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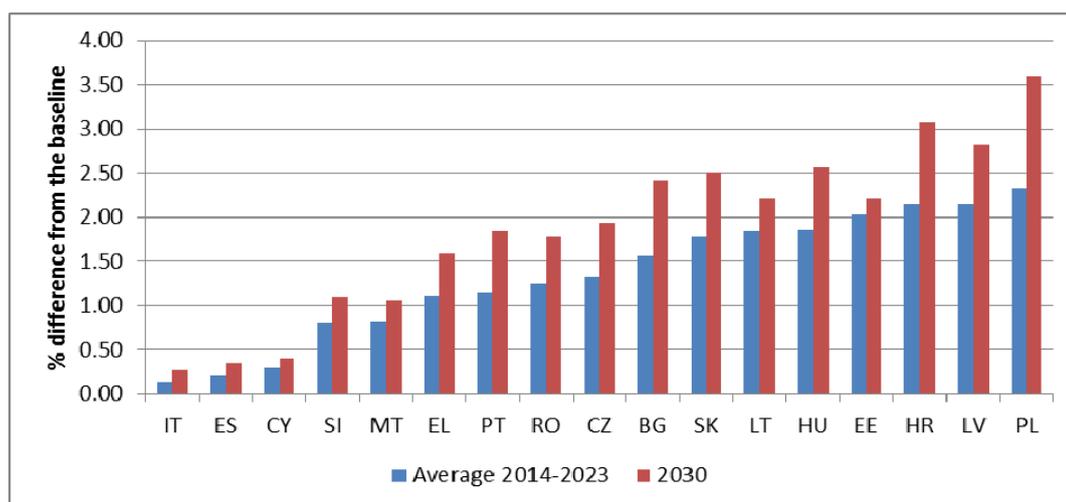
**COMMISSION STAFF WORKING DOCUMENT**  
*Accompanying the document*

**COMMUNICATION FROM THE COMMISSION**

**Sixth report on economic, social and territorial cohesion: Investing in Europe's Future**

{COM(2014) 473 final}

**Figure 1: Estimated impact of Cohesion Policy expenditure**



Source: *QUEST3R&D simulations, % deviations from baseline GDP.*

This continuing build-up over time of the impact of Cohesion Policy is also reflected in the multiplier which indicates the increase in GDP per Euro spent. For the EU as a whole, it is estimated at around 1.5 over the 2014-2023 period and up to 3.75 over 2014-2030. This illustrates the fact that Cohesion Policy not only boosts demand in the short-run but strengthens the growth potential of economies through supply-side effects which persist long after the funding has come to an end.

Cohesion Policy not only has a positive impact on GDP but also boosts employment. In the short-term, this is mainly a result of the increase in economic activity which the investment it co-finances give rise to. In the longer-term, the same investment tends to increase labour productivity and competitiveness through improvements in infrastructure, methods of production, the structure of industry, the skills of the work force and so on. This, accordingly, tends to lead to a further expansion of economic activity and employment and one which is likely to persist long after the initial expenditure was undertaken.

As in the case of GDP, the impact on employment is likely to be particularly large in the main beneficiary countries. For example, simulations suggest that in Poland, employment could be 1% higher than it would have been without Cohesion Policy funding during the implementation of programmes and significantly higher than this in the longer-term.

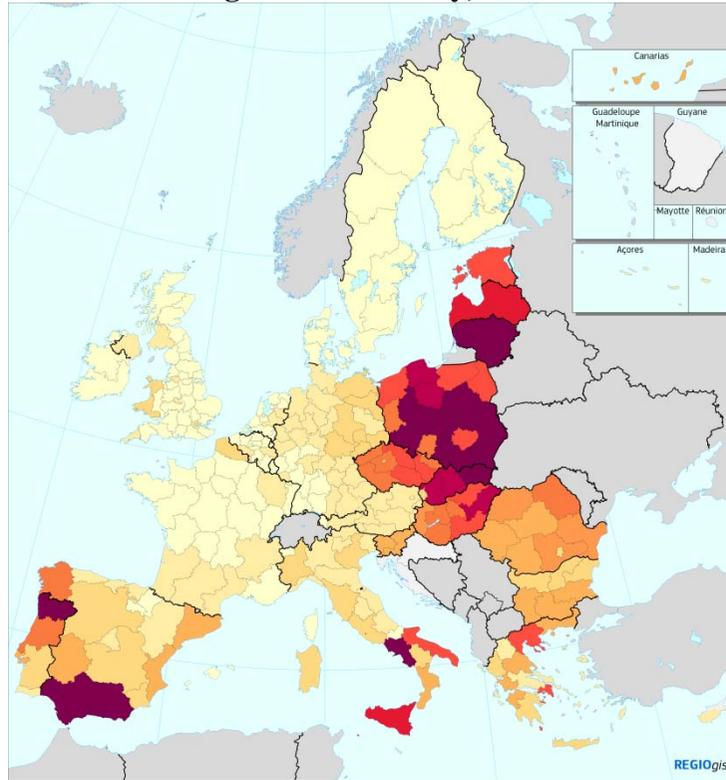
### **3.2. Estimated impact at the regional level**

A model like RHOMOLO which takes account of the spill-over effects of interventions at the regional level is important for assessing the full effects of Cohesion Policy. Since regions in the EU are closely interconnected through trade, the movement of workers, flows of capital and the diffusion of technology, interventions tend to have an impact well beyond the places in which they are implemented. The inclusion of such interconnections in the model, however, makes it more complicated to interpret the results. In order to illustrate how the various mechanisms represented in RHOMOLO combine to produce their effects, three simulations each focusing on a particular area of intervention are presented below.

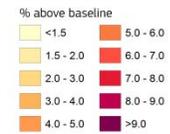
### *3.2.1. Investment in infrastructure*

Much of Cohesion Policy funding goes on investment in infrastructure. For the 2007-2013 period, it accounted for around 49% of the total and it is still expected to be important in the present period. There are, however, large differences between regions, expenditure being considerably higher in less developed regions where the need is greatest. The impact of investment in infrastructure is captured by assuming that it reduces the cost of transport between regions and increases the accessibility of those where it takes place (Map 92 shows the estimated impact of co-financed investment on the accessibility of each NUTS 2 region). This is largely in the less developed regions.

**Map 1: Impact of interventions in infrastructure on NUTS 2 regions accessibility, 2030**



**Impact of interventions in the field of infrastructure on NUTS 2 regions accessibility, 2030**

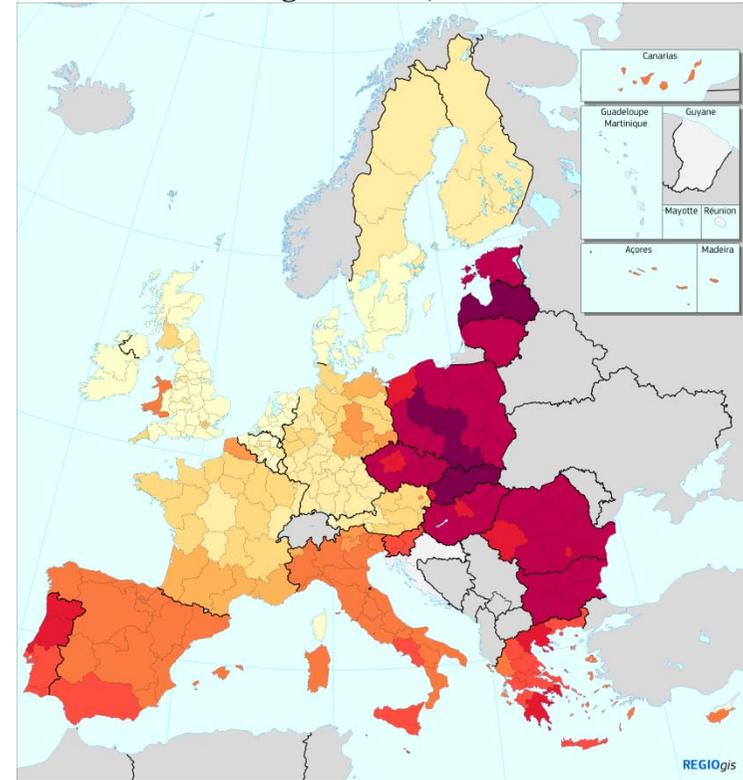


Source: RHOMOLO database

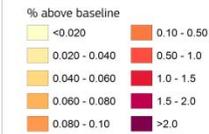


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**Map 2: Impact of interventions in infrastructure on NUTS 2 regions GDP, 2030**



**Impact of transport infrastructure interventions on GDP, 2030**



Source: RHOMOLO

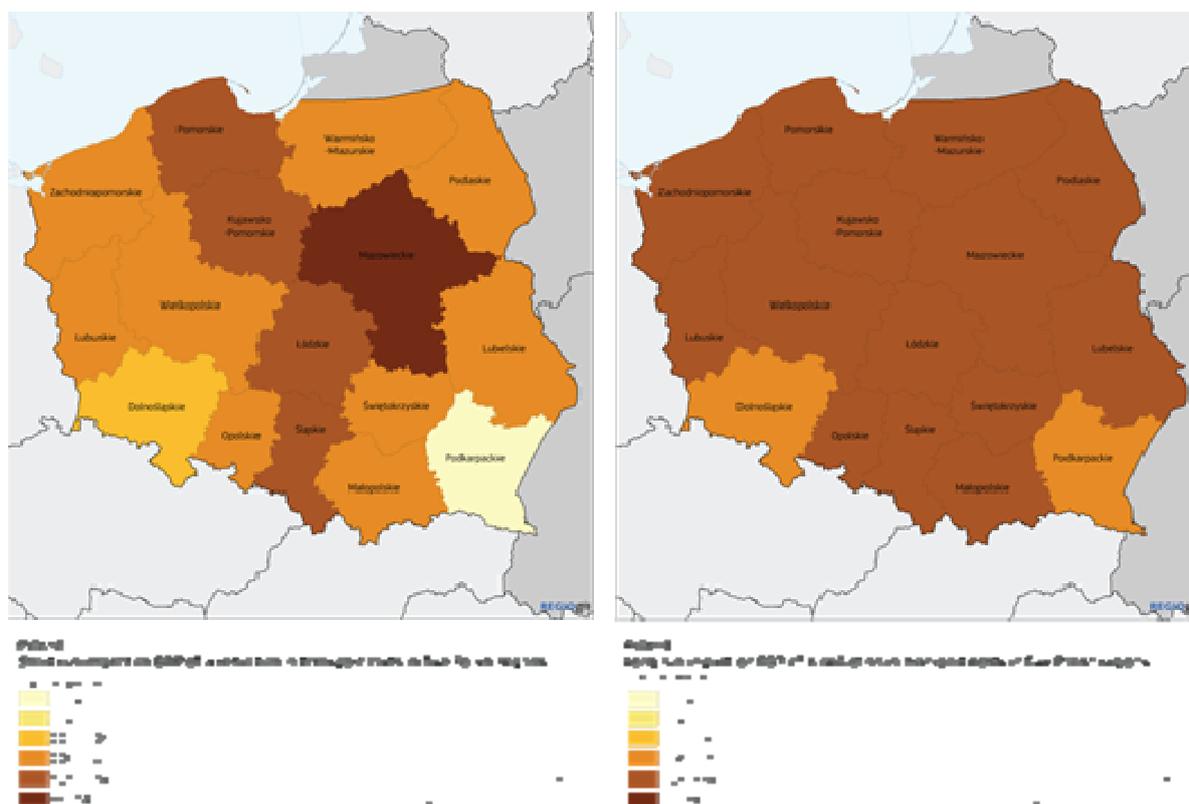


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Improvements in transport infrastructure mean that regions have better access to EU markets which increases their exports and GDP. They also mean, however, a reduction in the price of imports, since the regions concerned are more accessible to producers elsewhere. This increases the real income of households and reduces the costs of firms producing in the region, but it is likely to mean a loss in their share of the regional market which offsets this while benefiting producers in other regions and boosting GDP there. The impact of investment in transport infrastructure, therefore, is not confined to the region where it takes place, since the improvements in accessibility lead to other regions being able to export goods more easily which boosts their GDP too. All these effects combine to produce a differential impact on GDP in the different regions across the EU (Map 93).

The effect of the inter-relationships between regions can be further illustrated by simulating a symmetrical reduction in the costs of transport between five Polish regions: Łódzkie, Mazowieckie, Śląskie, Kujawsko-Pomorskie and Pomorskie resulting from a transport project which improves the connectivity between them (Map 94)

**Map 3: Short run and long run impact of a reduction in transport costs in five Polish regions**



The simulation shows that this would have a positive impact on GDP in almost all regions, though to differing extents. In the short-run (defined as the 4-year period following the completion of the project), the capital city region of Mazowieckie benefits most from the investment, mainly because it is in the centre of the 5 regions concerned and enjoys the largest increase in accessibility. In the very long-run, however (45 years after the project is completed), the positive impact spills over more to the other four regions and regions in the rest of the country also gain as a result of the increased economic activity generated. This underlines the importance

of taking inter-connections between regions into account when assessing the overall impact of policy intervention.

### 3.2.2. *Investment in human resources*

Cohesion policy investment in human capital through various measures, which accounted for 21% of total funding for the 2007-2013 period, is projected to account for 23% in 2014-2020. To simulate the effects of this, it is assumed that an increase in expenditure on training of 1% in a region leads to increase in labour productivity of 0.3%, which increases the region's competitiveness and so its GDP. It is also assumed, however, to increase the demand for labour (because of the lower unit labour costs from increased productivity) which in the long run pushes up wages.

The net effect by 2030 of the investment in human capital assumed to take place over the period is significantly positive, especially in most of the Central and Eastern European Member States where it is largest in relation to GDP (Map 95).

The difference in the impact between regions, however, also stems from other factors. First, investment in human resources is assumed to have a larger effect on GDP in regions where the level of expenditure on education is relatively low. Secondly, regions which have a larger proportion of economic activity in labour-intensive industries (such as much of manufacturing in Central and Eastern Europe) benefit more from an increase in labour productivity.

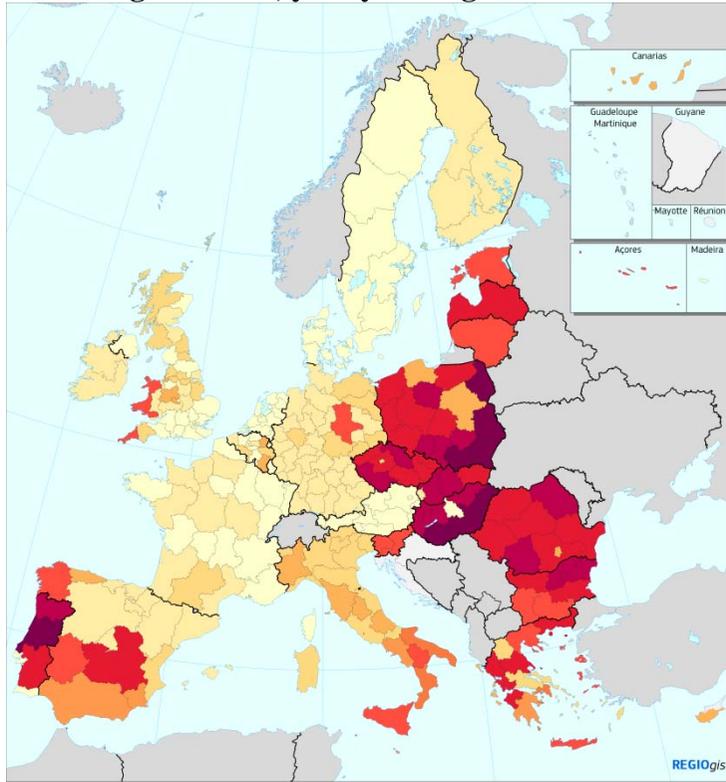
Thirdly, investment in human resources, as in infrastructure, generates regional spill-overs through trade links, so benefiting regions elsewhere. It is also, however, assumed to increase wages in the regions where it takes place, so attracting inward movements of workers from other regions, which in this case are adversely affected by the loss of the income and spending resulting from the outward movements concerned.

### 3.2.3. *Investment in R&D*

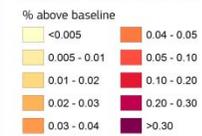
Cohesion Policy also funds investment in R&D, which accounted for around 12% of total funding in 2007-2013 and which is expected to increase in 2014-2020. In the model, support to RTDI is assumed to increase total factor productivity which leads to an increase in GDP both directly and indirectly through a reduction in production costs. The lower prices which result stimulate demand and accordingly the level of economic activity. As in the case of other kinds of intervention, the rise in GDP also benefits other regions through the increased demand for their exports.

The model, in addition, takes explicit account of spatial spill-overs effects specific to R&D. The assumption is that the further away a region is from the technology frontier, the greater the potential for absorbing and imitating technological advances made elsewhere. This implies not only that lagging regions catch up with more advanced ones in terms of technology but also that an increase in R&D has a bigger impact on factor productivity there.

**Map 4: Impact of interventions in human resources on NUTS 2 regions GDP, yearly average 2014-2023**



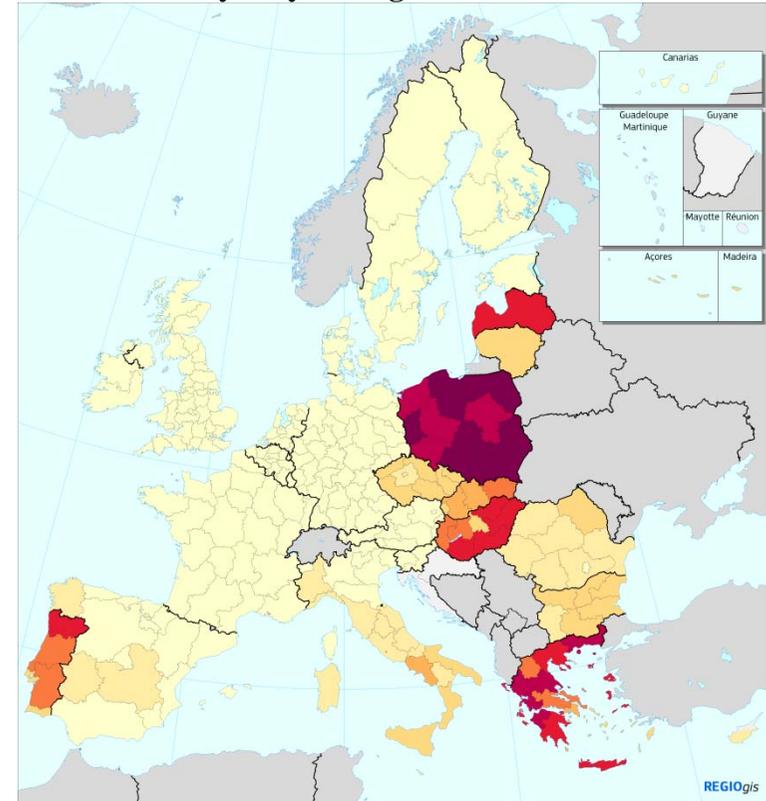
Impact of interventions in the field of human resources on GDP, yearly average 2014-2023



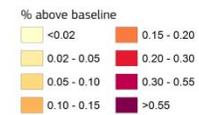
Source: RHOMOLO



**Map 5: Impact of interventions in R&D on NUTS 2 regions GDP, yearly average 2014-2023**



Impact of interventions in the field of R&D on NUTS 2 regions GDP, yearly average 2014-2023



Source: RHOMOLO database



The results of the simulation show positive effects in all regions with very few exceptions, with those in the Czech Republic, Hungary, Poland and Portugal benefiting most. In Poland for instance, the increase in GDP ranges from 0.5% to 0.8% a year over the period.

The effect of interventions in R&D is assumed to build up considerably over time, reflecting the many indirect effects generated, especially from the boost to private investment and lower production costs, which mostly materialise in the long run. For example, while the short-term impact on GDP in the Podkarpackie region of Poland is estimated to be 0.8% a year on average between 2014 and 2023, by 2030, GDP is estimated to increase by 3.3% above what it otherwise would have been. In Norte in Portugal, where the estimated short-term impact on GDP is 0.2%, it is increased to 1.5% by 2030.

In general, the impact is smaller in Transition regions than in less developed ones both because of the smaller funding received under Cohesion Policy and the smaller effect on factor productivity which is assumed since they lag less behind in terms of technology.

#### *3.2.4. Combined impact of investment at regional level*

RHOMOLO can also be used to estimate the overall impact of Cohesion Policy funding in 2014-2020. This is largest in the Central and Eastern European regions over years 2014-2023 (Map 97). In the Polish regions of Śląskie, Podkarpackie, Małopolskie and Lubelskie as well as in Észak-Magyarország and Észak-Alföld in Hungary, GDP is estimated to be increased by over 2.5% a year on average over the period.

This mainly reflects the fact that these regions are the largest recipients of EU funding, but they also lag behind in terms of infrastructure endowment, which means that the effect of investing in this tends to be particularly large. Equally, a given amount of investment in human resources adds more to total spending on education in these regions than in more developed Member States and, accordingly, typically has a bigger effect. In addition, these regions have more employment in labour-intensive industries which increases the gain from higher labour productivity.

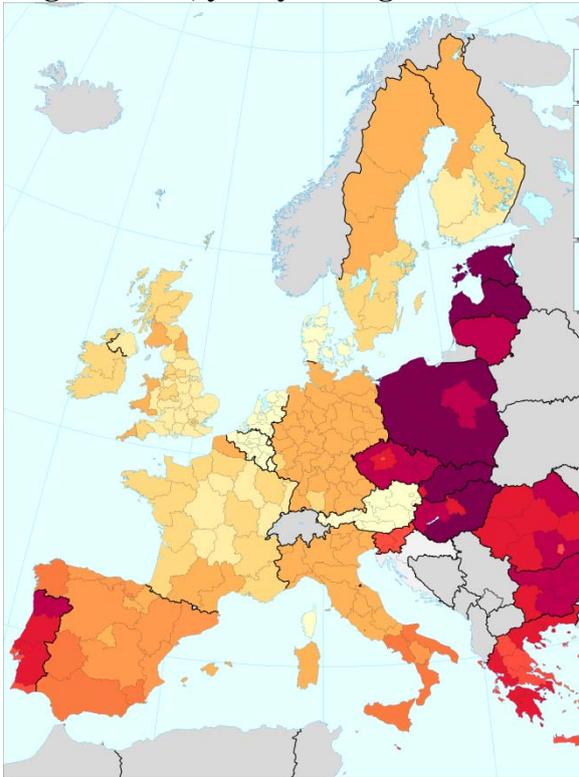
Even though regions in the more developed Member States receive much less Cohesion Policy funding, the impact is not negligible in the less developed among them. For example, GDP is estimated to increase by around 0.5% a year in Andalucía in Spain and Campania in Italy over the 2014-2023 period.

In the longer-term, the impact on GDP is much larger in all regions, most especially those in eastern, central and southern Europe, because of the effect of investment support on their productive potential. For instance, in Śląskie in Poland, GDP is estimated to be increased by 6.1% by 2030 as a result of the higher investment, over 2.5 times more than the average impact over the period itself (Map 98).

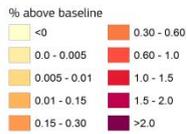
The long-term impact is also significant in the more developed regions, where the short-term impact on demand is small but where the effect on raising productive potential is much larger. The long-term impact, moreover, comes partly from the increased demand for their exports stemming from programmes carried out elsewhere, especially in the less developed regions, which also tends to increase in scale over time along with the growth of the latter.

These estimates, however, are based on simulations which incorporate hypothetical assumptions about the composition of the expenditure financed under Cohesion Policy. They will be updated once all the new programmes have been adopted and the breakdown between the various categories of investment has been decided. Nevertheless, they indicate that the Cohesion Policy funding made available can have a significant impact on regions across the EU, particularly on the less developed ones. Whether the impact in practice, however, is as significant as estimated above will depend to a large extent on programmes being carried out in a timely way and on the funding involved being deployed as effectively as assumed in the model.

**Map 6: Impact of the 2014-2020 cohesion policy programmes on NUTS 2 regions GDP, yearly average 2014-2023**



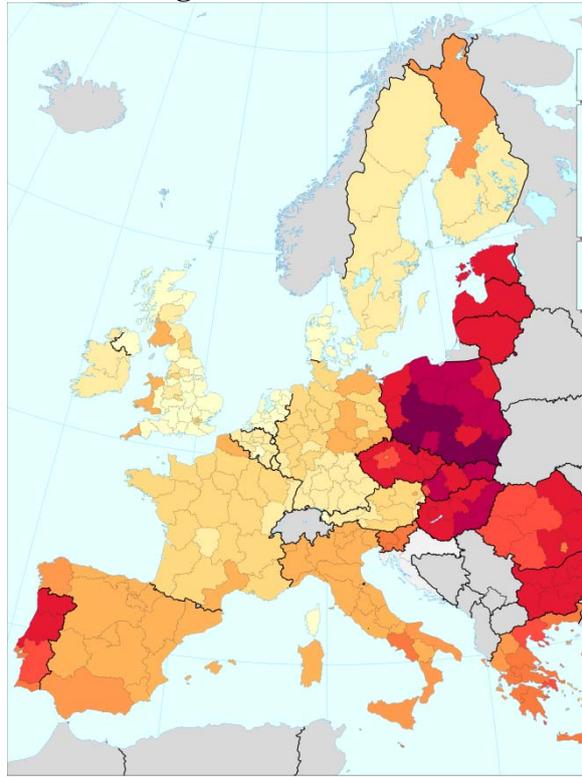
**Impact of the 2014-2020 cohesion policy programmes GDP, yearly average**



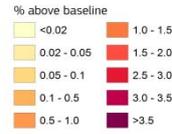
Source: RHOMOLO

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**Map 7: Impact of the 2014-2020 cohesion policy programmes on NUTS 2 regions GDP in 2030**



**Impact of the 2014-2020 cohesion policy programmes on GDP, 2030**



Source: RHOMOLO

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