Report 4.5.2 Recommendations for improving national and regional renewable energy incentive systems and applying innovative instruments

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The aim of is report to provide recommendations for improving the incentive systems and apply innovative instruments targeting closer to optimal renewable energy utilisation. Some of the recommendations are based on the CEP project partners' responses to the questions of Assessment of RES Financial Incentive Environment – Guidelines for partners' input to Report 4.5.1.

Recommendation "zero" is a must: observe the rules of EU state aid guidelines especially the new (2014) environmental and energy state aid guidelines[1].

Environmental and energy aid can only be found compatible with the internal market if it has an incentive effect towards sustainable energy systems, additional to the business as usual case. An incentive effect occurs when the aid induces the beneficiary to change its behaviour to increase the level of environmental protection or to improve the functioning of a secure, affordable and sustainable energy market, a change in behaviour which it would not do without the aid.

Environmental and energy aid can be awarded in various forms. The Member State should however ensure that the aid is awarded in the form that is likely to generate the least distortions of trade and competition. In that respect, the Member State is required to demonstrate why other potentially less distortive forms of aid such as repayable advances as compared to direct grants or tax credits as compared to tax reductions or forms of aid that are based on financial instruments such as debt or equity instruments (for example, low-interest loans or interest rebates, State guarantees, or an alternative provision of capital on favourable terms) are less appropriate. The choice of the aid instrument should be coherent with the market failure that the aid measure aims at addressing. In particular where the actual revenues are uncertain, for instance in case of energy saving measures, a repayable advance may constitute the appropriate instrument. For aid schemes implementing the objectives and priorities of operational programs, the financing instrument chosen in this program is in principle presumed to be an appropriate instrument.

Recommendation 1. Aim for uniting economic efficiency, effectiveness, enforceability and political feasibility for the design of the incentive instrument/system to be applied.

In general, when designing or modifying an incentive system, each of the following criteria should be considered. These broad criteria of policies are detailed in the Appendix.

- Efficiency;
    - Overall social costs minimised (and benefits maximised)
        - taking into account every actor/entity affected directly or indirectly
        - including also administration, monitoring and transaction costs
    - Simplicity – low complexity if possible[2]

[1] Guidelines on State aid for environmental protection and energy 2014-2020.

[2] Too many policies or too many features in a policy may be a problem as they may make conditions complex, inconsistent and non-transparent. They can interact to weaken each other's impact as well as may cause incalculable excess burden on actors and the society as a whole, more than necessary for a desired RES penetration and environmental result. It is often the case that the cessation of a barrier is a lower cost solution than stimulating the players to overcome it (avoid "giving coffee against tranquilliser"). For example, subsidies of RES technologies could be reduced with reducing regulatory risk of unstable regulatory environment or

- Effectiveness;
- Enforceability/monitoring – institutional feasibility;
- Distributional effects - political feasibility;
    - social effects-compensation needs
    - competitive effects- (macroeconomic, sectoral, intra-sectoral – "leakage" of energy intensive industry beyond the borders of the regulated jurisdiction. shrinking of fossil energy production, developing of RES production on the other hand)[3]

I. Recommendations regarding national incentive systems

Recommendation 2. Aim for advanced market integration for close to mature RES technologies.

RES Support systems, especially operation support should change towards a direction that facilitates deeper market integration. From maturating technologies it is expected to break out from the totally protected niche market and get more embedded into the power market. Overall, the long term goal is that these niche market technologies should become part of the mainstream and advance of market integration also has a positive feed back effect on maturation. As long as technology costs are higher than those of conventional power production, this integration cannot be full, and environmental and other benefits justify supporting RES, but the incentives must be there to drive RES in that direction. Consumer and electricity system costs of RES becoming higher and higher, and especially at larger penetration levels cause significant economic and political problems – both on the side of competitiveness of energy intensive industry and households as well as power transmission and distribution system operators. This is why political feasibility stands only for systems that aim at cost efficiency and market integration. And this is why the Czech Republic drastically reformed the PV support and why Germany is in the process of reforming its generous FIT system. Care must be taken that investor security should not suffer retroactively when such reforms are made.

Recommendation 2.1 Apply feed in premium (or tradable green certificate) system for close to mature technologies rather than fix feed in tariffs.

Feed-in premiums may be helpful to improve the market integration of renewables. Selling RES-E on the power market makes producers to adapt to market demand and prices, wherever possible to produce more in high demand (high price) period and less in low demand periods – make production more predictable, controllable and prepare for storage of fuel and in the

eliminating discriminated treatment by natural network monopolies. Another example is that the removal of fossil fuel subsidies (most often coal and natural gas subsidies) or even imposing emission taxes on them to reflect their total social costs could induce both RES and energy efficiency without (or less) need of their targeted support.

[3] These criteria are difficult to assess without comprehensive models and other deeper analyses. The support mechanisms should first be assessed individually, however always there is a given context including a mix of policies applied together – the partial effect of one particular scheme is difficult to see ex post unless no other (significant) changes in the regime/economy occur after its introduction.

future even electricity. Their development needs to be monitored closely in order to identify best practices. In order to avoid too high market risk, the premium can ex post be adjusted to off-set changes in power market prices to some extent (for example, as applied in Slovakia; or for TGC there are numerous design methods to reduce TGC price volatility). The size of the premium must be large enough to be sufficiently attractive so that the sum of the premium and the market price be larger than a corresponding riskless fixed tariff would be. For immature, risky and costly but from some aspects still desirable (e.g. innovative) technologies suitably large fixed feed in tariffs are to be maintained/given. Similarly, small RES plants with tougher access to power markets may continue to receive fix feed in tariff.

Recommendation 2.2 Maintain a transparent, foreseeably flexible feed in tariff system if FIP is not on the agenda to be introduced (and for less mature technologies).

Feed-in systems should be flexible on the adjustment to market developments. It is therefore important that they are designed smartly to support renewables in a cost efficient way. Among others, this can be achieved by implementing stepped tariff design, a many years ahead announced regular degression of tariffs, the combination with tendering approaches for large plants, the introduction of bonuses for more expensive but promising innovative technology solutions and even temporary limits of supported capacities/production so as to control consumer prices and assure secure system operation. However, many of these best practice design elements for fixed feed-in tariffs can also be relevant and applied for FIP systems when modifying the premium level.

It should be noted that as of 2017, if a support system is modified/created afterwards, a competitive bidding process is required by the EU 2014 state aid guidelines, either fix tariff or premium is the subject of the bid.

Recommendation 2.3. RES-E should bear electricity system costs it causes and be rewarded for benefits.

Proper allocation of system costs and benefits are an important factor to invest in RES-E in the right amount and at the right place, as well as to operate them closer to optimal manner. Bearing electricity system costs provides the incentive to predict/model day ahead production better and to place investments more carefully. On the other hand as predictions cannot be perfect, the feed in tariff or premium should be large enough so as to provide enough basic revenue (including covering balancing costs) *for a good practice benchmark operation* of the given RES-E technology to prevent it from being a loss maker. Bearing balancing costs is also required as of 2016 by the new (2014) EU state aid rules. Similarly, connection costs cannot be prohibitively high in most places – average connection costs should be taken into account when designing the support level.

On the other hand system benefits should be acknowledged roughly quantified and rewarded in a rule of thumb way. An example is that small plants can be rewarded for reducing distribution losses when connected to low-medium voltage or also if they can set a contract with the distribution system operator that they contribute to reactive power management.

Small plants, especially if bundled by an aggregator – should be allowed to participate in the ancillary services (mainly the reserve) market.

Recommendation 3. Give specific regional features to the national RES support system, where justified.

Add regional aspects if necessary for areas designated as, for example, "most disadvantaged area" or less-developed regions. This can be done in the form of a bonus on top of the feed in tariff or feed in premium, if a RES investor decides to invest and generate power (heat) in such distressed areas which otherwise hardly attract any investment.

Recommendation 4. Give larger attention and possibly design a systemic support approach for RES heat/cooling.

Renewable energy sources, except for wind, can be utilised for heat production to a larger extent and at better efficiency than for power generation. RES-H is mostly supported via grants towards the capital cost or preferential rate soft loans. As of the first half of 2014 RES-H operative support there exists only in the UK (financed by tax payers via the central budget). Similar RES-H fixed tariff or other operation support type systems could boost RES utilisation for heat production (just as was the case for RES-E) – better than the sporadic, individually assessed tender based investment support grants and loans. Obviously, efficiency and non-prodigal support levels are to be applied in this case, too – possibly taking into account unit costs of good practice benchmark RES-H technologies.

Recommendation 4.1 Apply a fix tariff operation support *for RES-H.*
or
Recommendation 4.2 Apply a purchase obligation with a premium system for RES-H.

There can be RES-H instruments other than feed in tariff types applied in the UK. Bürger et al (2008) advocates a purchase obligation with a premium system for RES-H, analogously with the FIT premium system for RES-E. In this scheme, operators of RES systems would receive a fix bonus from obligated energy traders for each RES-H MJ they produce. Transactor agents, who would collect the certificates from renewable producers would be in direct contact with both parties. According to quantitative analysis of Bürger et al (2008), this system performs better in most criteria in comparison with simple use obligation (at buildings) or investment subsidy.

It is expedient to integrate any RES-H support program with building energy efficiency (e.g. insulation, district heat system renovation, automatic temperature regulation solution installation) programs and/or requirements so as to avoid prodigal, inefficient use of RES in buildings equipped/supplied with RES-H.

Recommendation 4.3 Apply a RES-H obligation on new buildings and for major refurbishments.

Such a RES use obligation instrument has been used in Spain for several years. A recent legal basis of such an instrument is Directive 2010/31/EU (on the energy performance of buildings, EPBD), which requires that Member States shall ensure that by 31 December 2020 all new buildings are nearly zero-energy buildings and the remaining low energy need should be supplied to a large extent from RES. A similar objective is to transform existing building stock to a large extent into nearly zero energy buildings is also required in the case of refurbishments. (This objective, however, can also be achieved with other instruments.)

Recommendation 4.4 Apply bonus for RES-CHP on top of its regular RES-E support or only pay support based on heat output rather than electricity for RES technologies suitable also for CHP.

Utilising heat is a local business, and larger RES-H penetration even in the presence of good RES potentials is often prevented by the presence of enough local heat consumers. Such a special RES CHP support could support the search for/creation of further local heat consumers (either for own purposes or for selling) by way of cheap heat. The scope can be limited to some technologies (e.g. biomass) and/or regions.

Recommendation 5. Provide R&D funds and other incentives for innovative new technologies, energy systems and enterprises.

In doing so, take into account and rely on the distribution of national/ regional human and other R&D capacities, universities, research institutions as well as innovative private companies. Both smart micro grids and innovation aiming at more flexible, active RES absorbing distribution grids are to be included in R&D incentives. There is no sense to boost one leg (RES-E) if the other leg, the absorbing/distributing infrastructure cannot improve accordingly. Sometimes regulation indirectly forces innovations in the infrastructure (e.g. obligatory third party access), but the development and innovation path can only be optimal if incentives are provided for the infrastructure operator to innovate and change. It is more the so as the dominant regime - which the infrastructure is part of - may provide counterincentives, as they resist because radical changes are against their vested interests under conventional regulation.

A good example for infrastructure innovation policy is the UK Registered Power Zone scheme, in which regulation allows innovative electricity distribution network operators connecting a large number of small RES-E and CHP-E to their network at significantly higher rate of return than regulation provides normally. The higher rate of return can be as higher as 50 or 100% than the normal regulated rate of return, reflecting the additional riskiness of the given new and innovative operational practice. Of course, these higher costs are also spread on and paid by end consumers in the use of distribution system charge.

II. Recommendations regarding regional incentive systems

Recommendation 6. Rely on local forces, regional planning capacities and establish a

department in the regions for designing the programmes/priorities for distributing EU funds for energy purposes and for making decisions on actual disbursement

Most of the investment grants from EU sources will trickle down to supported enterprises, institutions, municipal governments via operative programs and priorities and via disbursement institutional systems (managing authorities) designed by MS governments. The given framework is described in some detail in the Appendix.

The Common provisions regulations of the various EU support funds (including, inter alia, the European Regional Development Fund, ERDF, and the Cohesion Fund) requires involvement of regions and local actors. For the Partnership Agreement and each programme, each Member State shall in accordance with its institutional and legal framework organise a partnership with the competent regional and local authorities, economic actors and civil society partners.

It is in the principle of subsidiarity that investment support of regional significance be decided upon locally, in the knowledge of local circumstances and needs as long as institutional and human capacities can be given. This requires "economies of scale", too: the region should be large enough to provide sufficient number of projects to make it worthwhile to operate such a local planning and/or decision making institution/department. Such a department can also operate under the regional/county council.

Recommendation 7 Establish a revolving fund – Development and Investment Organisation (DIO) for sustainable energy

The EU Interreg IVC project "Regions for Green Growth" outlines a model of a regional revolving fund – a Development and Investment Organisation (DIO) - which is especially useful when access to capital is limited. This fund can provide part of the equity or loan needed for a sustainable energy investment to fill the gap between the initiator investors own equity, commercial bank loan and the required investment costs. The fund is managed within the region by a public authority (e.g. under the regional council) and is based on close cooperation with sustainable energy investors and commercial financing institutions. Actually, it is a specific method for creating a public-private cooperation structure for investments in sustainable energy. The fund operates on a non for profit or low return basis, therefore it can provide the gap filling loans at lower than market rates. If it provides equity, exit rules are laid down: after a few years the fund sells its shares in the given project to retain capital and maintain the revolving fund – and to be able to finance newer projects. Such a fund only makes sense if there is a large enough potential pool of sustainable energy projects therefore such a project possibilities assessment has to precede the setting up of the fund.

A DIO is the combination of a project development organisation and an investment fund in which the necessary know-how and skills to develop projects will be concentrated in the DIO organisation in order to develop many projects in an effective and efficient way. The objective and incentive of a DIO is to develop a portfolio of sustainable energy projects whereby risks can be mitigated because of the number of projects (portfolio effect).

This model is already operating or just being built up in three European regions: Greater Manchester, UK, Noord-Brabant, NL and Flevoland, NL. The following figure shows the gap filling role of DIOs. The following figure shows the role of the DIO revolving fund in filling the gap of available financial resources and total investment costs.

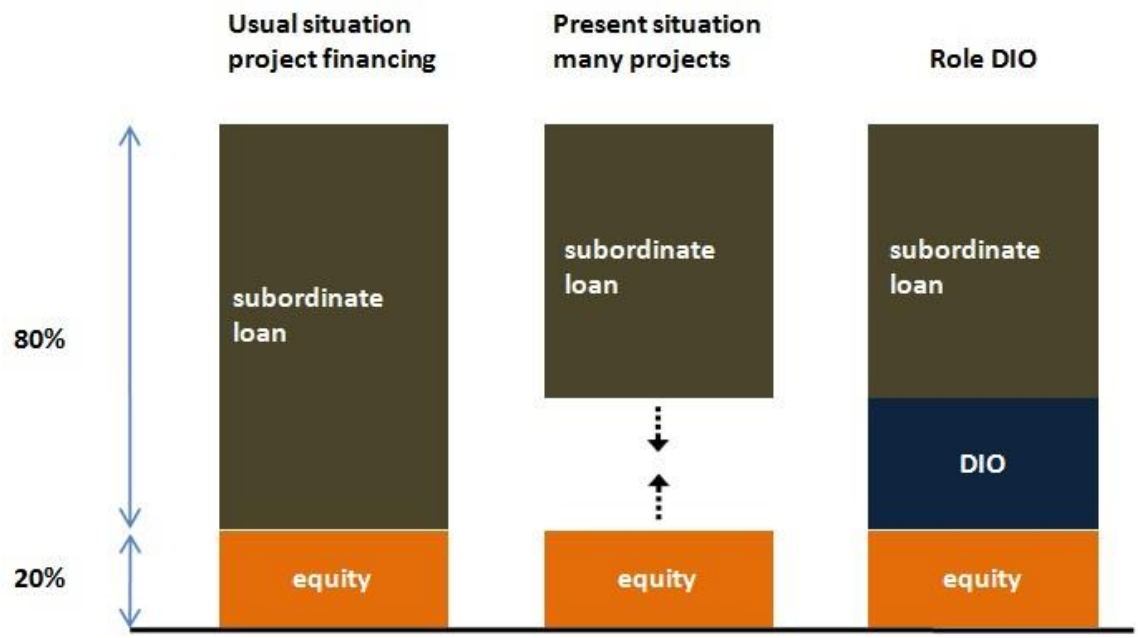

Figure 1. The role of the DIO revolving fund in filling the gap of available financial resources and total investment costs.

Recommendation 8 Give incentives to mobilise local forces to establish RES Energy Cooperatives

RES Energy Cooperatives - Give regulatory and financial incentives to mobilise local forces – capital, initiation, fantasy, knowledge, activity of inhabitants. Give incentives for formation/operation of RES energy production and consumption cooperatives and supply chains. These can be direct support towards transaction costs of coordination as well as reduced income tax rates of producers. Also, the Leader program of the EU can be heavily relied on in such initiations for cooperation of settlements under 10 000 inhabitants.

III. List of references

- Bürger et al: Policies to support renewable energies in the heat market. Energy Policy 2008
- Council of European Energy Regulators ASBL (CEER) (2013): Status Review of

Renewable and Energy Efficiency Support Schemes in Europe (Ref: C12-SDE-33-03)
- Ragwitz et al: Recent developments of feed-in systems in the EU – research paper for the International Feed-In Cooperation January, 2012
- "Regions for Green Growth" EU Interreg IVC project. http://www.regions4greengrowth.eu/
- Responses of Czech, German, Hungarian, Italian, Slovenian project partners to questions of "Assessment of RES Financial Incentive Environment – Guidelines for partners' input to Report 4.5.1"

IV. Appendix

A.1 The broad criteria to observe when designing policies

- Efficiency
  - Overall social costs (and benefits)
  - Administration, monitoring and transaction costs
- Effectiveness
- Enforceability – institutional feasibility
- Distributional effects - political feasibility
  - social effects-compensation needs
  - competitive effects- (macroeconomic, sectoral, intra-sectoral) – "leakage" of GHG (emitting processes beyond the borders of the regulated jurisdiction)

The **efficiency** criterion shows which measures maximise net social benefit or as a so-called second best approach which measure reaches a particular target at lowest cost possible. Social costs are taken into account, that is full economic costs, including private direct investment and operation costs, the economic costs of lost profit or output, administrative, private and public monitoring and enforcement costs, etc. Ideally, external cost and benefits otherwise not valued by markets or not at the source of origin (for example, environmental damages/benefits, electricity system costs/benefits) are also included. However this approach is ***static*** in the sense that it will only select efficient technologies/measures; those which are currently efficient, but do not give way for currently immature and more expensive technologies to develop and prove that they may become cheaper in the long run. Therefore, R&D and technology promotion impacts of policies or explicit R&D policies cannot be judged by the conventional short term efficiency criteria. Obviously without concrete elaborate proposals and a detailed economic model, application of this criterion can only be theoretically derived and not quantitatively detailed for particular policies for a country. Consequently, co-benefits can also only be outlined qualitatively.
Among social costs important components are administration and transaction costs – and costs and feasibility of enforcement/monitoring.
Transaction costs are "frictions" between actors and may hinder or even block actions. These can be direct transaction fees, contractual, travel and communication costs, etc. Additional administration costs for either regulators or economic actors are extra costs (additional

institutions, personnel, time etc.) that reduce competitiveness. Additional public administration costs require reshuffling of the state budget, or increasing the deficit or a tax increase; neither being a favourite of politicians both for reasons of reluctance towards increasing economic distortions and loosing popularity.

Enforceability and the possibility to monitor the results may also be crucial, as otherwise the temptation of evasion for actors may overcome their respect of rules. Enforcing and monitoring costs can be prohibitive for some "too delicately" elaborated measures/policies. Enforceability is an element of institutional feasibility, the latter also includes adequate organisational structures and procedures, well prepared and supervised personnel, appropriate amount and quality of equipment.

Effectiveness refers to the penetration of RES capacities and production, whether small or high. It is usually listed in evaluation criteria, but if transaction, administration and monitoring costs are included in efficiency, it need not play a role since even a large number of efficient measures with low effectiveness can be more socially optimal than a few inefficient measures with high effectiveness.

Distributional effects refer to (relative) winners and losers of the policy, and often to its end-user price or cost increasing effect. Distributional effects/social effects and compensation needs are always of political importance; if such effects of a particular policy are likely to lead to too much social upheaval, decision-makers will be reluctant to introduce. To some aspect compensation (which can be costly) can tackle the distributional difficulties. An example may be the rising electricity price due to carbon constraints (carbon tax or emission trading). Besides households, distributional effects also precipitate at industry and services. In this case profitability and competitiveness are important criteria.

Political feasibility is closely related to the above distributional effects, the question is how seriously the measures hurt how strong groups. If their opposition position is strong enough, they can block the introduction of a particular policy measure. Exemptions, burden allocation rules and protectionist measures are the usual remedy options.

A.2 Background to R&D/innovation support

Besides the obvious cash subsidisation of Research and Development , there may be other forms and roles of national or regional government in pushing R&D. Naturally, putting a price on GHG and other emissions also makes low GHG intensity technologies and practices more attractive also for innovators. It is not sufficient, however.

R&D expenditures in immature technologies may pay off usually only in the long run and runs high risk. According to economic theory, the amount of innovation provided by private market actors is suboptimal, therefore government support is justified. The government can bear part of the technological risks either in the form of providing money for an innovation fund, or granting other subsidies, e.g. loan guarantees for some not yet fully mature

technologies. Clear long term governmental commitment must be signalled to the investors/innovation developers. The critical issue is not necessarily the high number of innovations, but wide and successful diffusion. Both aspects are to be addressed with a support policy.

The success of "break-in" very much extent hinges upon the structure of the incumbent market into which the innovation seeks breakthrough. In a market where there are players that enjoy subsidies or benefit from freely causing negative externalities or have substantial market power (monopolistic, oligopolistic markets), it can only happen with additional support to offset the uneven playing field. These barriers are often addressed with support mechanisms rather than with removing the barriers themselves.

The market structure also interacts with the underlying technical infrastructure, especially if it is supplied by a natural monopoly. Technical infrastructure influences and is influenced by market structure, its configuration often being locked for decades poised only for slow changes (path dependency). Both own innovation activity and absorbing (of others' innovation) attitude is also necessary from the part of operator of the underlying infrastructure, whose owner and management are very often both on ownership, management level and socially intertwined with those of the incumbent technology. The energy (electricity) market liberalisation process is just partly successful in detaching natural monopoly and competitive undertakings of large companies (this process is called "unbundling"). Sometimes regulation indirectly forces innovations in the infrastructure (e.g. obligatory third party access), but the development and innovation path can only be optimal if incentives are provided for the infrastructure operator to innovate and change. It is more the so as the dominant regime - which the infrastructure is part of - may provide counterincentives, as they resist because radical changes are against their vested interests under conventional regulation.

An example for infrastructure innovation policy is the UK Registered Power Zone scheme, in which regulation allows innovative electricity distribution network operators connecting a large number of small RES-E and CHP-E to their network a significantly higher rate of return than regulation provides normally. The higher rate of return can be as higher as 50 or 100% than the normal rate of return, reflecting the additional riskiness of the given new and innovative operational practice.

However the amount spent on low GHG emission R&D is a political choice with the basic decision being whether a particular country should choose

- „Free riding" on (adoption of) other countries' experience or
- to be on the frontier of decarbonising R&D – intensified, sort of state (PPP) venture capital investment in R&D[4], learning and penetration of low GHG technologies (like historical Danish support for wind entailing the formation of a strong wind turbine manufacturing industry)?

The first choice is lower cost, and less risky, but entails a time lag in implementing advanced green technologies thereby causing a loss of competitiveness in a future carbon

[4] Venture capital investment here is not in its strict meaning; the state puts money in risky projects in any forms such as grants etc., thus not necessarily becoming even partly owner in the project.

constrained economy. The second one needs higher costs, and involves the risk of innovation failures too. The art of decision making lies in finding the optimal point in between the two extreme choices. Nonetheless, without striving for significant intellectual power in R&D, a country cannot become and remain a competitive economy.

Beside the question how much resources to allocate, it is also crucial that where and in what form to allocate public R&D funds, and in which areas to remain a licenser–learner–copier. State innovation policy and climate policy via their incentives also influence decisions in private research. Given the important role of learning by doing and extensive application in the innovation/diffusion process, those areas are recommended to motivate for innovation that possess good natural and human resource potentials in a country.

Horizon 2020

Stemming from innovative economic growth focus, joining the programmes of the Horizon 2020 should be high priority in Member States and in regions with good R&D capacities. It aims at more breakthroughs, discoveries and world-firsts by *taking great ideas from the lab to the market.* The goal is to ensure that Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation.

The Horizon 2020 programme is focusing on 3 main objectives:

- excellent science base
- industrial partnership and competitive frameworks
- tackling societal challenges

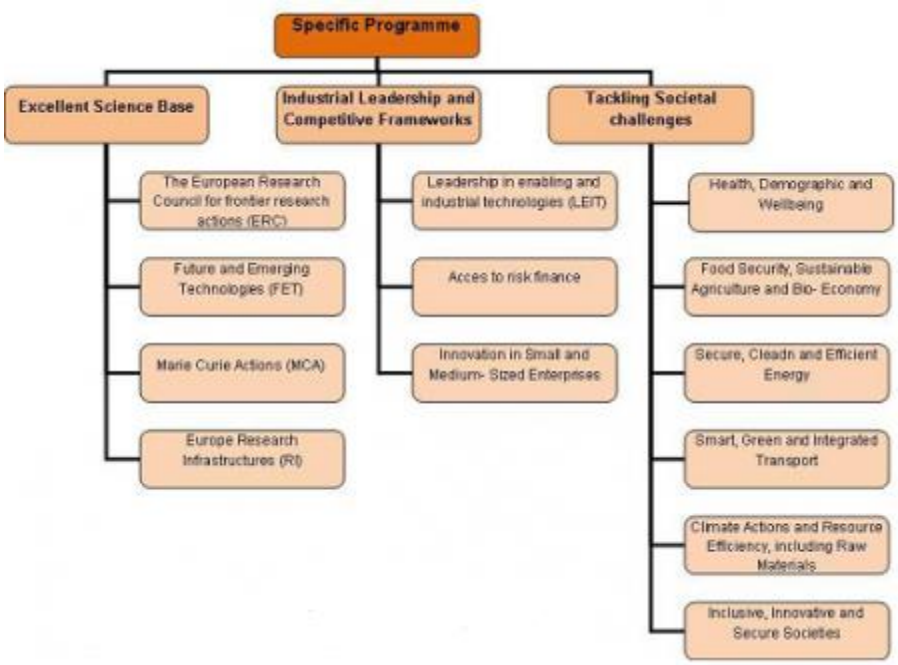

Figure 2. Structure of the objectives of the Horizon 2020 programme

As it can be seen from Figure 2, the issue of energy efficiency and renewable energy is incorporated into the programme both in terms of technological, innovational and societal developments.

A.2 Background to EU funds related to regional strategies and programmes supporting energy efficiency and boosting the use of renewable energy sources between 2014-2020

Common provisions regulations

For the 2014-2020 period the European Union decided to create a common basis for the previously differently regulated areas of European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund, the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF), altogether the European Structural and Investment – ESI Funds. To do so, in the frame of the Regulation (EU) no 1303/2013 of the European Parliament and of the Council of 17 December 2013, the European Union lays down the provisions necessary to ensure the effectiveness of the ESI Funds and their coordination with one another and with other Union instruments. This would allow different funds to function based on commonly set general rules.

The ESI Funds shall provide support, through multi-annual programmes, which complements national, regional and local intervention, to deliver the Union strategy for smart, sustainable and inclusive growth, as well as the Fund-specific missions pursuant to their Treaty-based objectives, including economic, social and territorial cohesion taking account of the relevant Europe 2020 Integrated Guidelines and the relevant country-specific recommendations adopted in accordance with Article 121(2) of the Treaty on the Functioning of the European Union (TFEU), and of the relevant Council recommendations adopted in accordance with Article 148(4) TFEU and where appropriate at national level, the National Reform Programme.

For the Partnership Agreement and each programme, each Member State shall in accordance with its institutional and legal framework organise a partnership with the competent regional and local authorities. The partnership shall also include the following partners:

(a) competent urban and other public authorities;
(b) economic and social partners; and
(c) relevant bodies representing civil society, including environmental partners, non-governmental organisations, and bodies responsible for promoting social inclusion, gender equality and non-discrimination.

In order to contribute to the Union strategy for smart, sustainable and inclusive growth as well as the Fund-specific missions pursuant to their Treaty-based objectives, including economic,

social and territorial cohesion, ESI Funds shall support the following thematic objectives:

(1) strengthening research, technological development and innovation;
(2) enhancing access to, and use and quality of, ICT;
(3) enhancing the competitiveness of SMEs, of the agricultural sector (for the EAFRD) and of the fishery and aquaculture sector (for the EMFF);
(4) supporting the shift towards a low-carbon economy in all sectors;
(5) promoting climate change adaptation, risk prevention and management;
(6) preserving and protecting the environment and promoting resource efficiency;
(7) promoting sustainable transport and removing bottlenecks in key network infrastructures;
(8) promoting sustainable and quality employment and supporting labour mobility;
(9) promoting social inclusion, combating poverty and any discrimination;
(10) investing in education, training and vocational training for skills and lifelong learning;
(11) enhancing institutional capacity of public authorities and stakeholders and efficient public administration.

Thematic objectives shall be translated into priorities that are specific to each of the ESI Funds and are set out in the Fund-specific rules. It should be noted that the Cohesion Policy 2014-2020 requires a minimum share of each region's ERDF allocation will be invested in measures supporting the shift to a low-carbon economy:

• 20% in more developed regions;
• 15% in transition regions; and
• 12% in less-developed regions.

Operative Programmes

Energy efficiency and the use of renewable energy sources are going to be important elements of the upcoming operative programmes in most Member States between 2014-2020 as well. In Hungary, the basic source of such developments is the Environmental and Energy Efficiency Operative Programme. Within the Programme, the 5th priority axis is responsible for the improvement of energy efficiency and the use of renewable energy resources.

The structure of incentives is organized around 4 basic objectives:

- use of renewable energy resources
- improving energy efficiency and the use of renewables
- raise energy awareness by complex campaigns
- development of electricity grid in favour of the set objectives of low CO2 emission

Under the objectives, there are several different measures to tackle energy issues both in private and public sector as well. These are:

- decentralized green electricity production
- pilot demonstrational projects on renewable energy utilization
- energy efficient buildings combined with renewable energy resources, buildings with zero energy demand
- development of district heating systems combining with renewable energy
- energy management systems in public services
- campaigns, awareness programmes

- smart meter systems
- demand response systems
- smart grid developments

However, in planning the priorities, objectives and measures, no direct regional involvement and differentiation was applied.

Territorial and Settlement Development Operative Programme (2014-2020) of Hungary

This operative programme is going to be the main source of financial funding for municipalities within Hungary. As a programme organized on territorial basis, the main motors behind it are the county councils and the county municipalities. Subsequently, county councils are responsible for all planning procedures and strategy development in terms of their own territory within the frame of the Territorial and Settlement Development Operative Programme. However, the actual decisions are centralized and will be made within the designated ministry, as managing authority.

All measurements focusing on energy issues are placed in the 3rd priority of the programme with the following objectives:

- environment friendly transport systems and sustainable public mobility
- energy efficiency and the use of renewable energy sources of municipalities

Under the objectives, there are several different measurements to tackle sustainability, energy efficiency and renewable energy. These are:

- sustainable municipal transport development
- energy efficiency and renewable energy resources in municipal buildings
- decentralized and autonomous energy supply in municipalities (local renewable energy resource production)
- sustainable energy action plan of settlements
- campaigns and local actions