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AGRICULTURE & INNOVATION



EIP-AGRI Focus Group

Sustainable mobilisation of forest biomass

MINIPAPER 6: Incentives for mobilisation of forest biomass

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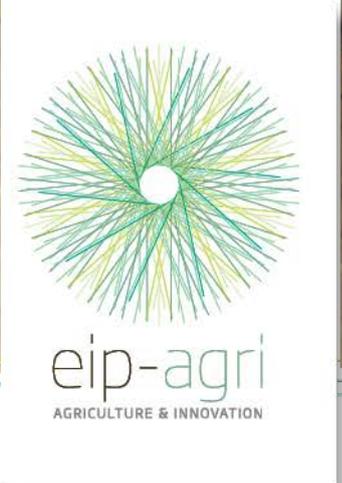
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INTRODUCTION – MOTIVATION

In a broad sense an incentive in forest policy is any instrument capable to motivate a decision or stimulate an activity of stakeholder actors along the forest sector and its value chains. In order to have a real impact, the incentive should modify the cost-benefit of the activity to be stimulated or at least be an "incitement and inducement of action" (Enters, 2001).

Primarily, well-functioning markets and competition should stimulate mobilisation. Nevertheless, though rising wood prices normally bring some additional raw material to the market, it is usually limited to larger forest properties and those small scale private owners already active. Experience show that a fundamental part of the potential biomass resource may not react rapidly to market improvement and may not offer security of long lasting supply, and thus may be substituted, e.g., by imported raw material. The major market discrepancies can be seen in low value wood (e.g. forest residues, thinning wood, fast growing plantations) mobilization costs and prices, thus significant forest and non-forest wood resources are not being mobilized as low market prices do not match high mobilization costs. Incentives can also be a valuable tool to initiate the mobilization processes, while during later stages can be removed after enough market participants could ensure efficient continuous supply of biomass without additional support.

Many countries or regions offer a range of grants and other incentives to encourage use and development of wood for energy and raw material use. But while support schemes in the demand side are widely employed, direct support for wood and biomass mobilisation/supply is less common in the EU.



In this context, and taking into account that business environments differ all over Europe, it is important to implement appropriate support and public-private partnerships. Biomass mobilisation through incentives may be direct (e.g. tax reduction for formerly inactive forest owners when conducting timber harvest) or indirect (e.g. lower VAT for forest machinery, RDP support measures for investment into machinery).

Incentives should be carefully designed and set at a level that does not over incentivise particular end uses, and competition is not distorted. Direct incentives can be adjusted to market price changes, to ensure stable biomass supply operations during market price declines.

Successful mobilisation of wood requires the close co-operation of various actors, including forest services, forest owners, forest owner associations and other groupings, forestry entrepreneurs and the wider forest-based industry (*see minipaper 01*). Properly functioning forest owner associations can play a major role in wood mobilisation from fragmented private forest holdings but they may need support for initiation and further capacity building. Incentives, such as grants, interest subsidies and loan guarantees, can be addressed to also for industry, contractors and entrepreneurs or partnerships between one or more of these groups.

DISSERTATION

Justification for providing incentives for biomass mobilization

Regardless to the sector involved, the use of incentives, especially subsidies, is always at the center of intense debates. Incentives aimed to transfer wealth from taxpayers to producers; to influence producer behavior; or to keep certain prices stable, usually face critics who contend that they can lead to economically incorrect allocation of productive factors.

From the economist's perspective, incentives are meant to correct a discrepancy between the financial attractiveness and socioeconomic desirability of an action. Thus, incentives from the public to the private sector are justified when social benefits are greater than private benefits associated with a given private action; or when social costs are less than private costs associated with the given action and social benefits are at least equal to private benefits.

Most of Europe's forests are owned by private families – of whom many own very small forest holdings. Since some of the private forest owners do not depend on the income of their forests, their behavior in terms of management and harvesting does not necessarily coincide with basic economic mechanisms and price increases cannot be seen as automatically incentivising them to put more wood on the market.

A significant gap in biomass supply may be developing in Europe, as a result of an increase in wood and biomass demand and insufficient attention to biomass supply. While there are opportunities to increase both availability and supply, both incentives and markets will be needed before this can occur. The mobilization potential will depend on supply chain efficiencies and profits and strong policy support to increase stakeholder and investor confidence, as well as prevent an excessive dependence on imports while European forest resources remain underused.

Hence, a transfer of wealth to the landowners may help in maintaining the supply of wood and biomass at a healthy level, addressing environmental concerns regarding sustainable materials and renewable energy,



generating employment (particularly in less developed rural areas) and preventing re-location of forest based sector while encouraging the development of new wood-using industries in these rural areas.

If bioenergy supply chains are to be sustainable over the long term and appeal to a wide range of stakeholders, they must be economically attractive, socially acceptable, offer social and economic benefits to communities, and maintain or improve ecosystem services.

Typology of best existing incentives for biomass mobilisation (or with impact on it)

During the initiation stage, direct incentives may be required, in certain instances, to raise awareness and to increase the pace and scale of biomass mobilization and to provide infrastructural support (e.g. forest roads, harvesting infrastructure). On the other hand, over the long term, and in mature markets, indirect incentives have greater influence than direct incentives. Some measures such as giving technical assistance or providing adequate tenure arrangements and resource security are difficult to undertake, but crucial to success. Others such as tax reforms, removing unnecessary regulations and eliminating bureaucratic procedures (licensing and permits) are just as important and in many cases easier to realize.

There are incentives that cannot be influenced through intervention or can be changed only with great difficulty. On the other hand, it is important to the reduce barriers to investments and remove structural impediments and operational constraints.

The following analysis concerns only those direct and indirect incentives that can be provided or withdrawn through policies. The “incentives” concept is broader than that of “subsidies”. The latter are of a purely pecuniary nature and usually viewed as payments provided to reduce the costs or raise the returns on an activity.

Examples, mentions and comparisons among different countries are necessarily broad, since even schemes that are generically similar differ in detail. Similarly evident is the incompatibility of various tax systems and concessions offered in different countries.

Direct incentives

Grants, subsidies and fiscal measures.

Providing grants and subsidies, tax reliefs and other direct fiscal measures and sources of and mechanisms for finance, may be the simpler way to increase mobilization by improving the economics or behaviours of already active forest owners.

Depending on the elasticity to price of the producers, this measures might be a sufficient mechanism to incentivise them to market more of their production. Nevertheless, it seems that the forest owners' behaviour is driven also by many other considerations than price alone. One can therefore imagine that price increases, be it from the market or through direct subsidies, would have limited effects in terms of wood mobilisation and may serve to push up associated costs. Taking into consideration the general situation of abandonment of rural land in many regions, there is a risk that landowners who would have



market their production anyway would use public funding and inactive ones would not react to the incentive. In other words, cost-sharing, unless it is targeted at a specific practice e.g. earlier/heavier thinning, may not change the level of management practiced by active forest managers.

In any case various experiences show that direct financial incentives to small-scale forest growers have a significant impact when combined with indirect ones as information support on silviculture and economics. It is also important to consider that small grants provided with a minimum of administrative complexity tend to be more effective than loans that have bureaucratic repayment requirements.

Local Infrastructures, transport and logistics.

Costs of handling and transporting wood and biomass is a widely documented bottleneck to further mobilization. Thus, direct incentives such as building local infrastructures, improving accessibility to the forest - in particular in mountain areas, or streamlining transport and logistics could play an important role.

Systems to improve collection system logistics for small woodlot owners can play a key role in the provision of flexibility. These include incentives to encourage establishment of concentration yards and terminals where biomass can be sorted into multiple feedstock assortments and pre-processed. Moreover, for biomass producers, terminals could also ensure that forest machinery can be utilized effectively year-round. Since raw forest biomass cannot be transported long distances due to its relatively high volume/value ratio, robust value-upgrading at terminals close to the feedstock sources, before long-distance transportation, need to be considered.

It is also important to optimize transport distances and improve technology and transport systems of new energy-wood assortments. Non-financial incentives as raising axle weight limits, when appropriate, would facilitate biomass transport to comply with expected stricter emission targets without increasing costs. For new conversion processes and utilizations, stricter requirements for limited biomass variability in quantity, quality and format requires further research and development into effective logistic and transport systems.

Subsidized loans (machinery, forest operations...)

Efficient mobilisation of biomass fractions traditionally underused (stumps, harvest residues...) may need to develop and implement new machinery concepts to traditional forest harvesting enterprises. Subsidized loans for machinery and other ways of backing extended forest operations may also have a very positive indirect impact, through modernisation, in health and safety issues in a biomass-demanding scenario.

Market organization and marketing:

In the case of new biomass assortments or areas without tradition in mobilizing forest resources, the establishment of public-private partnerships and supporting infrastructures such as marketing hubs can develop certain markets jointly ensuring transparency and efficiency in the initial stages. Also facilitating cost-share agreements, joint ventures, and long-term partnerships and contracts between industrial consumers and forest owners that may increase stakeholder confidence.

Indirect / Variable Incentives

There may be an indirect effect of the sector Tax policy - or even the General Tax policy - in biomass mobilisation that should be consider as an indirect incentive. How forest owners are taxed, in particular in thinnings, tending operations, may contribute to and increased mobilisation or, in the contrary, to a



deceleration of the activity. Also different trade regulations, trade barriers, tariffs, may affect the way wood and biomass are imported and exported.

It is also crucial to include the effect of other related policies and the existence of other forest incentives. Most of the forest-related incentive schemes launched in the last decade are related with ecosystem services, nature protection, deforestation control, landscape protection, etc. Most of them are implicitly focused to a less intense management and so to potential less biomass mobilisation. For example, the implementation of a Carbon Tax may provide incentives for landowners to build up forest inventories and forest carbon stocks, if carbon sink in products or substitution effects are not considered. Scenarios with high CO₂ payments and no accounting of the products sink effect, are incentives to leave trees longer in the woods to increase forest carbon storage and would mean less timber supply –though maybe of bigger size assortments-. Thus not-excluding forest operations from other forest incentives, or implementing a framework of complementary incentives that additionally help to mobilise biomass where appropriate, should be considered.

Indirect / Enabling Incentives

Resource information

A comprehensive understanding and assessment of the wood resource, its ownership structure, future domestic demand and the potential for industry investment is fundamental to the development of a biomass mobilization strategy. This is only possible with a sound data base, which is often lacking in the context of predicting forest biomass potential for mobilisation. There is also the data protection barrier where the database may exist but it not available to those who would leverage this knowledge. It is not only important to asses resources and conclude a general quantity estimation (even at a regional scale), but where they are and why are they underused. New technologies may offer great opportunities in this area and also public programs offering transparent high quality information may help investors and other stakeholders to forecast and conduct appropriate risk analysis.

Land tenure, management, coordination and planning

Security in land tenure and use is crucial for biomass production and mobilisation as it is for any other natural resources. Though, in Europe, it is not a big issue as it may be in developing countries, there are potential policy measures regarding abandoned rural properties that should be considered. Some examples are "Land Banks", taxes based on unused or under-used land, etc. In high fragmented forest areas consolidation of land management units and prevention of further fragmentation of holdings would need to be supported.

Additionally, well-functioning forest owner associations have proved their capability to increase wood supply from small scale private properties. Rural development policies, therefore, should continue to encourage further mobilisation supporting capacity building of forest owner associations; enhancing cooperation between forest management units, and creating cooperative organizational structures along the supply chain from biomass suppliers to energy firms and trade centers. Furthermore, support for organisation structures such as cooperatives (including items such as the development of professional corporations, associations and formal educational programmes) can also be a way to increase the professionalization of the workforce in forest biomass supply chains, which has been identified as an important driver for increased biomass mobilisation.



Sustainability

The sustainability of forests and other wood resources, as well as of operations, needs to be assured at all stages of planning and execution of wood mobilisation, both in policies and measures. As for other activities, guidelines, regulations, and standards are needed to ensure that biomass outputs comply with sustainability considerations,

Silvicultural measures

Afforestation programmes and silvicultural measures to enhance forest growth represent slower supply side responses than the options to collect under used resources and utilise side streams in the forest industry. Nevertheless they are a permanent improvement as well as a key elements in increasing the capacity of our forests to contribute in the longer term.

Additionally the application of new silvicultural models to traditional forest activity as well as the use of new forecasting and decision-making tools, and streamlining biomass supply chains with existing silvicultural and agricultural practices (e.g., timing of operations, use of machinery) can increase efficiencies and cost effectiveness and should enhance adoption rates and improve the overall productivity of existing practices.

Support Services for biomass producers (forest owners) / Extension services

Structures to support forest owners vary nationally, regionally and with the profile of the owner. In many cases a single agency/organisation can provide a number of these services/supports to forest owners. It may be argued that meaningful interaction with one or more of these support structures is the key to mobilising the timber resource. Interaction with these structures is generally voluntary and may be initiated by the owner or by the support service. (*Minipaper 02 includes a detailed analysis of this measures*)

Transferring best practices and technologies from more experienced regions while accounting for regional differences and local conditions and making use of existing infrastructure can be effective in getting supply chains off the ground.

Examples

In **Finland**, complementary to feed-in-tariff for wood support forest owners may apply finance for forest management based on "Act on the Financing of Sustainable Forestry" (*Kemera*). This incentive for energy wood mobilisation has included -until a temporary suspension in mid-2016- pre-commercial thinning. There is also a wide extension and support program for forest owners (*Metsään.fi / Metsäkeskus*) as well as an active conservation program (*Metso Programme*) for Natural Protected Areas.

The **Czech Republic** provides wood chipping grants. In **France** tax incentives are available for active forest owners to carry out forestry work that will enable timber to be extracted. The Biomass Support Scheme (**Scotland**) has been providing grants and incentives.

In other countries outside Europe there are some incentives in place. In **Australia** under MIS Plantation there are significant 'up front' tax deductions (100%) for expenditures incurred for plantation establishment and management. In **USA**, the Biomass Crop Assistance Program (BCAP) provides financial assistance to owners and operators of agricultural and non-industrial private forest land who wish to



establish, produce, and deliver biomass feedstocks including annual payments under the Commodity Credit Corporation (CCC) to produce eligible biomass crops.

Existing support schemes, as the European Agricultural Fund for Rural Development (EAFRD) and forest-related measures in respectively national and regional rural development programmes (RDPs) have allowed many European regions to launch measures to foster and improve forest management and infrastructure that may indirectly increase mobilisation of biomass.

For example, in some regions in **Spain**, these have been the only measures affecting the supply side while there has been a big effort - with very limited effects in mobilisation - in the demand side including feed-in tariff for electricity.

In **Lithuania** incentives for biomass mobilization exists only through RDP measures – subsidies for machinery, thinning cost subsidies (although there is no requirement to supply thinning wood for the market), subsidies for short rotation crop establishment (but no one can get these subsidies for SRC establishment, as SRC growers can not compete with conventional farmers for RDP grants). It would be a great support for SRC plantation expansion if RDP support could be financed from RDP forestry measure pool – forest establishment measures (e.g. with commitment to grow SRC for 20 years).

In **Lithuania** a detailed study on direct incentive (cost subsidy) needs for low value wood mobilization for energy needs has been conducted, but thereafter direct incentives were not introduced as that required budget funding, while RDP measures have not been available.

In **Ireland** profits/gains from woodlands managed on a commercial basis with a view to realisation of profit are exempt from income tax. Currently no subsidies or incentives available for thinning conifers (considered economic) but tending/thinning grant is available for broadleaves. Roading grants are available as most forests are in first rotation and don't have exiting infrastructure. Due to the low level of forest cover (10.5%) afforestation grants and annual (15 year) premium payments are available and farmers can still avail of CAP Basic Payment. These are nationally funded (not EU). Also incentives available for SRC but low uptake due to poor relative economics and market uncertainty. There are other support measures including Knowledge Transfer groups being planned/piloted (Biomass Mobilisation and Forest Certification). Demand side incentives due to be launched in 2017 with Renewable Heat Incentive. Indirect incentives include the provision of a free advisory service to potential and existing forest owners. This is aimed at supporting the development of a forestry culture among first generation forest owners.

RESEARCH NEEDS

Empirical research on the impacts and effectiveness of incentives is scarce and even where it exists, it is often impossible to clearly identify a direct relationship between incentives offered and the behavioral response by small and large-scale forest owners. Such research would work towards identifying the best form of incentives to support wood mobilisation and would need to take the different regional/national situation into account.

- Research on the impact of more indirect incentives e.g. extension services would be useful.
- Research needs from practice.
- Real effect and efficiency of current incentives along Europe.

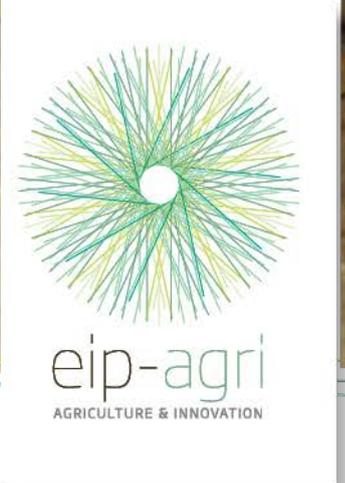


- Longitudinal Research: Mobilising forest biomass to meet emerging market needs is a relatively new concept, especially in terms of the increasing energy-related market. Experience of this value chain is therefore scarce. Longitudinal studies (over decades) should be designed and implemented to monitor this evolving industry, where factors such as the impact of different incentives could be measured.
- Social Motivation: The general public are becoming more aware of the impact climate change will have. Included in this 'general public' are those forest owners who do not see any economic motivation to mobilise their forest resources. Understanding how renewable fuels such as forest biomass are viewed by citizens could create an environment where forest owners are moved by social incentives to mobilise their forestry. This would require quantitative (e.g. simple surveys) and qualitative (e.g. drawing up subsequent actions) studies to capture the initial views of the public and from there to help inform wider discussion of biomass mobilisation.

IDEAS FOR INNOVATIONS

- Potential to develop models for innovative virtual timber sales/marketing hubs. This would enable forest owners to interact with timber buyers within a secure framework.
- Models for the development of forest owner groups so that they become more self-sufficient without overdependence on volunteerism. This may be specific to areas that don't have existing groups or economies of scale.
- Development a general extension framework supporting national or regional initiatives.
- Collecting existing and developing practices and policies along value chains for increased and sustainable supply of wood and biomass according to the quality needs
- Economic models and framework to provide analysis an incentive efficiency giving practical recommendations with guidance for policy-makers and value chain stakeholders, concrete actions for application, possible demonstration activities and dissemination of results.

Further research needs coming from practice, ideas for EIP AGRI operational groups and other proposals for innovation can be found at the final report of the focus group, available at the FG webpage <https://ec.europa.eu/eip/agriculture/en/focus-groups/sustainable-mobilisation-forest-biomass>



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ANNEX I: Table with typologies of incentives

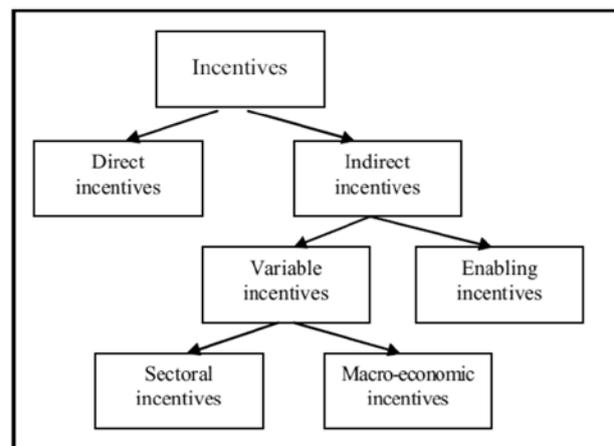
Typologies of incentives

Direct incentives: Those designed to have a direct impact in and affect directly the economic return on each operation.

Indirect Incentives: Those that establish or change the framework

Variable: affect net return that forest biomass producers obtain from their mobilisation activity.

Enabling incentives: to improve the potential answer to other incentives or market conditions.



General incentives in the forest sector (Adapted from Enters et. Al and FAO)

Incentives	Direct	<i>Direct supply of Goods and Materials (eg. plant, fertiliser, machines...)</i>			
		<i>local Infrastructures</i>		X	
		<i>Direct subsidies</i>		X	
		<i>Tax reliefs and other direct fiscal measures</i>		X	
		<i>differential fees and access to resources;</i>		X	
		<i>Subsidized loans (machinery, forest operations...)</i>		X	
		<i>cost-share agreements, joint ventures, guaranteed prices</i>			
	Indirect	Variable Incentives	Within the sector	<i>Input and Output Prices</i>	
				<i>Sector Tax policy</i>	
				<i>Trade regulations, trade barriers, tariffs, ...</i>	
		Macroeconomic		<i>Exchange rates</i>	
				<i>General Tax policy</i>	
				<i>interest rates</i>	
				<i>Other Monetary and Fiscal policies</i>	
		Enabling Incentives	<i>Security in land tenure and use</i>		
<i>Availability of general infrastructures (terminals, roads, ports, railways...)</i>					
<i>Support Services for biomass producers (forest owners)</i>			X		
<i>Market Development</i>					
<i>Political and Economic Stability</i>					



		<i>National Security</i>	
		<i>Research, Development and Knowledge transfer</i>	
		<i>Abandoned Land mobilisation</i>	X
		<i>Extension services</i>	X

Those ticked incentives are the ones that are described in the paper.