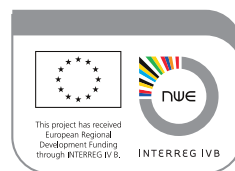




# GROWING LOCAL ENERGY

LAYMAN'S REPORT, TWECOM PROJECT, INTERREG IVB NWE PROGRAMME





*Educating kids about the maintenance of hedgerows is an important aspect of this project.*

## What is TWECOM?

TWECOM is a transnational project that runs from januari 2013 to december 2015, funded by the Interreg IVB NWE programme. TWECOM stands for "Towards Eco-Energetic Communities" and aims to demonstrate that the sustainable use of woody biomass from landscape elements, such as hedgerows, for local energy and heat production is economically feasible.

Besides leading partner Regionaal Landschap Lage Kempen, six partners from four countries are involved, each contributing their own expertise and knowledge to the project: Agrobeheercentrum – Eco<sup>2</sup> (ABC), Innovatiesteunpunt vzw (ISP), Philipps-Universit t Marburg (PUM), The Organic Research Center (ORC), Inagro and Zuidelijke Land- en Tuinbouworganisatie (ZLTO).

Ludwig Vandenhove, deputy for nature and environment of the Belgian province of Limburg and chairman of Regionaal Landschap Lage Kempen, underwrites the importance of this project: *"Thanks to TWECOM, we again consider the landscape to be a source for alternatives for fossil fuels. In order to find a balance in the way we treat the landscape, we need to cooperate and find synergy in the different functions: agriculture, nature, recreation, living. This may seem nearly impossible, but the pilot project in Bocholt has proven that it is possible. Local biomass is being valorized, with both the economy and the ecology benefiting from it. TWECOM is an excellent initiative, that we like to see as an example."*



*The valorisation of biofuel from landscape elements from a to z.*

The overall project budget was € 2,700,073 of which 50 % was provided by the European Regional Development Fund via Interreg IVB, North-West Europe.



## TWECOM highlights

### HARVEST MACHINERY AND ORGANISATION (AGROBEHEERCENTRUM ECO<sup>2</sup>)

We've invested in a complete set of harvest machinery to optimize the harvest of hedgerows in Bocholt (Belgium), the pilot project for TWECOM. These machines minimise the input of manpower. They complement one another and are very suitable for hedgerows. The machinery can be used by partners anywhere in the province of Limburg.

- mobile excavator with felling head
- chipper with crane and 13 m<sup>3</sup> bunker
- carrier with 40 m<sup>3</sup> container with drying floor, so excess heat from other processes can be used for drying

More detailed information on all machinery tested in the project and lessons learned can be found in the best practice guide via [www.twecom.eu](http://www.twecom.eu)

Maintenance of hedgerows for biofuel by farmers:

- creates new employment opportunities in landscape management for farmers;
- allows farmers to get organized into agro-management groups to maintain hedgerows at a bigger scale (at landscape level);
- helps farmers realize the full potential of landscape elements on their grounds.



*Mobile excavator with felling head.*



*The quality of the woodchips has an influence on the amount of air emissions.*

### EMISSIONS FROM WOOD HEATING (INAGRO)

The sustainable use of biomass contributes to a net reduction in CO<sub>2</sub> emissions in comparison to the use of fossil fuels, yet its application remains to be a major source of air emissions. Therefore it is very important to pay sufficient attention to the operation of a biomass plant. In theory it is very simple: if you pursue an optimal efficiency, emissions will be minimal! However, achieving this result is not that simple. As an operator you need to take into account a lot of factors. It starts with the configuration of the heating system and the choice of biomass installation. Moreover, you need to take into account the fuel quality (humidity and chip size) and correct adjustment of your biomass boiler.

More detailed information can be found in the publication "Green heat with small-scale wood combustion" which you can download at [www.twecom.eu](http://www.twecom.eu).

## TWECOM highlights

### DIPLA, A SMART ONLINE TOOL FOR ORGANIZING LANDSCAPE MANAGEMENT (RLLK)

Sustainable hedgerow management is a complex issue as hedgerows are important for biodiversity, for producing green heat and from a cultural and historical point of view. DIPLA is an online GIS based tool that helps you organise the management of landscape elements. With DIPLA you can estimate the amount of biomass that is available in landscape elements, you can register the actual amount of biomass harvested, you can organise the spatial spreading of the harvest regarding the ecological impact and you can calculate the costs and benefits of your harvest activities.

DIPLA has developed several apps for smartphones that allow you to automatically enter the data that you collect in the field into the central database, so the data can be used for calculations.

For more information about the DIPLA tool, go to [www.profsi.eu](http://www.profsi.eu). The DIPLA tool is available for users at [www.diplalogin.eu](http://www.diplalogin.eu).



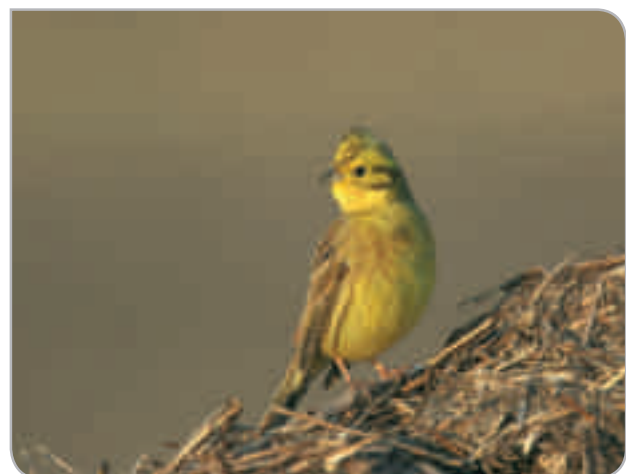
*Hedgerows as seen from the sky.*

### BIODIVERSITY AND HEDGEROWS (ORC)

Hedgerows provide multiple habitats, food resources, refuges, and ecological corridors for a diverse range of wildlife. Given their importance, it's essential to consider the potential biodiversity impacts from managing your hedgerows for woodfuel. Managing hedges for woodfuel can however also bring a number of biodiversity benefits. Hedgerows are dynamic in nature and without management naturally develop into lines of trees, losing many of their ecosystem functions. Coppicing for woodfuel rejuvenates old hedges and restores their value to biodiversity.

Harvesting in rotation can provide a diversity of hedge structures within the landscape, providing multiple habitats for a wider range of organisms. When needed for the biodiversity, negative impacts can be minimised by managing no more than 50 % of your hedges primarily for woodfuel and coppicing only small sections each year.

Visit [www.twecom.eu](http://www.twecom.eu) to read the biodiversity protocol.



*The yellowhammer loves hedgerows.*

## TWECOM highlights

### FEASIBILITY OF VALORISATION OF BIOMASS FROM LANDSCAPE ELEMENTS (INAGRO)

Managing hedgerows always comes with a certain cost. This cost depends on the structure and management type. During the TWECOM-project, we found that the managing cost of managing hedges for biofuel ranges from € 2,7 to € 13,6 per metre. The costs for drying and transportation of wood chip amount to approximately € 12 per ton (25% moisture). These figures show that we need to be able to harvest 28 to 140 ton dry wood per km hedgerow to cover for the expenses.

Because current hedgerows often aren't productive enough and the price for biomass is relatively low, owners will often still have to pay for the management of their hedgerows. An increase of the selling price of woodfuel in the future (in Bretagne the current price is € 100 per ton) and a higher productivity because of good management, has the potential to make the managing of hedgerows for fuel free or even lucrative in the near future.



*To make the maintenance of hedgerows feasible, the selling price of woodchips need to increase.*



*In a playful way, RLLK teaches children about hedgerows.*

### LOCAL VALORISATION OF BIOMASS FROM LANDSCAPE ELEMENTS (RLLK)

In Bocholt (Belgium) the cooperative 'Landschaps-energie CVBA' was founded, aiming to guarantee sustainable local use of biomass from landscape elements. Each member benefits from the cooperation:

- RLLK: *"We aim for a sustainable use of landscape elements which is economically feasible, has benefits for local communities and results in a biodiverse landscape. 'Landschapsenergie cvba' contributes to this in a unique way."*
- Municipality: *"The money spent for heating the school campus is (re-)invested in our own municipality: we pay local farmers and we contribute to a beautiful landscape. That's a strong motivation!"*
- Local farmers: *"The maintenance of the hedgerows provides us with alternative revenues. Moreover, maintained hedgerows have less impact on our crops."*
- School campus: *"By heating the school campus with renewable and local energy we set an example."*

Take a look at the film about Landschapsenergie cvba at [www.twecom.eu](http://www.twecom.eu).

## Do it yourself

You are thinking about starting a local biomass valorisation chain from landscape elements in your region? Here are 5 recommendations to take into account.

- 1 Landscape elements are **multifunctional**. Make sure the harvest of biomass won't have a negative influence on the other functions (ecological, historical, boundary, screening, ...).
- 2 **Cooperation** with all relevant local stakeholders is necessary: municipalities, local farmers, nature conservation organisations, ... It is important that all those who are involved work in a proactive way.
- 3 **Planning** is the key to guarantee an efficient and feasible way of working.
- 4 **All elements** in the valorisation chain have an influence on each other. The way of harvesting will determine the quality of the wood chips, the spatial spread of the coppiced hedgerows will influence the biodiversity, etc.
- 5 **The scale** you are working on determines the feasibility of the different activities. Heating for example can be organised on a small scale (local), while harvesting may work better on a larger (regional) scale.



*By maintaining hedgerows, you allow them to rejuvenate.*



*Planning is the key to success.*



*The scale you work on determines the feasibility.*

# Policy recommendations

During the course of the TWECOM-project, the different partners learned a lot about how policies relating hedgerows and the valorisation of biomass from landscape elements could be improved.

- 1** TWECOM encourages policymakers to **recognise the multiple benefits of hedgerow systems in cross-sector policies**, especially when developing a future vision of the role of biomass in sustainable energy transition which goes hand-in-hand with ecological needs. TWECOM has developed policy guidelines to further strengthen the role of hedges as community builders and energy sources.
- 2** Biomass from landscape elements needs to be **considered as an economical product**, not as a residue or waste product that needs to be transported, processed and disposed of in accordance with waste regulations. Using biomass from hedges in a local supply chain is a valuable process tool for the promotion of hedge products in our society.
- 3** TWECOM suggests **revising the role of hedgerows in the CAP 2014-2020**. Currently it is at the discretion of each member state to include hedges (as a practice) to fulfil the requirements of ecological focus areas (EFA's). Because of the outstanding importance of hedges, especially for largely open (already vastly cleared) and intensively used agricultural areas, we believe it's necessary to include hedges as a permanent and EU wide option for EFA's.



*Policymakers should consider biomass from hedgerows as an economical product.*

- 4** The project revealed **bottlenecks in EU legislation** demonstrating the lack of cross-sectoral integration. Good management of hedgerows by cyclical harvest of biomass on a regular basis, for instance, is ecologically interesting and could attract Red List species. However, there is concern that these ecological benefits might result in farmers being forced to refrain from certain agricultural production methods and to take additional protection measures, which would not be viewed favourably by farmers. Secondly the planting of new hedgerows by farmers is hindered by the fear that they can't be removed once they are planted.
- 5** TWECOM encourages policymakers to **take into account the multiple benefits of hedgerows as well as the dilemmas** when further developing EU policies.

*Twecom aims to promote hedgerows product in our society.*



# TWECOM partners

**Regionaal Landschap Lage Kempen vzw (RLLK)** is the lead partner in the TWECOM project. RLLK is an organisation in the province of Limburg (Belgium). RLLK aims to preserve and maintain the typical landscape of the 'Campine' region through collaboration with relevant stakeholders: farmers, municipalities, nature conservation organisations, touristic organisations, hunting organisations and private landowners. Hedgerows are a typical landscape element in the RLLK region. Concern for the preservation and management of these ancient landscape elements was the main reason to take the initiative to start this TWECOM project.

[www.rllk.be](http://www.rllk.be)



**Agrobeheercentrum – ECO<sup>2</sup> (ABC)** is a non-profit organization that supports local "agro- environmental cooperations", groups of farmers who collaborate on landscape and nature management in Flanders. The ABC Eco<sup>2</sup> is a center of excellence on agro-environmental management. They stimulate and support farmers to integrate landscape and nature management in their farming practice. Agrobeheercentrum fosters local partnerships, encourages networking and cooperation and initiates and implements projects on agrarian landscape and nature management. They develop, collect and distribute knowledge and experience about nature and landscape management and contribute to policy development at all levels, based on practical experience.

[www.agrobeheercentrum.be](http://www.agrobeheercentrum.be)



**Innovatiesteunpunt vzw (ISP)**, the Innovation Support Centre for Agricultural and Rural Development, is the specialized service in Flanders for guiding agricultural entrepreneurs, groups of rural residents and local governments in taking a new future-oriented direction. Embedded within Boerenbond, the largest farmers' organization in Flanders, their activities are focused on a sustainable agriculture in a vibrant rural area, targeting three domains: technical development, business development and rural development.

[www.innovatiesteunpunt.be](http://www.innovatiesteunpunt.be)



**Philipps-Universität Marburg (PUM)** The workgroup on regional studies of the department of geography at the Philipps-University of Marburg is conducting research in the field of renewable energies. They are working together with local partners for the development and implementation of energy transition strategies. One of the main focuses is on bioenergy. In this context hedgerows are regarded as new biomass potential that can be used in bioenergy villages (cooperative local heat supply grids) in the County of Marburg-Biedenkopf and other regions.

[www.uni-marburg.de](http://www.uni-marburg.de)



**The Organic Research Centre (ORC)** is the UK partner for the TWECOM project. ORC is the UK's leading independent research and development institution for organic agriculture and agro-ecology. ORC aims to develop and support sustainable land use, agriculture and food systems, primarily within local economies, which build on organic/agro-ecological principles to ensure the health and well-being of soil, plant, animal, man and his environment. ORC has been involved with agroforestry research for over 10 years, evaluating an agroforestry approach to balancing productivity with protection of the environment as a truly multifunctional land use. The potential for providing a local renewable energy resource from existing woody resources such as hedgerows on farms while maintaining their multiple ecological and social functions was the main reason for ORC's involvement in the TWECOM project.

[www.organicresearchcentre.com](http://www.organicresearchcentre.com)



## TWECOM partners

**Inagro** is the knowledge partner of agricultural and horticultural businesses in the areas of innovation and sustainability. Within its own optimized professional research infrastructure, Inagro's scientific and technical teams devise farming and cultivation techniques ready for practical use. Their partners in these endeavours are universities, university colleges and businesses. Inagro's advisers take the new know-how to the agricultural and horticultural businesses and help them implement these insights, all of which is supported with professional communication tools. Geographically speaking Inagro is located in the very intensive and innovation-driven agricultural and horticultural heart of the province of West Flanders in Belgium.

<https://leden.inagro.be>



### Zuidelijke Land- en Tuinbouworganisatie (ZLTO)

represents around 16,000 farmers and growers in the South-Netherlands. ZLTO supports these green entrepreneurs in their daily operational business and connects them to other sectors and organisations to create new opportunities in sustainable economic growth and social welfare. Several specialised market teams advise and assist the entrepreneurs on innovation in the agricultural sector, innovative cooperatives, new products, renewable energy, sustainable vegetation and animal protection techniques. Within the TWECOM projects, ZLTO has spread knowledge and organised meetings to inform farmers and agricultural nature conservation organisations about the different possibilities. This information has been used by both members and the authorities. At this very moment, different initiatives resulting from the TWECOM project are being set up within the ZLTO-area.

[www.zlto.nl](http://www.zlto.nl)



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## Facts and figures

**661** km  
*hedgerows* were  
recorded in a  
hedgerow vision plan



**851,414.42** kWh  
*heat* was produced by wood chips  
from local landscape elements



**215** *farmers*  
are involved in the initiatives



**6** *business plans*  
were made for local  
valorisation of biomass  
from landscape elements

**1972**  
*people*  
have been reached  
with local and  
regional activities



**495,394**  
*people* have been  
reached via the media



**€ 82,523**  
of extra *funding* was  
generated through  
the project

**19**  
*municipalities*  
are involved in  
TWEKOM  
activities





[WWW.TWECOM.EU](http://WWW.TWECOM.EU)