



biomasspolicies

An integrated policy framework for the sustainable exploitation of biomass for bioenergy from marginal lands

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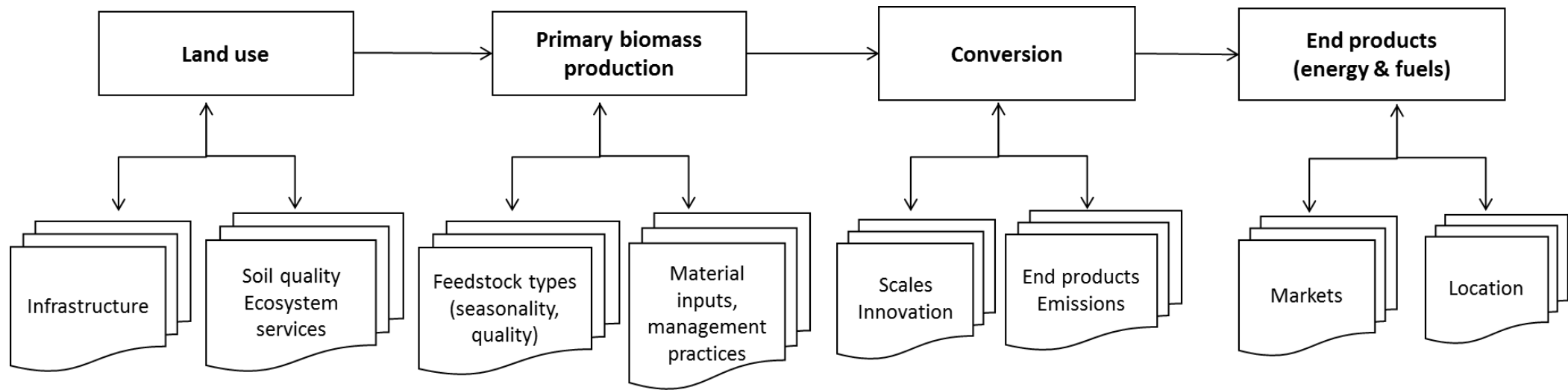
Policy for marginal land and bioenergy in EU

- Marginal land, according to FAO: Land having limitations which in aggregate are severe for sustained use due to a) increased inputs to maintain productivity, b) low fertility, poor drainage, shallowness, salinity, steepness of terrain, unfavourable climatic conditions, c) difficult market accessibility, small holdings, poor infrastructure and d) limited options for diversification.
- In EU, such areas were defined till 2013 as Less Favoured Areas (LFA) in the Common Agricultural Policy. From then, transition to Areas with Natural Constraints (ANC). Re-designation process is ongoing within Member States; expected to finish by 2018.
- With improvements (both of bio-physical and socio-economic nature) such land types may be cultivated with non food crops for bioenergy.
- Future policy must provide detailed system prescriptions-support in one sector may cause conflicts to another. Attention to trade-offs and displacement effects.

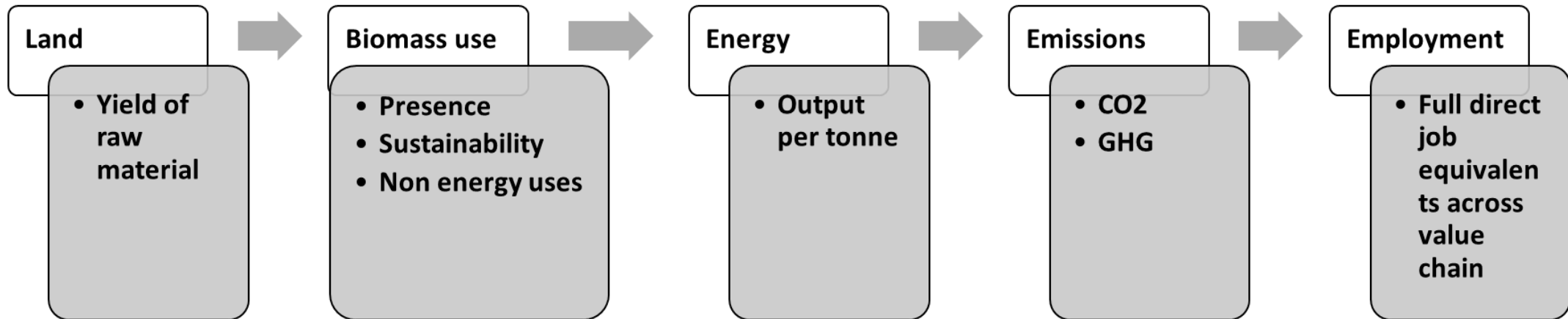
Framework conditions

- Policy for sustainable bioenergy from marginal lands has **cross sectoral nature** and is driven by supply demand interactions.
- Policy makers need to understand how to distinguish **key attributes across value chains**, measure them and prioritise actions with a 'system' based approach.
- Effort is required to map **current policy landscape** & understand both the **typology** and interactions.
- Future policy should be balanced both for supply and 'rising' demands ensuring that the 'system' supplying capacity is not exceeded.
- An **integrated approach** is required.

Policy for marginal land and bioenergy is cross sectoral



Key attributes across value chains



1

**Understand and
measure key
value chain
attributes**

2

**Map current
policy
landscapes**

3

**Prioritise actions
and suggest
future policy
interventions**

4

**Impact
assessment &
monitoring
progress**

Steps for future policy design

Key data challenges

1. Cross sectoral nature limits access to historical information about policy development, drivers and rationale. Such data can be used to identify and measure impacts, correlations, and validate models.
2. Different databases, inventory techniques and units are used to develop policy for the individual sectors involved across biomass value chains. This restricts data aggregation and analysis.
3. Land marginality varies over time and improvements have a long transition period as well; links to update remote sensing techniques are essential for monitoring and ensuring the validity of the proposed measures and ensure suitable regional coverage.

Key modelling challenges

1. Modelling and impact assessment relies on land use, econometric and energy models that are fragmented and sectorial (*e.g. focus in agriculture, forestry, urban planning, etc.*). These, most of the times represent other sectors as external drivers or treat them in a simplified manner.
2. Due to complex interactions of socio-economic forces, biomass production in marginal land in a region may influence changes in land use in another one around the globe. Such direct and indirect land use impacts could benefit or adversely affect the sustainability of value chains that are promoted by policy mechanisms.

What can we consider as integration in a policy framework?

1. Integration of various types (mix) of policy mechanisms by combining regulations, financing and information provision and apply them across 'value chains' and sectors to ensure sustainability, well functioning ecosystem services, resource efficiency, successful market development, maintenance and improvements of existing infrastructures.
2. Integration of sectoral (e.g. heat, electricity, biofuels, marginal land, etc.) policy which reflects both the supply and demand policies required within specific 'systems' to ensure both resource and energy efficiency.

Approach for developing an integrated framework for the sustainable exploitation of biomass for bioenergy from marginal lands

Step 1: Analysis & Direction setting

Current land use
Domestic biomass options
Value chains
National infrastructures

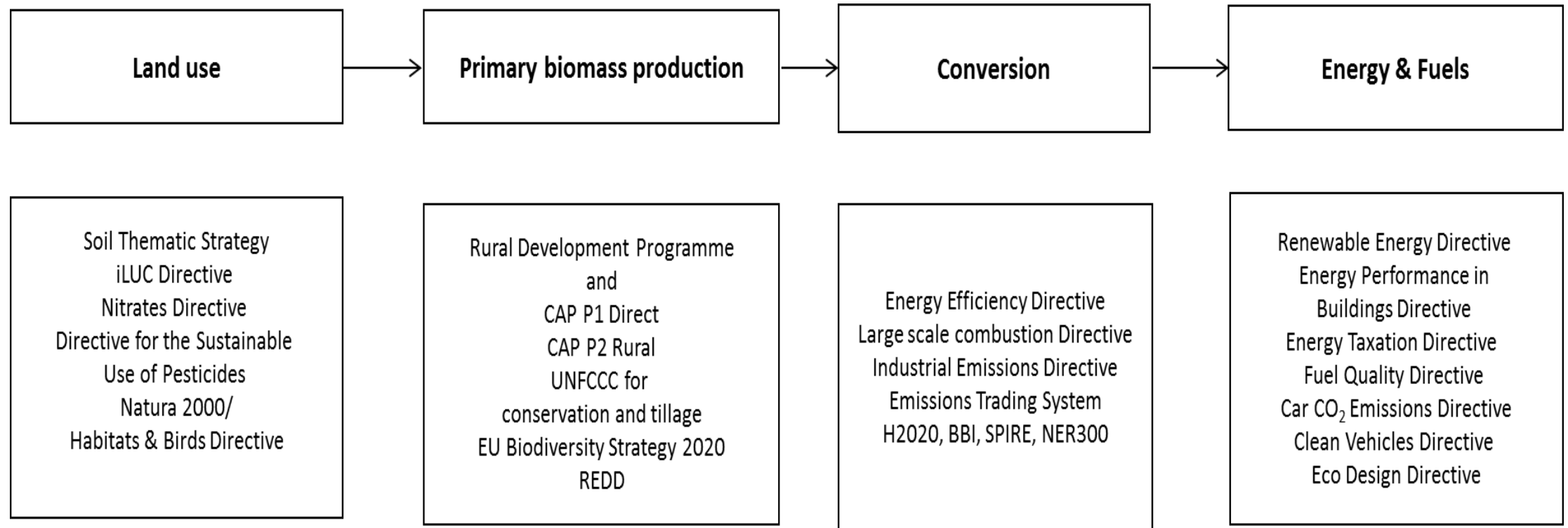
Step 2: Policy aim & justification

Current policy
Challenges to turn marginal land into productive systems
Why is the government intervention necessary?
Policy objectives and intended effects

Step 3: New policy for improved competitiveness

Targeted interventions for domestic biomass & efficient value chains
Impact assessment: why these instruments- what they can achieve? Value added.
Integrate recommended instruments in existing or form new policy measures?

Current policy landscape in EU



Sector policies: agriculture, forestry, wastes

Regulations

Financing

Information

Biomass Supply

Logistics

Conversion

Distribution

End Use

Agriculture

CAP Pillar 1: Direct Payments

CAP, pillar 2 – Rural development

Nitrates Directive

Animal by-products

Forestry

Forest strategy

Timber Regulation

FLEGT – Forest Law Enforcement, Governance and Trade

LULUCF – Land Use, Land-Use Change and Forestry

REDD+

Phytosanitary standards in forestry

Wastes

Waste Framework Directive (2008/98/EC)

Landfill Directive

Sewage Sludge Directive

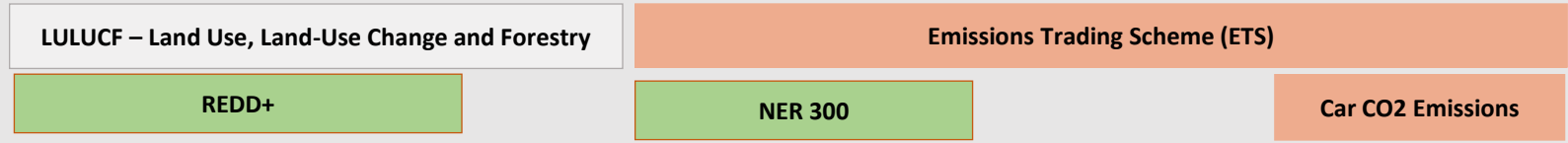
Industrial emissions Directive (including waste incineration)

Sector policies: climate, energy, transport, bioeconomy

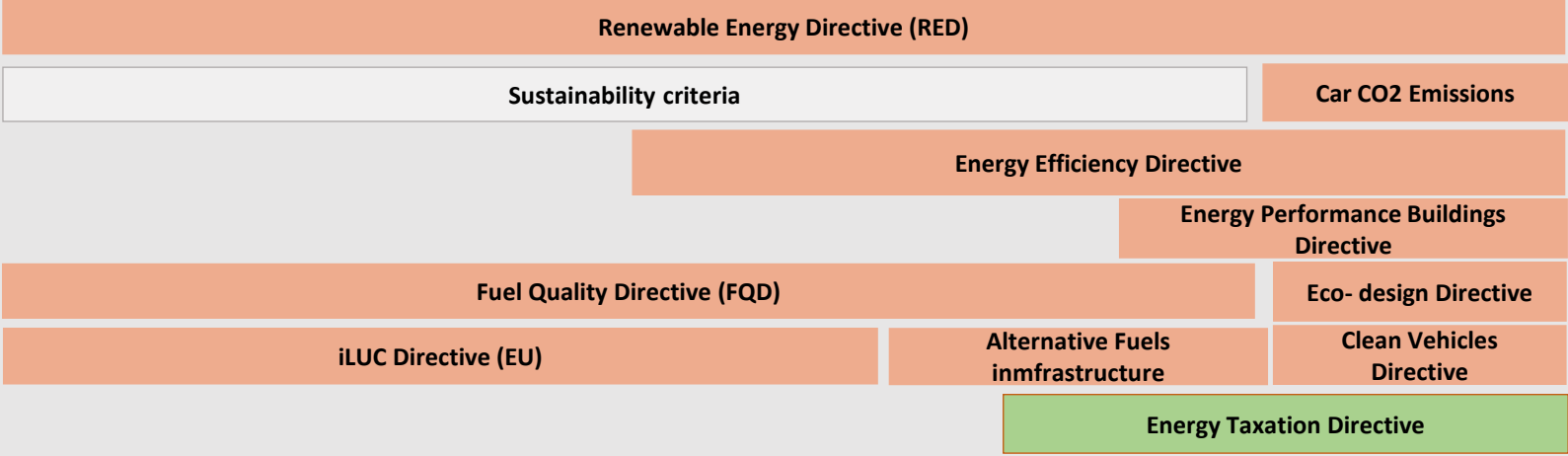
Regulations Financing Information

Biomass Supply Logistics Conversion Distribution End Use

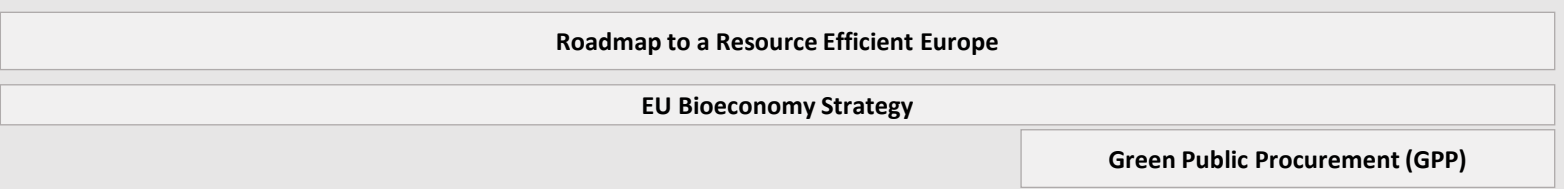
Climate



Energy & Transport



Bioeconomy



Suggestions for future policy formation (Supply); *ongoing work*

	Mechanism/ System component	Land Use	Crop (non-food) Production	Harvesting/ Collection	Logistics	Trade
Regulatory	Common Agricultural Policy Act on ecological products and farming practices Nitrates Directive (91/676/EEC)	Early markets	Mature markets Sustain markets	Mature markets Sustain markets		Mature markets Sustain markets
	Certification/ Standardisation		Mature markets Sustain markets			Mature markets Sustain markets
Expenditure	Investment subsidies, CAP P1 green direct payments	Early markets	Early markets	Early markets	Early markets	
	R&D Grants	Early markets	Early markets	Early markets		
	Tax exemptions				Mature markets Sustain markets	Mature markets Sustain markets
Information provision	Strategies/ Action plans	Early markets	Early markets	Early markets	Early markets	Early markets
	Capacity building	Early markets Mature markets	Early markets Mature markets	Early markets Mature markets	Early markets Mature markets	

Suggestions for future policy formation (Demand), *ongoing work*

	Mechanism/ Mechanism/ System component	Biomass supply	Conversion	Distribution	End Use
Regulatory	Regulations		Early markets Mature markets Sustain markets	Mature markets Sustain markets	Mature markets Sustain markets
	Certification/ Standardisation	Mature markets Sustain markets	Mature markets Sustain markets		
	Public procurement		Mature markets Sustain markets		
Expenditure	Loans, Credit lines		Early markets		
	Investment subsidies	Early markets	Early markets		
	R&D Grants	Early markets	Early markets		
	Tax exemptions		Mature markets		
	Tariffs/ Premiums/ Tendering schemes		Mature markets Sustain markets		Mature markets Sustain markets
Information provision	Strategies/ Action plans		Early markets	Early markets	Early markets
	Targets/ Obligations	Mature markets Sustain markets			Mature markets Sustain markets

Example of integrated framework for perennial crops in marginal lands for bioenergy in Germany- *Biomass Policies & ongoing work*

Feedstock/ Value chain	Policy interventions	Rationale for the recommended policy interventions	Expected added value of the recommended policy interventions
Perennial crops			
<p>small scale heating (household level)</p> <p>medium scale heat driven (apartment building, district heating, public buildings)</p> <p>medium scale CHP (residential district or industry; heat driven)</p>	<p>i) Investment subsidy for heating applications and loans for district heating (MAP).</p> <p>ii) Assessment of suitability for the cultivation of perennial crops on voluntarily set aside and marginal lands</p> <p>iii) Feedstock bonus for CHP < 100kW (EEG).</p>	<p>to diversify indigenous feedstock options</p> <p>to introduce premium for energy crops; to sustain the high share of biomass heat and support cogeneration and subsequent heat uptake.</p> <p>to sustain the high share of biomass heat and support cogeneration and subsequent heat uptake.</p>	<p>To improve land use and enlarge the resource base.</p> <p>To ensure FiTs for early biomass plants that end in 2021 have a follow up scheme, meet targets and sustain deployment in the bioelectricity sector it is important to further mobilise residual and waste biomass potentials, for bioelectricity and to promote high efficiency technologies (in current stock and or newly built plants). Increase the value added of bioelectricity to the energy system (providing flexible and reliable power for balancing energy etc.), to agriculture (e.g. decrease nitrate input of manure) and to cascading use of waste (e.g. anaerobic digestion before composting).</p>

Steps towards future policies for sustainable bioenergy from marginal lands

- Understand the context in terms of region, land uses, marginality factors and infrastructures.
- Analyze current policy:
 - Are certain policy types under- represented (economic, regulatory, expenditure, institutional policy instruments)?
 - Are policies not focusing on key drivers, pressures, the state or the impacts?
 - What improvements are necessary to improve their overall effectiveness
 - Are relevant policies missing?
- What are the key sectoral policy inter-linkages and are they positive or negative?
- Look for policy 'success' stories

Recommendations to consider....

- Marginal land has serious limitations (both of biophysical and socio-economic nature) and transition to productivity could take a long time period.
- Base regulatory framework exists in EU and several Member States and can form the background for an integrated **regulatory policy**.
- Strong **financial support** is required to develop the infrastructures required whilst ensuring sustainable management practices.
- There is still very little knowledge and awareness, especially among farmers, foresters and local communities. **Information provision** is essential, especially at local/ implementation level.



www.s2biom.eu

Thank you

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