In this

regard, the diverse support schemes (i.e. for the protection of the environment and the programme 'Fit4 Circularity') already provide good incentives. Nonetheless, government representatives note a relative lack of understanding about the implications of adopting a circular economy model and highlight a need for further awareness-raising activities with the wider building sector.

From an **industry perspective**, the ETAP is also regarded as a successful initiative. Construction companies consider that, along the lines of government representatives, this strategy urged public and private actors to exchange best practices and effectively work together. According to the R&D Director at Tarkett, which specialises in sustainable floor covering, the company's participation in the circular economy testbed projects at Wiltz, as part of the ETAP, has been very valuable. The Director says that collaboration is the key building block that makes the circular economy achievable. The strong collaboration that Tarkett has actively sought and experienced as part of the project has enabled the company and others to benefit from collaborative outcomes, such as a common database for materials owned and used by construction companies and others<sup>24</sup>.

Overall, companies broadly welcomed the introduction of the new support schemes to incentivise construction companies to adopt clean technologies.

Indeed, the Luxembourg Chamber of Trade strongly supported the renewal of the support scheme for the protection of the environment in 2017, saying that it is a reference instrument that is helping businesses to upgrade their technologies, become cleaner, more efficient, more productive and more competitive. It is also contributing to the achievement of national climate and energy objectives<sup>25</sup>.

# Endnotes

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