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Green investments in a European Growth Package

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SUPPORTING INVESTMENTS: A KEY ELEMENT OF THE EUROPEAN GROWTH PACKAGE

The Eurozone is still stuck in a downward spiral: high public and private debts weigh on potential growth; gloomy prospects for growth prevent the further reduction of these debts. A European plan to support growth should be a complement, and not a substitute, to the on going efforts to reduce public deficits. It should both encourage structural reforms and incentivize investments. In the short term, supporting investment is vital: the crisis now entails the characteristics of both a liquidity trap and credit squeeze.

MACROECONOMICS OF GREEN INVESTMENTS: PROFITABLE AND BIG

Green investments would improve European competitiveness in the long run, while supporting growth and employment creation in the short term, in particular through the multiplier effect of investments in energy efficiency. The net benefits of investments in energy efficiency in buildings, low carbon energy supply, and energy and transport networks, is 55 billions euros (260 billions of investment costs, minus 315 of energy savings) over 2010 – 2050; their average incremental investment cost their average incremental investment cost is 2% per year of 2008 GDP. A significant proportion of these investments could be front-loaded.

GREEN INVESTMENTS, PUBLIC DEFICITS, AND THE CREDIT SQUEEZE: SECTOR SPECIFIC SOLUTIONS

Funds can be raised by recapitalizing European and national public banks, such as CDP and ICO in Italy and Spain respectively; pooled guarantees for specific investment programs by national public banks in crisis countries; or unspent funds from the EU budget. They can be invested via a number of instruments: credit lines to private banks for building refurbishment programs; preferential loans for larger-scale renewables or infrastructure projects; or green bonds issued by municipalities, private companies or banks, with appropriate credit enhancement from European instruments. Appropriate risk sharing between the EU and national level, the public and private sector, can leverage additional private funds and ensure sound project selection and implementation.

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INTRODUCTION

The ongoing deterioration of the economic situation in the Eurozone has unleashed an intensive political debate on whether structural reforms and public budget reforms are alone sufficient to create a way out of the crisis, or whether short-term growth impulses need to be given. Currently this discussion is centered on how the fiscal treaty can be complemented by growth-inducing measures and how stronger European governance can flank these measures.

At the same time, Europe has clear objectives in energy and climate policies. Europe has committed to reducing greenhouse gas emissions (GHG) by 20% and to increase the use of renewable energy by 20% by 2020. It recently agreed to an Energy Efficiency Directive aiming at a 20% increase in energy efficiency by the same date. These measures form part of a longer-term objective to reduce emissions by 80-95% by 2050. The large investments necessary for this transition can increase economic productivity in the long term and strengthen economic resilience against fossil fuel price increases and further GHG constraints.[1] Some of these investments can also have positive impacts for growth and jobs in the short term. This combination supports the argument for "green" investments in a European Growth Package.

1. LONG-TERM PRODUCTIVITY INCREASES AND SHORT-TERM MULTIPLIER EFFECTS

Potential stimulus investments should be assessed against a number of criteria. These include long-term productivity gains, fiscal impacts, short-term multiplier effects and the timeliness of the investment program. In Table 1 we qualitatively assess investments in different green sectors on the basis of these criteria and the existing literature.[2] It shows that green technologies give significant scope for socially profitably investments, in particular in building energy efficiency and small and large-scale infrastructure. These projects perform well against the criteria of long-term productivity as well as short-term multiplier effects and timeliness. In the short term they demand limited budgetary resources in so far as the public contribution can catalyze private investments. The long-term budgetary impacts would be positive in so far as growth impulses would be induced in various economic sectors from a substitution away from imported oil to investments in energy efficiency, renewable energy and infrastructure (Table 2).

1. In 2010, oil imports in Greece, Spain and Portugal amounted to almost 4% of GDP, compared to 2.6% for the EU. Increased resource efficiency and the substitution of imported resources can lead to an improvement of the trade balance and a more resilient economy. See e.g. McKinsey Global Institute (2012), "Trading myths: addressing misconceptions about trade, jobs and competitiveness", and *Oxford Economics* (2011), "Fuel price shocks and a low-carbon economy".

2. See e.g. Aldy, J. (2012), "A Preliminary Review of the American Recovery and Clean Energy Package", *Resources for the Future*; Helm, D. (2011), "Green growth: Opportunities, Challenges and Costs"; Kronenberg, T. (2012), "Macroeconomic effects of the German Government's Building Refurbishment Program", Research Centre Jülich, Institute of Energy and Climate Research; "Langfristszenarien und Strategien für den Ausbau der erneuerbaren Energien in Deutschland bei Berücksichtigung der Entwicklung in Europa und global", DLR, IWES und IFNE, Schlussbericht (2012).

Table 1. Economic impacts of green investments*

Assessment criteria	Long-term productivity	Budgetary impact (short-term/long-term)	Short-term multiplier effect	Timeliness
Building energy efficiency	Medium	ST: positive LT: positive	High	High/medium
	high labour intensity, low technology import intensity investment incentives for households net public budget impact can be positive even in the short term			
Renewable energy	High	ST: small, negative LT: positive	Medium/high	Medium/high
	high labour intensity with decentralized installations PV higher technology import intensity Financial support generally socialized, therefore limited fiscal impacts Important technology learning effects			
Infrastructure (networks and transport)	High	ST: small, negative LT: positive	High	Medium/high
	high labour intensity, low technology import intensity key element of resource efficient technologies like small grids and public transport financing generally private; in some instances public investment needed in order to secure public goods			

* Own analysis based on surveyed literature, e.g: Aldy, J. (2012), *op. cit.*; Kronenberg, T. (2012), *op. cit.*; DLR, IWES und IFNE (2012), *op. cit.*; Schlussbericht (2012); Zenghelis, D. (2012), "A strategy for restoring confidence and economic growth through green investment and innovation", Grantham Research Centre in *Climate Change and the Environment*; Bowan, D. (2009), "An outline of the case for 'green' stimulus", Grantham Research Centre in *Climate Change and the Environment.*

Table 2. Employment impacts of the transition to a low-carbon economy

	Direct + indirect employment content per million Euro of expenditure
Energy efficiency	17
RES (wind/PV)	10-14
Transport infrastructure	16
Oil	2.4
Gas	3.6

Data for France, 2009, INSEE and ADEME. N.B. If energy imports (oil and gas) are substituted by imports in energy efficiency and renewable energy, expenditure and activity is shifted from economic sectors with low domestic labour multipliers (oil and gas) to economic sectors with high domestic multipliers. Particularly in the current financial crisis with high unemployment, this is a desirable effect.

As part of the Energy Roadmap 2050 for the transition to a low-carbon energy system, the European Commission has assessed the investment requirements in energy supply and consumption, as well as the energy import costs. It shows that under a shift from the reference scenarios with existing policy measures to low-carbon scenarios, about €260 billion in annual average incremental investments would be required. The majority of these are in energy efficiency, with high co-benefits in terms of growth, job creation, and energy security. Overall average annual fuel costs are reduced by 315 billion compared to the reference scenarios, so that total energy system costs are actually reduced (Table 3).

Table 3. Costs and savings in the decarbonization *vs* reference scenarios, annual averages 2010-2050, 2008 prices

	Additional capital costs energy supply[1]	Additional energy efficiency capital investments[2]	Total additional capital costs	Savings on fuel purchases	Changes energy system costs
Billion €08/yr	105.4	152.2	257.6	-315.4	-55.6
% 2008 GDP	0.8	1.2	2.1	-2.5	-0.4

European Commission, "Energy Roadmap 2050".
1. Energy installations such as power plants and energy infrastructure, energy using equipment, appliances and vehicles.
2. House insulation, control systems, energy management, etc.

Low-emissions scenarios replace energy import expenses with domestic investments; the annual incremental investment volume estimated by the Commission reaches 2.1% of 2008 EU GDP (Table 3), and are therefore of the same magnitude as the European stimulus packages 2008-2010. Green investments can therefore reach a macro-economically significant size. In contrast to the stimulus packages of 2008-2010, green investments would focus on the improvement of energy and carbon productivity, not on stimulating consumption. Thus they offer the opportunity for long-term productivity gains and greater resilience to fossil fuel price shocks.

2. BARRIERS TO GREEN INVESTMENT

Due to multiple market failures regarding the green economy, investments with a net positive social value are not undertaken. The crisis has worsened these problems by increasing capital market constraints and private discount rates.

Political risks: the green economy relies on policies to overcome market failures, e.g. pollution and coordination externalities. The difficult economic environment increases policy risks as governments are inclined to reconsider policies with incremental short-term social/fiscal costs.

Thus the main concerns against investments in the energy sector are based on uncertainties regarding future policy developments. Potential retrospective policy changes could hinder the implementation of existing projects as well as generate losses. However, in so far as public institutions offer financial support for projects, excessive policy changes would entail public losses. Public financing contributions can therefore strengthen the regulatory framework and its credibility with investors. In turn, this can lower the overall policy costs.

Technology risk: the performance and hence cash flow of some low-carbon technologies, such as offshore wind, is uncertain due to lower maturity. In addition, low-carbon technologies imply a significant and uncertain shift in the prevailing socio-technological system.

Transaction costs: the green sector often involves diffuse actors and disaggregated projects. Information asymmetries exist between project developers, financers and policy makers. The green sector financial market is characterized by a lack of liquidity, i.e. limited number of players, absence of a secondary debt market.

Credit squeeze: Credit supply conditions remain tight in the European financial sector, particularly in crisis-hit countries. Banks are deleveraging and shedding riskier, longer-term liabilities. Basel III and Solvency II regulation will raise the cost of long term, higher risk financing.[3] According to BNEF, European clean energy asset finance fell almost 50% from Q4:2011-Q1:2012. $11bn worth of project finance loan commitments have been sold by EU lenders to US and Japanese banks over the past 6 months.

3. Standard & Poor's, "Basel III and Solvency II regulations could Bring a sea Change" in *Global Project Finance Funding*, 14 October 2011

3. MEASURES TO ACCELERATE GREEN INVESTMENTS IN EUROPE

Given pressures on public budgets, in particular in Peripheral countries, finance mechanisms need to be developed that avoid further public debt. The options include:

1. recapitalization of European and national public banks;
2. state guarantees for public banks for specific green investment programs;
3. contributions from the EU budget.

Thereby, different public institutions could be supported with the financing of green investment programs. Among these institutes there are:

1. public European credit institutes such as the European Investment Bank and European Bank for Reconstruction and Development;
2. national public banks such as the KfW in Germany, CDC in France, ICO in Spain or CDP in Italy;
3. central or regional governments.

These institutions could support green projects and programs through a range of appropriate instruments (see Figure 1).

Figure 1. Instrument and institution matrix for green investments

Mobilizing capital	Recapitalization State guarantees EU budget				
Political instrument	EU public banks, EIB, EBRD National public banks, ICO, CDP, CDC, KfW, etc. Central/local governments				
Financial instrument	**Credit lines**	**Loans**	**Program bonds**	**Project bonds**	**Grants**
Energy efficiency	✓	✓	✓		✓
Small scale RES*	✓	✓			✓
Large scale RES*		✓	✓	✓	
Network and transport		✓		✓	

* Renewable energy sources

Recapitalization of public banks

Globally, public agencies such as public banks were the lead investor in 44% of clean technology project financing in 2011. For example, during the crisis the EIB was central to maintaining project financing in renewable energy and infrastructure. Given the continued turbulence in financial markets and the uncertain economic climate, the EIB is maintaining its lending—in so far as the risks to its credit rating allow. However, in 2012 the EIB is planning to reduce its lending volume back to 2008 levels. With a recapitalization program for

the EIB and possibly other national public banks it would be possible to fill the breech left by deleveraging commercial financial institutes. A recapitalization program would have to be largely born by solvent countries.

State guarantees

In so far as financial markets judge that national and European public banks are exposed to country risks in their lending portfolio, they could benefit from state guarantees for an appropriate share of these risks. Thereby they could finance additional projects in Peripheral countries.

Contributions from the EU budget

Direct public financing could be secured for Member States and local governments from the EU budget, in order to mobilize resources for regional programs, particularly in energy efficiency.[4] Moreover, crisis-hit countries have significant unspent resources from their structural fund allocations, as the crisis has weakened the capacity for the required national co-financing from the beneficiary country. At the end of 2010, unused resources made up 7% of GDP in Greece and 9% in Portugal. Such resources could potentially be used for anti-crisis measures with oversight from the EU.[5]

Thus reinforced, public banks and institutions could use their new room for manoeuvre *via* a number of financial instruments. A common approach consists of giving *credit lines* to private banks so that they offer access to loans at preferential rates for specific project types. Public banks can also offer *direct loans*; generally, this option is limited to large-scale projects. *Direct loans,* however, can be offered at preferential rates. Their use to demonstrate public engagement and support private co-financing can be considered.

However, a precondition for this is that they thoroughly assess the projects they support. Thus they can offer reliable information in order to attract private co-financing. If credit volumes are to be increased, it is important that the appropriate competences in assessment and monitoring be provided.

Because the loan volumes offered by private banks are being restricted by the ongoing credit squeeze, other approaches are being discussed. Public banks could bundle smaller projects into *program bonds*. These should be sufficiently large scale and highly rated, in order to attract institutional investors. A possibility would be European support for *municipal green bonds*, following the successful example of the federal program in the US.[6] European support could effectively and quickly help municipalities invest in clearly defined, socially valuable programs, such as energy efficiency in social housing or public buildings. Concerning larger-scale projects, it is currently discussed to allow the EIB to support the private issuance of *project bonds*. In both cases, public involvement could increase the rating of the bond, which would in turn create incentives for participation by institutional investors.[7]

Finally, *grants* could be made available in order to mobilize investments—usually through public agencies or bodies, sometimes however managed by public banks.

4. SPECIFIC OPTIONS FOR INDIVIDUAL SECTORS

Energy efficiency in buildings

Barriers: this sector is characterized by high transaction costs (multiple actors, split economic incentives between landlords and tenants, information asymmetries). Private discount rates may also exceed social discount rates, particularly in times of crisis, which may justify financial subsidies in order to align the two.[8]

Policy proposal: European public banks could host funds to provide credit lines to commercial financial institutions. These can offer **preferential loan programs for standardized refurbishments**.[9] For municipalities direct loans could be provided and could facilitate **investments in public buildings,** potentially allowing for a more rapid rollout of the program. Municipalities could potentially raise finances by issuing *municipal green bonds* supported at the European level.

Such initiatives can built on the experience with the JESSICA fund operated by EIB since 2009 (€1.9 billion committed) or Poland Sustainable Energy Financing Facility (PolSEFF) based on a

4. Schopp, A. (2012), "Wie können Ziele der EU regionale Strategien verbunden werden", DIW Wochenbericht nr.5
5. Marzinotto, B. (2011), "A European Fund for Economic Revival in Crisis Countries", Bruegel.
6. Qualified Energy Conservation Bonds (QECB) were important and successful parts of the US stimulus package.
7. See also DIW Discussion Paper 976, "Structuring International Finance Support for Climate Change Mitigation".
8. Energy efficiency in long-lived infrastructures displays elements of a public good, given that future occupants will benefit from reduced energy payments. This may not always be reflected in the purchase contract. Programs to tie payments to infrastructure (e.g. the pay-as-you-save program in the UK) or to subsidize the initial investment may be necessary.
9. See Spencer, T. *et al.,* "Can the EU Budget Support Climate Policy in Central and Eastern Europe?", Finnish Institute of International Affairs, 2011.

credit line of €150 million from the EBRD. They are used by four large banks in Poland to offer small and medium enterprises loans of up to €1 million for energy efficiency in buildings, processes and renewable energy. The opportunity to access international resources to contribute to national stimulus and jobs creates incentives for national policy makers to address administrative, informational and training requirements to allow for successful project implementation.

Renewable energy

Barriers: renewable energies are characterized by **policy risks** in the current climate/energy framework, exacerbated by the crisis. **Technology risks** exist for less mature technologies, whose performance and hence cash flows can be uncertain. **Transaction costs** are worsened by often limited financial sector expertise (project assessment) and liquidity (secondary markets for bank debt). As with energy efficiency, the credit squeeze has hit the sector disproportionately.

Policy proposal: European financial institutions and national banks could provide credit lines to national banks for smaller scale projects or **preferential loans for a selected set of larger projects in less mature technologies**. European banks could also **wrap pools of built renewable energy assets** to guarantee **renewable energy bonds issued to secondary debt markets.** This would free up bank balance sheet financing for further investment, particularly in crisis-hit countries. In addition to project appraisal, public European banks might initially provide sovereign risk guarantees for such bonds, e.g. to alleviate concerns about ex-post adjustments of feed-in tariffs. This would create incentives for national governments and EU institutions to ensure such adjustments are avoided, thus eliminating the risk also for other investors.

Networks and transport

Barriers: infrastructure investments are characterized by **coordination externalities**, i.e. social benefits exceed private benefits for infrastructure provision. Therefore they are typically financed against regulated revenue streams, and thus subject both to the opportunities of regulatory guarantees and to policy risk. Strengthening regulatory stability and clarity should therefore be the main focus to facilitate access to low-cost finance. In some countries additional support might be required to limit financing costs in light of high sovereign risk. Where national or European public institutions take exposure to policy or sovereign risk, this signals to private investors a clear commitment to regulatory stability.

In the current situation, large-scale infrastructure investments have furthermore been hit by the **credit squeeze**.

Policy proposal: the Commission's project bond proposal should be accelerated and expanded. Its envelope of €230 million should be **supplemented by European funds**. Its **scope could be increased** from transmission grid to include diffuse infrastructures (smart grids), municipal public transport and suitable renewable projects.

CONCLUSION

How can growth impulses be released in a time when all signs point to budgetary consolidation? This question, currently much discussed in Europe, is the background for this study, which proposes a green investment strategy in the framework of a European Growth Package.

Green investments in energy efficiency, renewable energy and networks and transport could play a central role in a growth package, as they can entail significant employment impulses in the short term and mid- to long-term positive fiscal effects. At the same time, they can improve energy and carbon productivity and therefore contribute to both the achievement of EU climate objectives and reduced dependence on fossil fuel imports. Moreover, these projects can be quickly implemented, as in many cases they build on existing capacities and plans. The annual volume of additional green investments would be of macro-economic relevance; and is a comparable order of magnitude to the 2008-2010 stimulus packages.

Although many energy efficiency and renewable energy projects—especially in the context of long-term increasing fossil fuel prices—have net positive social benefits, their implementation is proceeding slowly. Thereby financial factors play a central role. Transaction costs are high in the case of small-scale, complex projects; the further development of the regulatory framework is uncertain; and banks are restricted in lending long-term capital at attractive rates. Political support is therefore necessary, in order to accelerate growth in green investments.

In order to overcome these financial barriers, the EIB and national public banks as well as public bodies could be strengthened. A recapitalization or state guaranties from solvent EU countries are currently under discussion. Thereby additional green investment projects could be supported.

In order to strengthen the regulatory framework it is necessary to accelerate the transposition of EU agreed regulation to the national level; adopt the EU directive on energy efficiency and

reduce the volume of certificates in the EU emissions trading scheme. The clearer the regulatory framework is, the easier it is to assess project profitability and the lower the need for public financial support.

Green investments can deliver significant growth impulses also during a phase of consolidation. They require clear and credible regulatory frameworks and public support to overcome existing financial barriers. With European cooperation, European and national public banks can be strengthened with own capital, loans and guarantees so that they can finance these targeted projects. The projects unleashed thereby will be profitable in the mid to long term through energy savings. Thereby Europe will make progress with its energy and climate goals and reduce its dependence on energy imports.

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