

# A green, fair and resilient recovery: the role of energy efficiency and domestic renewables home retrofits

Prashant Vaze, Lionel Mok and Zach Malik, Climate Bonds Initiative

## Introduction

EU's COVID-19 Recovery Strategy and Green Deal's "Renovation Wave"

On 18 March 2020 the European Central Bank (ECB) announced a EUR750bn Pandemic Emergency Purchase Program<sup>1</sup> to buy government and corporate debt. On 9 April 2020, EU Finance Ministers agreed on unlocking a EUR540bn support package<sup>2</sup>.

There is on-going discussion about how the support package is to be allocated between industries. On 17th April, MEPs agreed that the EUR 1tr EU recovery plan should have the European Green Deal at its heart<sup>3</sup>. The emphasis of this plan should not be the mutualisation of existing debt, but to focus on *future investment*. MEPs stressed the recovery and reconstruction package: "should have at its core the *Green Deal* and the digital transformation in order to kick start the economy."<sup>4</sup> The Commission is expected to present its Renovation Wave strategy in which member states will use funds under the new Recovery and Convergence Instrument to foster investment.<sup>5</sup>

This paper argues that publicly supported sustainable renovation programmes have and will make economic recovery greener, fairer and more resilient. Innovative programmes that mobilize private capital result in job creation, increased economic activity, energy poverty mitigation and improvements in health and wellbeing of European citizens.

The paper reviews energy use in homes and barriers to retrofiting, the deleterious effect of the current lock-down on the construction sector, the historic importance of retrofit programmes in previous stimulus programmes. It ends by looking at some existing national energy efficiency schemes that leverage private debt capital and sets out how these might be augmented with public finance.

The challenge ahead of us

COVID-19 is suffocating Europe's economy. Governments across the continent have closed nonessential services, amounting to about one-third of output<sup>6</sup>. As long as these sectors remain closed, annual GDP will drop by 3 percent<sup>7</sup> each month.

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<sup>1</sup> [https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318\\_1~3949d6f266.en.html](https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318_1~3949d6f266.en.html)

<sup>2</sup> <https://www.consilium.europa.eu/en/press/press-releases/2020/04/09/report-on-the-comprehensive-economic-policy-response-to-the-COVID-19-pandemic/>

<sup>3</sup> <https://www.europarl.europa.eu/news/en/headlines/priorities/eu-response-to-coronavirus/20200415IPR77109/COVID-19-meps-call-for-massive-recovery-package-and-coronavirus-solidarity-fund>

<sup>4</sup> <https://www.europarl.europa.eu/news/en/press-room/20200419IPR77407/eu-COVID-19-recovery-plan-must-be-green-and-ambitious-say-meps>

<sup>5</sup> <https://www.euractiv.com/wp-content/uploads/sites/2/2020/05/Green-Deal-Recovery-Package.pdf>

<sup>6</sup> <https://blogs.imf.org/2020/03/30/europes-COVID-19-crisis-and-the-funds-response/>

<sup>7</sup> <https://blogs.imf.org/2020/03/30/europes-COVID-19-crisis-and-the-funds-response/>

Today's challenge is stopping COVID-19; tomorrow's is ensuring jobs and economic activity (especially for SMEs) recovers so as to make the economy more resilient against future shocks and fairer. But the on-going challenge for the decades to come is climate change.

We urge governments to incorporate sustainable renovation programmes as part of any stimulus package. Energy efficiency can have a 'super-multiplier' effect on jobs and economic activity increasing demand through:

- direct expenditures on energy efficiency,
- indirect second round effects through the wages of low-paid construction workers with propensities to consumer, and
- long-term effects through the investment permanently making the economy more resource efficient and productive lower health related work absences.<sup>8</sup>
- Reducing the health effects associated with people being exposed to poor indoor air quality for extended periods of time during lockdown.<sup>9</sup>

### Energy use in homes and barriers to private investment in retrofits

In 2017, households consumed 27.2 percent of final energy consumption in the EU-27<sup>10</sup>, and are responsible for approximately 40 percent of the EU's GHG emissions.<sup>11</sup> Addressing our housing stock's energy efficiency is essential if the EU-27 and the UK are to achieve their net zero ambitions. Tighter building standards have greatly reduced net energy usage of *new* home. But over half of the EU's building stock was constructed pre-dates 1970 before building energy efficiency regulations were widely introduced. Analysis suggests that with major renovation energy use by a building can be reduced by 50 to 80 percent depending on the age of the home<sup>12</sup>. The current annual renovation rate of homes and buildings in Europe is roughly 1.2 percent<sup>13</sup> of which only 0.2% is deep retrofit<sup>14</sup>. To meet Paris Agreement objectives, around 250 million homes across the EU will need energy renovation<sup>15</sup>. This implies a future annual home renovation rate of 3.4 percent – almost three times the current European average<sup>16</sup>.

At the national level the investment is estimated at EUR10-30bn in a medium sized country like Belgium or Austria, EUR50-150bn for France and EUR100-300bn for Germany.<sup>17</sup>

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<sup>8</sup> John Hick's coined the term 'super-multiplier' to describe spending government investment in areas like education or infrastructure that increase the efficiency of the economy. Hahn, Frank. "John Hicks the Theorist." **The Economic Journal**, vol. 100, no. 401, 1990, pp. 539–549. JSTOR, [www.jstor.org/stable/2234139](http://www.jstor.org/stable/2234139). Accessed 18 May 2020.

<sup>9</sup> Household air pollution is one of the leading causes of disease and premature death in the developing world, according to the World Health Organization. <https://www.who.int/airpollution/household/health-impacts/en/>

<sup>10</sup> <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190620-1>

<sup>11</sup> [https://ec.europa.eu/info/news/new-rules-greener-and-smarter-buildings-will-increase-quality-life-all-europeans-2019-apr-15\\_en](https://ec.europa.eu/info/news/new-rules-greener-and-smarter-buildings-will-increase-quality-life-all-europeans-2019-apr-15_en)

<sup>12</sup> EU ZEBRA2020 analysis – see <https://zebra2020.eu>

<sup>13</sup> <https://www.rockwoolgroup.com/our-thinking/blog/sustainable-home-renovation-solutions/>

<sup>14</sup> <https://www.euractiv.com/wp-content/uploads/sites/2/2020/05/Green-Deal-Recovery-Package.pdf>

<sup>15</sup> <https://www.corporateleadersgroup.com/reports-evidence-and-insights/publications/publications-pdfs/renovation-roadmap-making-europes-homes-fit.pdf>

<sup>16</sup> <https://www.corporateleadersgroup.com/reports-evidence-and-insights/publications/publications-pdfs/renovation-roadmap-making-europes-homes-fit.pdf>

<sup>17</sup> [https://www.zebra2020.eu/website/wp-content/uploads/2014/08/Zebra2020\\_Deliverable-5.1\\_Report.pdf](https://www.zebra2020.eu/website/wp-content/uploads/2014/08/Zebra2020_Deliverable-5.1_Report.pdf)

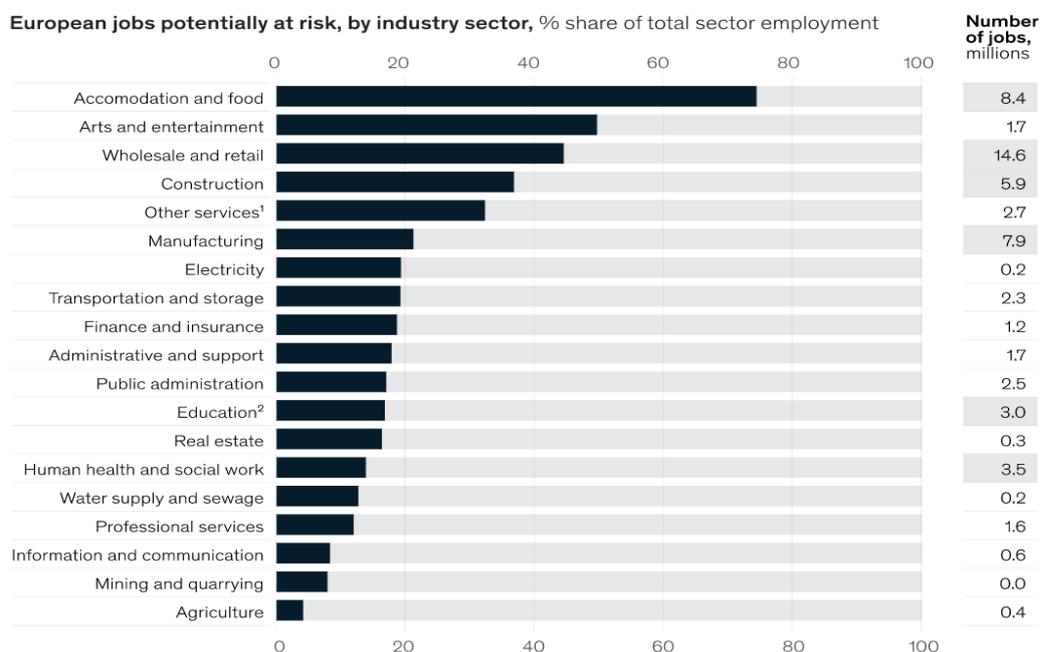
The reasons for chronic underinvestment in deep energy efficiency retrofits are well known. The capital costs typically exceed EUR20k per home, which is more than many Europeans have in their saving, thus requiring a loan. The payback period through reductions in energy bills extends over many years and may not be possible at commercial interest rates. Also, homeowners lack the skills or knowledge to evaluate different energy efficiency options and the multiple benefits of the renovation. Finally, the ‘hassle’ of arranging the works is off-putting. Tenants often find their landlord is unwilling to fund the investment if the benefits go to the tenant. In the current economic down-turn people’s willingness to fund energy efficiency will be even lower.

It is therefore essential that government step in and intervene to help set up scalable programmes supporting homeowners throughout the renovation journey and offering affordable financing. The EuroPACE initiative is demonstrating how such public-private partnership can bring lasting value to public administrations and European citizens.

### Construction Sector has been Hit Hard by COVID-19

Construction projects have been delayed, and some cancelled. France and Italy, for example, have suspended all construction. The Economic Institute for Construction and Housing predicts construction production will shrink by over 15 percent<sup>18</sup>. COVID-19 is impacting 60 percent of the European construction equipment industry<sup>19</sup>.

Regarding employment, global consultancy McKinsey & Co. forecasts that 5.9 million European jobs will be lost in the construction industry. In the UK alone, half a million jobs in the construction industry could be at risk<sup>20</sup>.



**Figure 1:** Number European jobs potentially at risk, by sector, percentage share of total sector employment. Source: [McKinsey & Co.](#)

<sup>18</sup> <https://nltimes.nl/2020/04/03/construction-industry-harder-hit-COVID-19-2008-economic-crisis>

<sup>19</sup> <https://www.cece.eu/news/COVID-19-significantly-impacting-60-of-the-european-construction-equipment-industry>

<sup>20</sup> <https://www.independent.co.uk/news/uk/politics/boris-johnson-lockdown-strategy-coronavirus-trade-body-warning-a9495176.html>

Crucially, 76 percent of small and medium-size enterprises (SMEs) jobs in the construction sector are at risk<sup>21</sup>. Employment in SMEs accounted for more than EUR4.3tn in value added in the EU-27 plus the United Kingdom in 2019<sup>22</sup>. Energy efficiency not only targets the buildings sector but the construction too. In fact, analysis suggests that around 60% of expenditure on home energy efficiency retrofits goes towards labour, delivering strong employment growth<sup>23</sup>.

## The Case for Energy Efficiency and Domestic Renewable Energy Investment

COVID-19 may have exacerbated energy inequality by leading to job losses in populations that are most likely to struggle to pay energy bills, while at the same time, increasing their energy bills during the lock-down by increasing the time people have to spend at home. Investing in energy efficiency renovation programmes by retrofitting wall and window insulation, new heating, cooling and ventilation systems, and small-scale domestic renewables like solar PV, ground-source heat pumps or biomass boilers could pay multiple dividends:

**Job Creation:** The economy will be stimulated through increased construction activity – which generates about 9 percent of Europe’s GDP. These industries directly account for 18 million jobs<sup>24</sup>. This will be particularly impactful for SMEs **who** contribute more than 70 percent to the EU’s building sector. The European Commission estimates that up to 2 million jobs could be created or retained because of energy efficiency<sup>25</sup>.

**Alleviating Energy Poverty:** Energy poverty affects millions of Europeans each year. Around 40 million Europeans cannot keep their home adequately warm in the winter<sup>26</sup>, and 98 million Europeans cannot keep their home adequately cool in the summer<sup>27</sup>. Around 7 million Europeans receive disconnection notices per year<sup>28</sup>. In the current crisis, forced disconnections must stop. Targeting investment in buildings, especially on the rental market, can support vulnerable, energy poverty people. Efficient buildings can cost up to 37 percent less to operate as they consume less water and electricity<sup>29</sup>.

The reasons are clear. Now, more than ever, investment in energy efficient, sustainable homes is needed. Member states should align EU’s 2030 climate and energy targets with ambitious renovation initiatives.

## Energy Efficiency Stimulus Case Studies

A century ago, the Spanish flu tore through what was left of Europe after the First World War. Instead of succumbing to the pandemic, governments embarked on ambitious plans to kickstart the economy. The UK embarked on its ‘Homes Fit for Heroes’ policy, replacing slum housing with modern, sanitary homes. The 1919 Housing Act required local government to

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<sup>21</sup> <https://www.mckinsey.com/industries/public-sector/our-insights/safeguarding-europes-livelihoods-mitigating-the-employment-impact-of-COVID-19>

<sup>22</sup> <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20181119-1>

<sup>23</sup> <https://www.iea.org/articles/energy-efficiency-and-economic-stimulus>

<sup>24</sup> [https://ec.europa.eu/growth/sectors/construction\\_en](https://ec.europa.eu/growth/sectors/construction_en)

<sup>25</sup> [https://www.eurima.org/uploads/Eurima-Financing\\_Mechanisms.pdf](https://www.eurima.org/uploads/Eurima-Financing_Mechanisms.pdf)

<sup>26</sup> <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190131-1>

<sup>27</sup> <http://bpie.eu/wp-content/uploads/2015/10/Alleviating-fuel-poverty.pdf>

<sup>28</sup> [https://www.acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Publication/ACER%20Market%20Monitoring%20Report%202015%20-%20CONSUMER%20PROTECTION%20AND%20EMPOWERMENT.pdf](https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202015%20-%20CONSUMER%20PROTECTION%20AND%20EMPOWERMENT.pdf)

<sup>29</sup> <https://foresightdk.com/finding-the-investment-wow-factor-in-green-buildings/>

survey and remedy deficiencies in the housing stock. Central government provided subsidies to help local public-private partnership construct homes on an unimaginable scale. Other European countries have implemented similar programmes after the two world wars to provide macro-economic stimulus, rebuild war damaged homes and materially improve the quality of lives of poorer households.

Following the 2008 financial crisis, the extra spending on energy efficiency programmes from governments greatly helped the recovery process, in particular aiding the hard-hit construction sector. Equally, stimulus funds unlocked the development of critical low-carbon technologies, like wind and solar, which have since prospered over the past decade. The current crisis is different from the 2008 crisis but offers some valuable lessons on how governments have used energy efficiency stimulus packages to promote sustainable recovery. Below are examples of how governments incorporated energy efficiency investment in response to the financial crisis.

#### United States of America

During the 2008 financial crisis, the US economy experienced the sharpest decline since 1958, falling by 5.4 percent in the last quarter of 2008<sup>30</sup>. The USD787bn stimulus package, passed in February 2009, was called the American Reinvestment and Recovery Act (ARRA). The Act focused on four categories of energy-related investments<sup>31</sup>: energy efficiency, the electric grid, transportation, and clean energy.

The ARRA earmarked USD92bn<sup>32</sup> for clean energy technologies, which included tax incentives, loan guarantees and subsidies for research and development in clean technologies<sup>33</sup>. More than USD100bn in private capital was mobilised to manufacture wind, solar, and other low-carbon sources<sup>34</sup>. Also, ARRA provided USD25bn to state and local governments to enable investment in building and home energy conservation programmes, energy audits, fuel conservation programmes, and building retrofits<sup>35</sup>. In fact, the early PACE programmes, residential and commercial renovation initiatives, were started in San Francisco, Los Angeles and Palm Desert using the ARRA funds. To date, those programmes have generated more than \$7b in funded projects and more than 120,000 local jobs.<sup>36</sup> EuroPACE is inspired by the success of the US PACE program. The EuroPACE initiative presents an opportunity to boost sustainable residential renovation through an innovative financing tool leveraging on the public support to attract private capital.

This encouraged states to update energy-efficient building codes and regulatory policies to promote demand-side management programmes by energy utilities. ARRA created 900,000 jobs in clean industries from 2009 to 2015, of which 200,000 were from programmes related to energy efficiency in buildings<sup>37</sup>.

Overall, the ARRA strengthened local governments' clean energy policies and contributed positively to the renewable energy sector. Since 2008, wind power installations have almost

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<sup>30</sup> <http://www.pewtrusts.com/~media/assets/2010/04/28/costofthecrisisfinal.pdf>

<sup>31</sup> <https://academic.oup.com/reep/article-abstract/7/1/136/1577855?redirectedFrom=fulltext>

<sup>32</sup> <https://www.sciencedirect.com/science/article/pii/S1364032114008855>

<sup>33</sup> [https://drodrik.scholar.harvard.edu/files/dani-rodrik/files/green\\_industrial\\_policy.pdf](https://drodrik.scholar.harvard.edu/files/dani-rodrik/files/green_industrial_policy.pdf)

<sup>34</sup> [https://dash.harvard.edu/bitstream/handle/1/5688917/RWP11-048\\_Aldy.pdf?sequence=1&isAllowed=y](https://dash.harvard.edu/bitstream/handle/1/5688917/RWP11-048_Aldy.pdf?sequence=1&isAllowed=y)

<sup>35</sup> [https://www.globaldashboard.org/wp-content/uploads/2009/HSBC\\_Green\\_New\\_Deal.pdf](https://www.globaldashboard.org/wp-content/uploads/2009/HSBC_Green_New_Deal.pdf)

<sup>36</sup> <https://pacenation.org/pace-market-data/>

<sup>37</sup> [https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160225\\_cea\\_final\\_clean\\_energy\\_report.pdf](https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160225_cea_final_clean_energy_report.pdf)

quadrupled and solar power increased more than fifty-fold<sup>38</sup>. Between 2008 and 2016, the cost of utility-scale solar fell by 60 percent, with solar becoming cost competitive with fossil fuels in 20 states<sup>39</sup>. Consequently, 270 million tonnes of CO<sub>2</sub> emissions were avoided due to the uptake of renewables between 2008 and 2012<sup>40</sup>. Furthermore, the ARRA revived the US electric vehicles (EVs) industry, supporting 16 auto manufacturers to offer 28 new electric vehicle models. The number of EVs on the road rose to 400,000 in 2015 from a few thousand in 2008<sup>41</sup>.

## South Korea

In the final quarter of 2008, South Korea's GDP declined by 4.5 percent, the second-largest contraction on record worldwide<sup>42</sup>. In response, On 6 January 2009, the government launched its Green New Job Creation Plan, a KRW50tr (USD36bn) package spent over the period 2009-2012. The plan aimed to create 960,000 jobs mainly in construction<sup>43</sup>. An approximate total of USD28.8bn (about 80 percent of the total plan) was allocated to climate-related investment themes<sup>44</sup>. At the time, Korea's allocation for green stimulus as a proportion of its total plan was the highest amongst all major economies implementing fiscal stimulus plans.

While USD1.5bn was dedicated to renewable energy, energy efficiency in buildings emerged as the highest invested area in the South Korean Green New Deal. The plan allotted around USD6bn for improving energy conservation in villages, schools, and domestic households. Moreover, the plan included the construction of 2 million green homes and LED lighting installation across public facilities<sup>45</sup>. Going further, the government used the funds to develop a green building code for larger residential buildings, which required a 20 percent improvement in energy efficiency. Simultaneously, a financial incentive programme was provided for the retrofitting of homes. Eventually, a "Building Energy Certification Programme" was extended to all building types<sup>46</sup>.

In July 2009, the government adopted a Five-Year-Plan for Green Growth. The USD83.6bn plan expanded beyond the Korean Green New Deal in terms of overall government investment<sup>47</sup> and intended to create 950,000 jobs. Specifically, investments were made in the areas of climate change and energy, sustainable transportation, and the development of green technologies. Later, on 29 December 2009, the Korean National Assembly accepted a "Framework Act on Low Carbon, Green Growth", which the then President – Lee Myung-Bak – signed into law on 13 January 2010. This Framework Act requires the government to establish and implement a national strategy, action plans, and a detailed 5-year plan for a planning period of 20 years, focusing on various aspects of climate change mitigation and

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<sup>38</sup> [https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Mar/IRENA\\_RE\\_Capacity\\_Statistics\\_2019.pdf](https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Mar/IRENA_RE_Capacity_Statistics_2019.pdf)

<sup>39</sup> <https://obamawhitehouse.archives.gov/the-press-office/2016/02/25/fact-sheet-recovery-act-made-largest-single-investment-clean-energy>

<sup>40</sup> <https://www.sciencedirect.com/science/article/pii/S1364032114008855>

<sup>41</sup> <https://obamawhitehouse.archives.gov/the-press-office/2016/02/25/fact-sheet-recovery-act-made-largest-single-investment-clean-energy>

<sup>42</sup> <https://portal.research.lu.se/ws/files/5761857/8832015.pdf>

<sup>43</sup> [https://www.globaldashboard.org/wp-content/uploads/2009/HSBC\\_Green\\_New\\_Deal.pdf](https://www.globaldashboard.org/wp-content/uploads/2009/HSBC_Green_New_Deal.pdf)

<sup>44</sup> <https://portal.research.lu.se/ws/files/5761857/8832015.pdf>

<sup>45</sup> [https://www.globaldashboard.org/wp-content/uploads/2009/HSBC\\_Green\\_New\\_Deal.pdf](https://www.globaldashboard.org/wp-content/uploads/2009/HSBC_Green_New_Deal.pdf)

<sup>46</sup> [http://siteresources.worldbank.org/INTSDNET/Resources/5944695-124775731647/INFRA\\_Korea\\_Newsletter.pdf](http://siteresources.worldbank.org/INTSDNET/Resources/5944695-124775731647/INFRA_Korea_Newsletter.pdf)

<sup>47</sup> <http://keia.org/sites/default/files/publications/LeeJK.pdf>

adaptation<sup>48</sup>. The Framework Act includes a system of mandatory reporting of carbon emissions by all carbon- and energy-intensive industries and provides a basis for the creation of a carbon trading system<sup>49</sup>. The Framework Act also plans to reduce greenhouse gas emissions by 30 percent by 2020<sup>50</sup>.

## China

China, too, felt the spill-over effects from the 2008 financial crisis. Although China managed to sustain economic growth – 9.6 percent in 2008 and 9.2 percent in 2009 – these figures were much less than the 14.2 percent in 2007<sup>51</sup>. On 9 November 2008, the Chinese government launched a two-year stimulus package of RMB4tr (USD586bn)<sup>52</sup>. More than one-third – a total of about USD221bn – went towards green investments<sup>53</sup>.

The government invested USD46.9bn on energy efficiency, clean vehicles, and new electricity grid infrastructure<sup>54</sup>. Establishing more flexible and sophisticated grid infrastructure helped increase the efficient use traditional fuels and renewable energy sources. Investment in other clean energy technologies supported pollution control and ecological improvements and structural upgrades in energy intensive industries. Ultimately, the country's stimulus package contributed to financing the start of China's green economy transition.

Even though the renewable energy sector was not the main recipient of the 2008 stimulus package, the sector has since received government financing, especially after the introduction of the country's 12<sup>th</sup> Five-Year-Plan<sup>55</sup>. In this context, the Chinese government has placed a priority on the investing in renewable energy and has ambitious goals for the sector.

On 10 December 2016, China's National Energy Administration (NEA) agreed on its 13<sup>th</sup> Five-Year-Plan (2016-2020) for Renewable Energy. The NEA and the National Development and Reform Commission (NDRC) plan to spend more than USD360bn developing renewable energy and create 13 million jobs in the sector by 2020<sup>56</sup>. Also, by 2030, one-fifth of the country's electricity consumption is forecasted to come from non-fossil fuel sources<sup>57</sup>.

## Europe

The European Commission (EC) responded to the financial crisis with the European Economic Recovery Plan (EERP) worth EUR200bn<sup>58</sup>. A third of the total stimulus addressed energy efficiency initiatives<sup>59</sup>. At country-level, green investments accounted for 13.2 percent of the total stimulus, with the priority being climate protection and energy efficiency. The majority of spending was on energy efficiency of buildings (75 percent). The remainder was on the rail sector (20 percent) and vehicles (5 percent)<sup>60</sup>. In April 2009, the European Energy Programme

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<sup>48</sup> <https://www.climate-laws.org/cclow/geographies/south-korea/laws/framework-act-on-low-carbon-green-growth-regulated-by-enforcement-decree-of-the-framework-act-on-low-carbon-green-growth>

<sup>49</sup> [http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/05/SOUTH\\_KOREA.pdf](http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/05/SOUTH_KOREA.pdf)

<sup>50</sup> [http://siteresources.worldbank.org/INTSDNET/Resources/5944695-1247775731647/INFRA\\_Korea\\_Newsletter.pdf](http://siteresources.worldbank.org/INTSDNET/Resources/5944695-1247775731647/INFRA_Korea_Newsletter.pdf)

<sup>51</sup> <https://www.hindawi.com/journals/ecri/2012/961694/>

<sup>52</sup> [http://siteresources.worldbank.org/INTSDNET/Resources/5944695-1247775731647/INFRA\\_China\\_Newsletter.pdf](http://siteresources.worldbank.org/INTSDNET/Resources/5944695-1247775731647/INFRA_China_Newsletter.pdf)

<sup>53</sup> <https://voxeu.org/article/urgently-needed-global-green-new-deal>

<sup>54</sup> [https://www.globaldashboard.org/wp-content/uploads/2009/HSBC\\_Green\\_New\\_Deal.pdf](https://www.globaldashboard.org/wp-content/uploads/2009/HSBC_Green_New_Deal.pdf)

<sup>55</sup> [http://siteresources.worldbank.org/INTSDNET/Resources/5944695-1247775731647/INFRA\\_Korea\\_Newsletter.pdf](http://siteresources.worldbank.org/INTSDNET/Resources/5944695-1247775731647/INFRA_Korea_Newsletter.pdf)

<sup>56</sup> <https://www.csis.org/east-green-chinas-global-leadership-renewable-energy>

<sup>57</sup> <https://www.csis.org/east-green-chinas-global-leadership-renewable-energy>

<sup>58</sup> [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms\\_194175.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_194175.pdf)

<sup>59</sup> <https://www.csis.org/analysis/assessing-global-green-stimulus>

<sup>60</sup> [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms\\_194185.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_194185.pdf)

for Recovery (EEPR) was adopted. A sum of EUR4bn supported new energy infrastructure, including offshore wind and carbon capture and storage demonstration<sup>61</sup>. This included a EUR1bn “European energy-efficient buildings” initiative that encouraged member countries to promote green technologies<sup>62</sup>.

## A green recovery

### Principles for directing stimulus finance

EU Governments are currently providing emergency support to vulnerable households and small businesses, while the “lock-down” measures are in force. Such support meets the immediate need to replace wages and business revenues, and are provided in a relatively untargeted way, since the public policy imperative is to ensure the survival of viable businesses.

As restrictions ease, an entirely different approach will be needed. Business will continue to struggle due to weak private sector demand. Cash transfers will not be sufficient, institutions and frameworks that can direct investments and spending towards goods and services that create a greener future will be vital.

The recovery must be guided by a set of principles that ensure stimulus budget helps the economy recover and address EU’s climate goals to build resilience for future crises. To provide effective stimulus to the economy the sectors that government supports should:

- **Have excess capacity** - The sector is presently suffering from short-term lack of demand resulting in under-utilised labour capacity,
- **Be shovel-ready**– it is important that the investment projects can be initiated quickly with little time elapsing between approval of the funding and commencement of work.
- **Promote public-private partnership** – Public funds are not sufficient to meet the renovation needs, thus there is a need to stimulate private capital to boost the clean energy transition
- **Target SME businesses** – SMEs typically have smaller cash reserves and poorer access to bank lending or equity or debt capital. They are more at risk of failing in an economic down-turn than larger better capitalised businesses
- **Provide social and health benefits** – the project should provide social and health benefits, especially for the poorer sections of society, and other vulnerable groups
- **Have local economic linkages** – ideally the projects should make use of local labour and nearby supply chains to increase the economic multiplier impact
- **Cost-effective carbon reduction** – the project should ideally deliver good value for money in terms of life-time carbon savings per unit investment
- **Utilise existing policy and delivery networks** – to deliver benefits on the ground quickly it is preferable for the stimulus funding to be routed through existing mechanisms rather than design new policies and identify delivery partners.

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<sup>61</sup> <https://op.europa.eu/en/publication-detail/-/publication/cc84513b-71c0-45c9-aca1-a3f5818a6e5c>

<sup>62</sup> [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms\\_194185.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_194185.pdf)

At the time of writing<sup>13</sup> environment ministers and a large number of business leaders, NGOs and think-tanks and politicians have written jointly in support of a “Greenrecovery”<sup>63</sup> establishing a Green Recovery Investment Package to support the transition towards climate neutrality and healthy ecosystems. A particular concern is that the investment in the wrong sort of businesses risks locking-in the continued use of fossil fuels.

Investment in energy efficiency and small-scale renewables stimulates jobs and economic activity, helps Europe’s energy poor households and helps EU attain its net-zero carbon target. It is for this reason commentators are asking for the “renovation wave”<sup>64</sup> (announced in the European Green Deal) to become one of the key pillars of the stimulus package that the EC will launch to restart the economy<sup>65</sup>. The energy efficiency supply chain has also set out its proposals for a renovation fund.<sup>66</sup>

Funding will be key. To ensure that European buildings are sufficiently energy efficient by 2050, an annual expenditure of at least EUR75bn will be needed<sup>67</sup>. Investment at this sort of scale requires partnership arrangements with government funds leveraging in private investments from home-owners. Fortunately, initiatives in some Member States such as EuroPACE in Spain, Energiesprong in the Netherlands, UK and France, the New Green Saving initiative in the Czech Republic<sup>68</sup>, and district renovation schemes in Lithuania<sup>69</sup> provide successful models for deploying large-scale renovations at a local level. Other notable initiatives include Italy’s ‘EconBonus’, an income tax deduction for interventions aimed at improving home energy efficiency<sup>70</sup>, and the ‘Picardie Pass Renovation’, a financial instrument designed by the regional Public Office for Energy Efficiency in France to tackle the energy transition<sup>71</sup>.

### Stimulus measures need to leverage existing energy efficiency programmes

There are several successful national energy efficiency delivery programmes where there are existing institutions to handle finances, organise contractors, market the service. It would be counter-productive to create new schemes from scratch. Often the number of homes that these programmes can successfully deliver has been held back due to insufficient scale, high costs of capital and overly-long payback periods for the underlying measures.

Governments seeking to implement energy efficiency packages as part of a stimulus package, need to act quickly, and use existing delivery mechanism adjusting them for the changed circumstances caused by COVID-19.

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<sup>63</sup> <https://s3.eu-central-1.amazonaws.com/euobs-media/0babad78ca6e324155dc4e1201c79a07.pdf>

<sup>64</sup> <https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/file-renovation-wave>

<sup>65</sup> <https://www.euractiv.com/section/energy/opinion/building-renovations-can-unleash-future-proof-jobs-for-a-green-recovery/>

<sup>66</sup> <https://www.renovate-europe.eu/about-the-campaign/renovation-fund-for-all-europeans/>

<sup>67</sup> [https://www.europarl.europa.eu/doceo/document/ECON-PR-641227\\_EN.pdf](https://www.europarl.europa.eu/doceo/document/ECON-PR-641227_EN.pdf)

<sup>68</sup> <https://www.sfzp.cz/en/administered-programmes/new-green-savings-programme/>

<sup>69</sup> [https://ec.europa.eu/regional\\_policy/en/projects/best-practices/lithuania/2114](https://ec.europa.eu/regional_policy/en/projects/best-practices/lithuania/2114)

<sup>70</sup> <https://www.idealista.it/en/news/financial-advice-italy/2020/01/13/2658-green-building-incentives-italy-how-make-your-home#Eco-bonuses+for+energy+saving>

<sup>71</sup> <https://www.fedarene.org/picardie-pass-renovation-11059>

This section provides a brief outline of the energy efficiency financing models that were identified as part of a feasibility study<sup>72</sup> available on the EuroPACE website. of financial instruments by the EuroPACE Consortium

In particular, we identify several case studies from across Europe:

- **The EuroPACE model**, inspired by the PACE model from the US, is designed to make home renovation simple, affordable and reliable for all Europeans by combining affordable financing with people-centric technical assistance and smart funding from the public sector. Energy efficiency, renewable energy, water conservation, including green roofs, fuel cells, batteries and other innovative improvements can be funded. The first pilot program, [HolaDomus](#), was launched in Catalonia, Spain to offer support and financing to realize eco-sustainable home renovations.
- **The Energiesprong model**, which aims to deliver standardised net-zero retrofits to multiple social housing units by working with housing associations instead of individual homeowners, to achieve increased energy efficiency and exploit efficiencies of scale. The model advocates use of off-site assembly of the new energy efficient facades to reduce disruption to occupiers and ensure high and consistent quality. An “Energiesprong” retrofit is provided for and financed by the housing association by combining future savings on energy cost from tenants, repairs and maintenance.
- **The Oktave model**, a one-stop-shop for different services connecting energy renovations contractors, building professionals and financing organisations. It provides support and clarity to individuals on energy renovation, project definition and financing.
- **The KfW model** which supports energy efficiency investments in residential buildings through the “Energy-efficient Construction and Refurbishment” programme (the KfW programme) and Effizienzhaus (Efficiency House) standard. This long-established programme as well as low interest rates provides homeowners with grants that meet a percentage of the capital costs of the energy efficiency retrofit. The grant can meet as much as 27.5 percent of costs for an ambitious retrofit. The tenor of loan can be 30 years. The scheme has triggered over EUR 300bn of investments over the last 14 years.

When designing future energy efficiency retrofit programmes that scale-up and provide greater public support need to understand how stakeholder perspectives may have shifted in light of CoVid-19.

- **Tenants:** Retrofits need to be carried out quickly and without hassle, with no additional cost to tenants. If economic behaviour shifts in favour of people spending more time at home, then there will be demand for improved comfort and cost saving appliances. Suppliers and contractors will need to be conscious of tenants’ health concerns, although this could incentivise shorter surveying and installation periods.
- **Owners:** Owners will want capital outlays to be as low as possible and need confidence that debt servicing costs will be recouped from the tenant or from their own savings for owner-occupier units. Rental market dynamics may change in

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<sup>72</sup> <https://www.climatebonds.net/resources/reports/europace-24-feasibility-study-financial-instrument-and-review-existing-retrofit>

sectors such as student or low-income-housing, as universities take their content online. During periods of economic uncertainty, there also needs to be extra comfort that warranties and guarantees that technologies will perform to specification will be upheld.

- **Lenders:** Typical lending considerations apply, as during any recession. Risk aversion and need for securitisation or guarantees. Due diligence and credit checks will be important as always, especially if delinquency might increase due to recession. Lenders will need to provide competitive financing to owners, those who can benefit directly or in-directly (through on-lending principles) from low-interest rates in capital markets are better positioned to do so.
- **Suppliers:** Supply chains may be disrupted, but this is also an opportunity to create local manufacture, contracting and installation industries that provide higher value-added services. Models that can deploy drone sensing and automate design optimisation and calibration, while also using 3-D printing to deliver these parts, could be developed, provided that the scale is available.

Furthermore, we identify strategic priorities that must be considered and maintained for these programmes to scale.

- **Simplify the renovation process:** Helping consumers navigate the energy efficient home renovation market is as important as ever. System designers must consider the user experience. Platforms that can harmonise and or aggregate contractors, suppliers and other service providers and support consumers throughout the renovation process will be vital.
- **Create and aggregate demand:** Consumer bandwidth to pay for retrofits during a recession may be constrained, but this ultimately depends on the value of the project and the time-value/opportunity cost of the capital spent. But this is not the only constraint on consumer demand. Programme architects should not underestimate how this recession has already shaped consumer understanding of climate, environmental and human-existential risk. Additionally, translating consumer demand into execution of projects requires that the consumer experience is managed throughout the process, from discovery to delivery.
- **Promote Transparency and Consistency:** Programmes need to integrate energy efficiency provisions into clear regulatory frameworks, that are supported with clear and accessible information. This can include creating a strong, enforceable standard(s) that can be reflect varying degrees of retrofit ambition.
- **Incentivise ambition:** Programmes need to be encouraged ambitious retrofit. For example, in the case of KfW's Effizienzhaus retrofit scheme, deeper retrofits trigger higher rates of subsidy and the Energiesprong package requires treated homes to be net-zero to qualify.
- **Lower the cost of finance:** Irrespective of ambition, the financing of these programmes must be attractive to borrowers and secure for lenders. Government subsidies, or as in the case of KfW, the on-lending (and thus channeling) of funds secured in capital markets by institutions with strong credit ratings, passed on to local/retail banks that can administer the funding through existing channels.
- **Plug the knowledge gap:** Programmes can act as a platform that enables customers can approach to understand their technological options, the contractors available, the costs, risks and guarantees when seeking to finance an energy efficiency retrofit.

For example, Oktave connects consumers with qualified and certified contractors and provides access to an independent advisor that assists the consumer through the process of selecting and managing the contractors.