



European Construction Sector Observatory

Policy measure fact sheet

Netherlands

Energiesprong (Energy Leap)

Thematic Objectives 1 & 3

March 2017

Implementing body:	Platform31
Key features & objectives:	Energiesprong is an innovative market development initiative that uses an integrated supply chain approach to develop attractive and viable net-zero energy building retrofit solutions for the mass market by 2020. Retrofits feature rapid implementation and are paid for by savings to energy bills, at no net additional cost to tenants.
Implementation date:	2010 – 2016 ¹ (Government-funded scheme); 2017 – ongoing (private sector led).
Targeted beneficiaries:	Initial focus on social housing providers and tenants, construction and retrofit companies and tradespeople. Focus later widened to include non-residential (offices, schools, healthcare) building owners and occupiers; and private home owners.
Targeted sub-sectors:	Residential and non-residential building retrofit (supply chains) and energy efficiency.
Budget (EUR):	50 million (Govt funding: 2010-2016) 6 billion (WSW Social Bank funding for Stroomversnelling (Rapids) deal) Additional European project funding awarded: 3.6 million (Transition Zero / H2020) 5.4 million (E=O / Interreg NW Europe)

In a nutshell

Buildings in the Netherlands account for approximately 35% of the country's total energy consumption². Most Dutch residential and non-residential buildings use natural gas and electricity, almost entirely sourced from fossil fuels, to fulfil their energy needs. Rising energy prices (+85% between 2000 and 2010), the need to reduce the use of fossil fuels and the importance of meeting national energy performance objectives have led the Dutch government to seek innovative solutions that can deliver more energy and cost efficient buildings³, as well as Net Zero Energy (NZE) buildings by 2020.

Energiesprong (Energy Leap) is an innovative market development

programme that was launched in 2010 with a EUR 50 million government funded budget to develop attractive and viable net-zero energy retrofit solutions for the mass market by 2020. This revolutionary approach has real potential to provide affordable market-driven energy saving building retrofits at scale. It was commissioned by the Dutch Ministry of the Interior and Kingdom Relations (BZK) and implemented by Platform31, which is a knowledge-sharing network of organisations committed to urban and regional development. It is designed to implement the Energy Innovation Agenda for the Built Environment (IAGO, 2009)⁴ and its primary goal is to create the market conditions for energy neutral buildings in the Netherlands. It creates demand and market opportunities for large-scale retrofits of homes, offices, schools and care homes by creating market-driven partnerships between housing providers, building owners, component suppliers (supply chain) and contractors to design and deliver fully integrated whole building energy saving retrofit solutions.

The key to the success of this measure is that it appeals to both industry and tenants. The retrofits are affordable, quick to implement, long-term performance guaranteed, attractive to both tenants and industry, they provide economies of scale, and are paid for through savings to energy bills. Energiesprong has successfully delivered NZE retrofits to over 2,000 new and existing homes so far, and has agreed a deal to retrofit 111,000 Dutch homes by 2020. The success of the Energiesprong business model has led to it being exported to international markets. The United Kingdom and France, for example, aim to apply this business model and retrofit about 100,000 homes each in the coming years.

General description

The key objectives of Energiesprong are aligned with government objectives in the Innovation Agenda energy neutral Built Environment (IAGO). It aims to deliver energy saving solutions to 5,000 building objects, including 2,500 new buildings and 2,500 renovated buildings⁵. It aims to achieve a target of 45% to 80% energy savings in the built environment and energy-neutral new buildings by 2020. Longer-term, it targets a 50% overall reduction

in energy consumption in the built environment by 2030 (compared to 1990). To achieve these goals, the programme will work to remove obstacles that block innovation and/or upscaling⁶.

The programme's priorities are:

- Accelerated development and implementation of scalable high performance energy saving packages in existing buildings;
- Accelerated development of energy saving concepts which take an integrated (supply chain) approach to design and implementation. This is necessary to realise higher ambitions in new and existing buildings;
- Incorporation of consumer and user friendly requirements into energy efficient building design⁷.

Energiesprong targets performance-based procurement to deliver fully integrated energy efficient retrofits at scale, with long-term guarantees, through market driven innovation. The aim is to achieve a volume deal that makes the solution commercially viable and attractive. Retrofit solutions are designed, manufactured, delivered and installed using a fully integrated industrial supply chain approach⁸.

Energiesprong defines four main parameters for success:

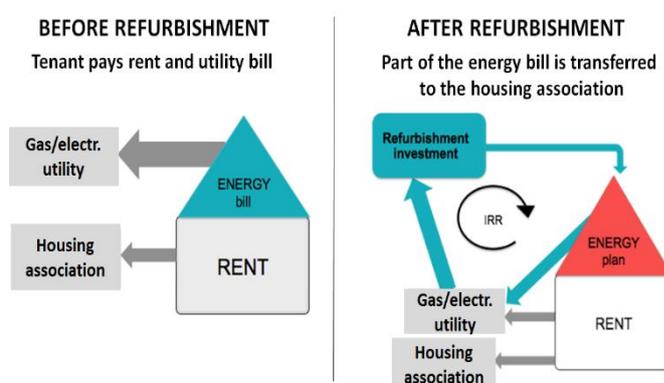
- **Energy performance guarantee** – the retrofit package needs to be delivered with a long-term guarantee (30 years), backed by an insurer;
- **One-week delivery** – installation of the retrofit package should be completed within one week and should enable residents to continue living in their residence during the installation period;
- **Affordability** – investment is paid for by the energy savings. The net present value of the energy cost savings over the lifetime of the retrofit package therefore sets the price target;
- **Attractiveness** – the retrofits must be attractive to tenants, and improve quality of life and the appearance of buildings. It requires a change in how construction companies typically sell retrofit products, to make them desirable, easy and fun⁹.

Under Energiesprong, property owners do not specify a technical solution to retrofit – they specify an energy performance that the retrofit should deliver¹⁰. The retrofit process begins with a 3D scan of a building, inside and outside, and the production of a 3D model. This model is the starting point for a single retrofit plan that brings all NZE components together. The retrofit provides an NZE building envelope which typically involves insulated wall cladding, masonry veneer and windows, removal of internal windows, roof replacements complete with insulation and PV arrays, underground insulation where possible, new kitchens and bathrooms, and installation of an energy unit to provide for onsite generation of renewable energy¹¹.

The retrofit is non-intrusive and can usually be completed within one week and without tenants needing to move out. The result is a warm, comfortable and affordable home or building that is modern and attractive with a long-term quality guarantee¹².

To implement the programme, Platform31 began by bringing together housing associations, contractors and manufacturers to collectively transform neighbourhoods and enhance people's lives by delivering guaranteed 'net zero-energy performance' building retrofits that are implemented without subsidies and are paid for through savings to tenants' energy bills¹³. The Energiesprong business or revenue model (Figure 2) replaces energy bills with an energy plan. Housing associations provide the upfront capital to pay the building companies that provide the retrofits and then recoup the cost through savings to their tenants' energy bills, with no net additional cost to tenants.

Figure 1: Energiesprong business/revenue model



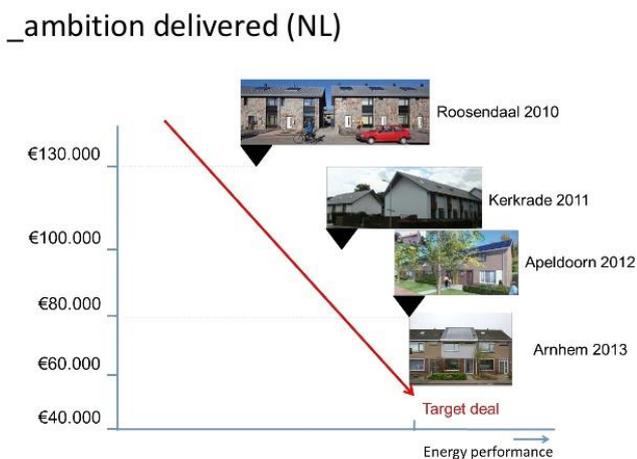
Source: Energiesprong¹⁴

Achieved or expected results

On a practical and conceptual level, the Energiesprong model is revolutionary. It works because it delivers results whilst also being an attractive offer for contractors, housing providers and residents. Unlike existing retrofit models, Energiesprong uses an energy performance contract to guarantee the long-term energy saving performance of retrofits for a minimum of 30 years. This provides the property owner with financial security, giving assurance that the property will perform at the expected level. For the solution provider(s), there is a confirmed order pipeline with a minimum volume that justifies investment in innovation and solution development¹⁵.

The first completed Dutch net zero energy retrofit prototypes were piloted on terrace houses. They generate about one third of the saved energy consumption on-site and the other two thirds is saved via energy efficiency measures. The prototypes successfully achieved an average total reduction in energy use of 150 kWh/m² and a 70% reduction in total household energy consumption, from almost 20,000 kWh to just over 6,000 kWh. The cost of the first pilot in 2010 was approximately EUR 130,000 per unit. The goal is to get the costs down to about EUR 40,000 per unit for a terraced house¹⁶. This is important to make the scheme attractive and financially viable at scale. To date, economy of scale, 3D technologies and pre-fabricated materials have enabled Energiesprong partnerships to lower the unit cost to about EUR 65,000¹⁷, moving it closer to the EUR 40,000 target.

Figure 2: Energiesprong ambition delivered



Source: Jan-Willem van de Groep, Energiesprong Founder¹⁸

A 2016 study for the European Parliament's Committee on Industry, Research and Energy (ITRE) reports that between 2011 and 2013 Energiesprong achieved¹⁹:

- 15.6% reduction in CO₂/m²;
- 19.4% reduction in the consumption of gas/m²;
- 4.3% reduction in the consumption of electricity/m²;
- 0.3% increase in the consumption of heating/m².

By the end of 2013, Energiesprong reported that it had achieved 45% energy savings in 1,000 new houses and 800 existing houses, 60% savings in 180 new houses (+60 in the pipeline) and 160 existing houses (+60 in the pipeline), and 80% savings in 258 existing houses (+174 in the pipeline). 80% savings were also envisaged for a further 85 new houses that were in the pipeline at that time. It had also contributed to the construction of 70 new energy neutral houses and had completed 3 Slim & Snel (Smart & Fast) projects in different regions with varying energy saving ambitions (minimum 45% savings) targeting clusters of about 400 homes per project.

Energiesprong's **major achievement** in 2013 was to broker the Stroomversnelling (Rapids) deal between six housing associations²⁰, four construction companies²¹ and a number of other supporting organisations²² to retrofit **111,000 homes to Net Zero Energy (NZE)**. The deal targets the three main types of social housing: terraced; four-story apartment blocks; and high-rise blocks. The deal features confirmed agreements for 11,000 homes and the prospect for a further 100,000. The Stroomversnelling network is made up of contractors, component suppliers, housing providers, local governments, financiers, DSOs and other parties. The 111,000 home retrofit deal requires an investment of EUR 6 billion, which is being funded by the WSW Social Bank to underwrite government-backed 40-year loans to housing associations²³.

Figure 3: Energiesprong: from prototype to scale

_from prototype to scale (in NL): 111,000 deal



Source: Jan-Willem van de Groep, Energiesprong Founder²⁴

The Energiesprong team has grown from 3 people in 2010 to 45 people in 2014, by which time it had also extended the Stroomversnelling (Rapids) partnership from 6 to 27 housing associations. This has resulted in 200 pilot retrofits in 2014 and a roll-out of 2,000 more retrofits in 2015²⁵.

Energiesprong has also expanded its scope beyond the social housing market in the Netherlands by establishing **additional programmes** and dedicated teams to deliver NZE retrofits to commercial offices, schools and care homes:

- Kantoor vol Energie (Office Full of Energy)²⁶ – 9 office pilot projects with ambitious energy saving objectives ranging from 60 to 93%. They are already yielding good results with at least 60% savings achieved so far.
- School vol Energie (School Full of Energy)²⁷ is working to bring together municipalities and school boards to develop 10 pilots for NZE schools. The Stephanusschool²⁸ pilot is the first school pilot to be launched, although it is still at the initiation stage.
- Langer Huis (Longer at Home)²⁹ – 5 care home pilot projects involving an NZE proposition plus the option of additional value propositions, such as modifications to living spaces (e.g. extensions) or enabling ground floor living. The aim is to enable elderly people to live at home for longer.

Another **key success** of Energiesprong has been the attention and interest it has generated internationally, due to its success in the Netherlands, and its work to make NZE retrofits a market reality in other countries. Achieving scale is essential to the long-term success of Energiesprong and exporting the business model to international markets is an important step to achieving that aim. The larger the market, the bigger the component supply chain. This is important to drive the development of new NZE components, improve quality and drive down costs to the benefit of all³⁰.

Through the Stroomversnelling (Rapids) network, under the Energiesprong banner, **market development teams** have already been established in the United Kingdom and France and they have brought together a group of suppliers and housing corporations in each market that are committed to delivering NZE

retrofits at scale. The first prototypes in both countries are expected in early 2017 and the aim is for both countries to have 100,000 improvement deals in place by January 2018³¹. Energiesprong teams have also been established in Germany, Italy and the US State of New York, and they are currently engaging in early stage market development work.

Additional funding has been obtained to support Energiesprong's market development and international expansion work. Transition Zero is a Horizon 2020 project (2016-2019) with EUR 3.6 million funding. It features partners from the UK, France and the Netherlands and aims to establish the right market conditions in each country to facilitate the delivery of NZE homes at scale. It addresses business modelling, regulations, performance guarantees, financing, public tendering, partnership and bid development, and communications campaigns. E=0 is an Interreg North-West Europe project with a budget of EUR 5.4 million that aims to develop an initial set of deals to deliver NZE retrofits to 11,200 homes in the UK, France, Luxembourg and the Netherlands. It features co-funding for early NZE pilots and supports expansion and solution improvements.

Dutch government funding for the Energiesprong programme ended on 31st December 2016; however, that is not the end of Energiesprong in the Netherlands. Its component programmes are continuing into the foreseeable future. NZE housing and care home retrofits are being run by the Stroomversnelling (Rapids) team and the team are also planning to take NZE to the private residential market in the near future. NZE office retrofits are being run by the Kantoor Vol Energie (Office Full of Energy) team, and NZE school retrofits are being run by the Platform31 team.

Perspectives and lessons learned

From an **implementation perspective**, Energiesprong has been very successful to date and has had a major impact on the construction sector in the Netherlands, with the promise of similar achievements and impacts in other countries. According to the Energiesprong manager, the initiative is successful because it appeals to tenants. Retrofits are carried out quickly (within one week), with no net additional cost to tenants, they deliver comfort and they are visually appealing. Tenants can even preview how the retrofit might look, with the use of 3D glasses. This increases resident buy-in. Energiesprong is also successful because it provides a win-win model for everyone: the tenant has a warm dry home with a new kitchen and bathroom; the owner has a maintenance programme; and the contractor has a new source of income³².

Looking forward, the Energiesprong manager explains that continued and scaled-up success requires building companies to make significant and time-consuming changes to assimilate different products, a different business model and different people. Long-term success will require home mortgage providers to take home energy performance data into account when assessing mortgage affordability. This would enable providers to

differentiate the mortgage loan-to-income (affordability) ratio according to the energy performance of a house. Differentiation would enable house prices, mortgages and energy labels to be correlated. That could mean, for example, that the lower a house's energy label, the lower the loan-to-income ratio³³. Work done by the UK Green Building Council (UKGBC) and the University College London supports this view, arguing that it could result in efficient homes attracting more finance than less efficient homes, which would then be expected to significantly drive demand for home retrofits³⁴.

From a **Dutch industry perspective**, Energiesprong has provided the construction sector with a revolutionary approach and business model that offers both sizeable market opportunities that are attractive to industry (e.g.: retrofit providers) and effective energy saving retrofits that are attractive to clients (e.g.: housing associations) and residents (consumers / end users). According to a business developer at BJW Wonen, a one-stop-shop for retrofits inspired by Energiesprong, the business model and its approach to retrofits is a game changer. Moving to finance retrofits through energy bills is a new concept and has made the retrofit market attractive to businesses. Parallel production of buildings and energy systems has been replaced by integrated industrial production that allows for automation, better quality products and economies of scale³⁵.

From an **international industry perspective**, the project manager of Energiesprong UK became convinced about the potential and opportunity to replicate the approach and business model in the UK while he was working at the National Housing Federation last year. He engaged with housing providers, industry representatives and expert organisations in an effort to convince them that Energiesprong was an effective and economic opportunity to deliver performance-assured whole-house retrofits at scale. He managed to turn their initial interest into commitment by taking a group of 30 representatives on a two-day trip to the Netherlands to see the Net Zero Energy houses and to talk with a range of Dutch stakeholders, including tenants. The housing context and the current political environment in the UK pose different challenges to those faced by the teams in the Netherlands and France. However, UK industry partners are very keen on its application because they view its commercial model as an opportunity to shape their own destiny, significantly improve the quality of the housing stock and tap into a new market that they are co-creating with housing providers³⁶.

From a **resident / tenant perspective**, Energiesprong housing retrofits are not only fast and effective but transformational and visually appealing. A couple living in the small Dutch town of Tilburg are running a small childcare business from their mid-terrace home – one of many owned by the Tiwos housing association that are benefiting from Energiesprong retrofits. The tenants describe the retrofit as transformational, talking about their 'old home' and their 'new home' even though the basic structure of their house is unchanged. Effective insulation has transformed the indoor climate, preventing heat from escaping

and stopping wind and drafts from entering. Tiwos tenants have also received new bathrooms, kitchens and kitchen utensils to complement their new all-electrical heating and power systems, as the whole street has been taken off the gas grid.³⁷

The pre-fabricated cladding is not only bolted to the front and rear of the houses on the terraced street with speed and ease, but the tenants also note that it has transformed a row of conventional grey houses into attractive modern properties with new solar panelled roofs. Greater awareness of their energy use and the ability to make different choices, such as what kind of appliances to purchase and how best to use them, have also enabled them to adapt their behaviour and become more sustainable energy users. Overall, they view the Energiesprong experience very positively, saying that they feel extremely lucky to have received these benefits 'free of charge'³⁸.

Endnotes

- ¹ Government funded Energiesprong programme was discontinued on 31st December 2016; however, Energiesprong sub-programmes are continuing under private sector management. Energiesprong, Energiesprong beëindigd programma's gaan door:
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- ³ House of Energy, Inspiration for Energy Neutral Living, Oct 2011:
<http://www.except.nl/consult/HuisVolEnergie/>
- ⁴ Build Up Skills – The Netherlands – Analysis of the national status quo, 2012:
https://ec.europa.eu/energy/.../sites/.../build_up_skills_nl_status_quo_analysis_en.doc
The Energy Innovation Agenda for the Built Environment is a compilation of innovative policies set out in Clean & Energy Efficient [Schoon & Zuinig] and “The Netherlands, Land of Entrepreneurial Innovation.” The goal is to reduce CO₂ in the built environment. The underlying conviction is that the energy transition can only be done by taking large steps. The focus is on innovation, developing new working processes in the building chain, developing new technological concepts and developing and implementing energy concepts. An energy transition requires an industry transition (the former Ministry for Housing, Communities and Integration [WWI], 2009).
- ⁵ Energy Efficiency Watch, Energy Efficiency Policies in Europe, Case Study: Energiesprong (Energy Leap) in the Netherlands (Intelligent Energy Europe Programme of the European Union):
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- ⁶ Build Up Skills – The Netherlands – Analysis of the national status quo, 2012:
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<http://www.slideshare.net/ArnoSchmickler/energiesprong-ukjuly-2015>
- ⁹ Arno Schmickler, Energiesprong presentation, Mar 2015:
<http://www.housingforum.org.uk/resources/presentations/working-groups/wg-13032015-energiesprong-presentation>
- ¹⁰ Simon Brandon, Towards an orange housing boom, Aug 2015:
<http://www.insidehousing.co.uk/towards-an-oranje-housing-boom/7011284.article>
- ¹¹ Nick Collins, The Beacon Blog: Large scale retrofit in the Netherlands, Interview with Jasper van den Munckhof (Energiesprong Manager), July 2016:
<http://beaconpathway.blogspot.co.uk/2016/07/large-scale-retrofit-in-netherlands.html>
- ¹² Transition Zero: What is Energiesprong?
<http://transition-zero.eu/index.php/about/>
- ¹³ Simon Brandon, Towards an orange housing boom, Aug 2015:
<http://www.insidehousing.co.uk/towards-an-oranje-housing-boom/7011284.article>
- ¹⁴ Energiesprong: How to pay for an Energiesprong house?
<http://energiesprong.eu/net-zero-energy-home-makeovers/>
- ¹⁵ Kerry Mashford, Chief Executive, National Energy Foundation, Energiesprong UK, Industry leaders explore supply chain opportunities provided by Energiesprong housing retrofit market, Feb 2016:
<https://connect.innovateuk.org/web/supply-chain-integration-in-construction/article-view/-/blogs/industry-leaders-explore-supply-chain-opportunities-provided-by-energiesprong-housing-retrofit-market>
- ¹⁶ Steve Cole, Project Coordinator at the National Housing Federation, Oct 2014:
<http://www.ukgbc.org/resources/blog/keep-calm-and-learn-dutch-energiesprong-future-sustainable-homes>
- ¹⁷ BPIE, i24c Memo November 2016, Think Deep: Boosting Renovation Through Innovation & Industrialisation:
http://bpie.eu/wp-content/uploads/2016/11/I24C_Memo-Final.pdf
- ¹⁸ Jan-Willem van de Groep, Energiesprong Founder, Energiesprong presentation:
<http://slideplayer.com/slide/10318416/>
Energiesprong: How to pay for an Energiesprong house?
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- ²⁰ Housing associations: Lefier, City Lander, Woonward, Tiwos, Housing Limburg and Portal.
- ²¹ Ballast Nedam, BAM, Dura Vermeer and Volker Wessels.

- ²² Building Netherlands, Uneto-VNI, FNV, CNV Professionals, Network Conceptual Construction, OnderhoudNL, BNA, NVTB and Contractors Federation.
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- ²⁵ Platform31, Energiesprong, Transition Zero, July 2015:
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- ²⁷ School vol Energie (School Full of Energy):
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<http://www.energiesprong.nl/scholen/>
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- ³⁰ Stroomversnelling (Rapids) – Energiesprong International:
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- ³¹ Steve Cole, Project Coordinator at the National Housing Federation, Oct 2014:
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- ³⁴ UK Green Building Council (UKGBC), Public Consultation on the Energy Performance of Buildings Directive, UKGBC Response:
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- ³⁸ Ibid