



Netherlands Enterprise Agency

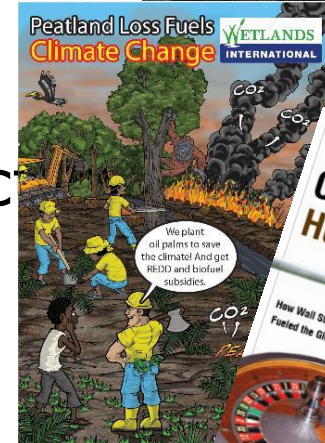
Aspects of Sustainable Biomass Supply chains

By: Kees Kwant





- Competition with food (price spikes 2007/2008)
- Land use change (direct and indirect)
- Loss of biodiversity
- Loss of GHG sinks
- Other sustainability effects:
 - Locally: soil, water, air
 - Social (poverty, land rights)





Sustainability is defined as the capacity of an activity to continue while maintaining options for future generations

What is Sustainability?

- **For Biomass:**

- **Environment**
(soil, water and air)
- **Biodiversity**
- **Greenhouse gases**
(emission and carbon stock)
- **Well-being**
- **Prosperity**





Netherlands Enterprise Agency

Trust and Sustainability Assurance



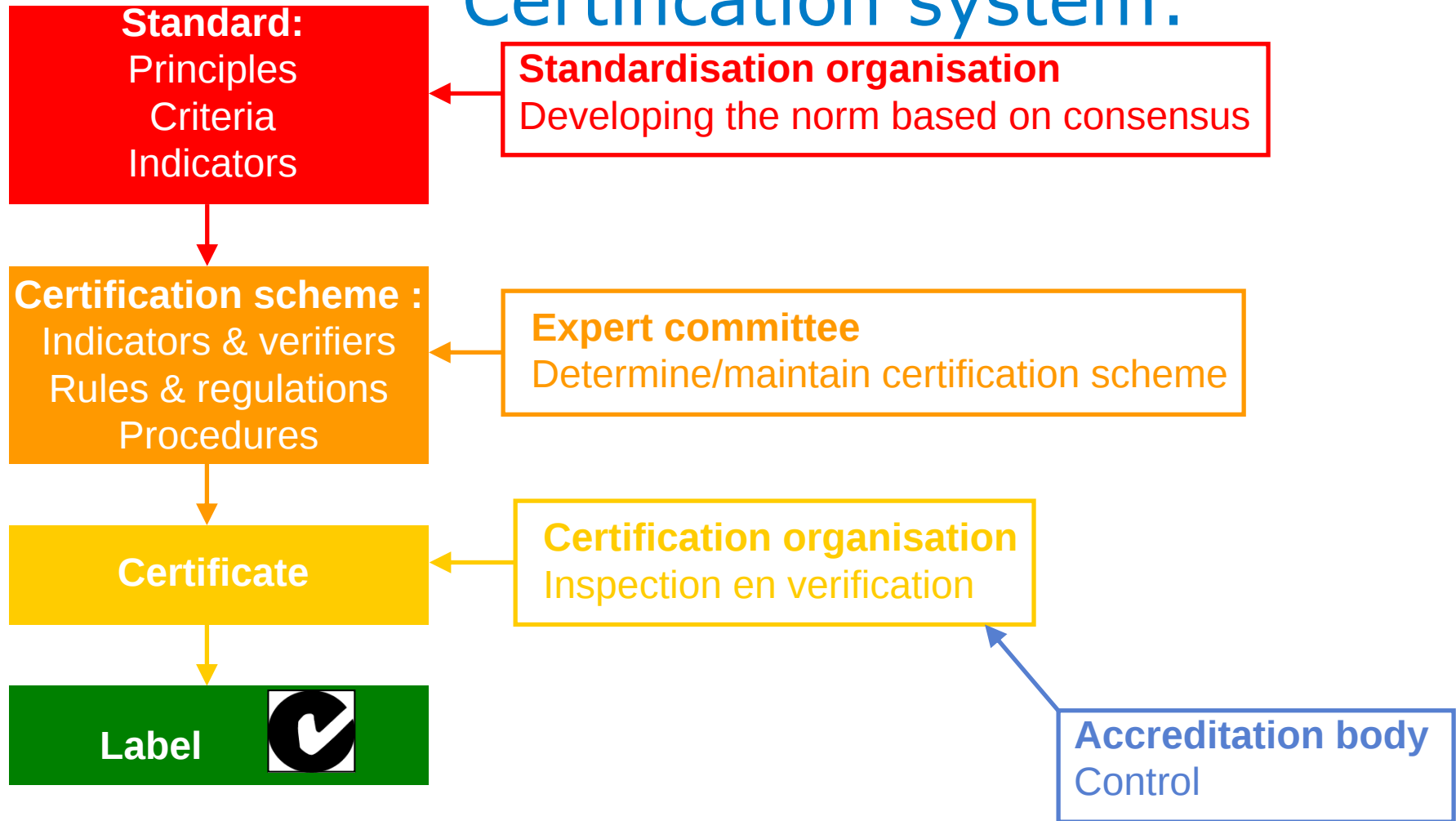


Sustainability, how to create trust

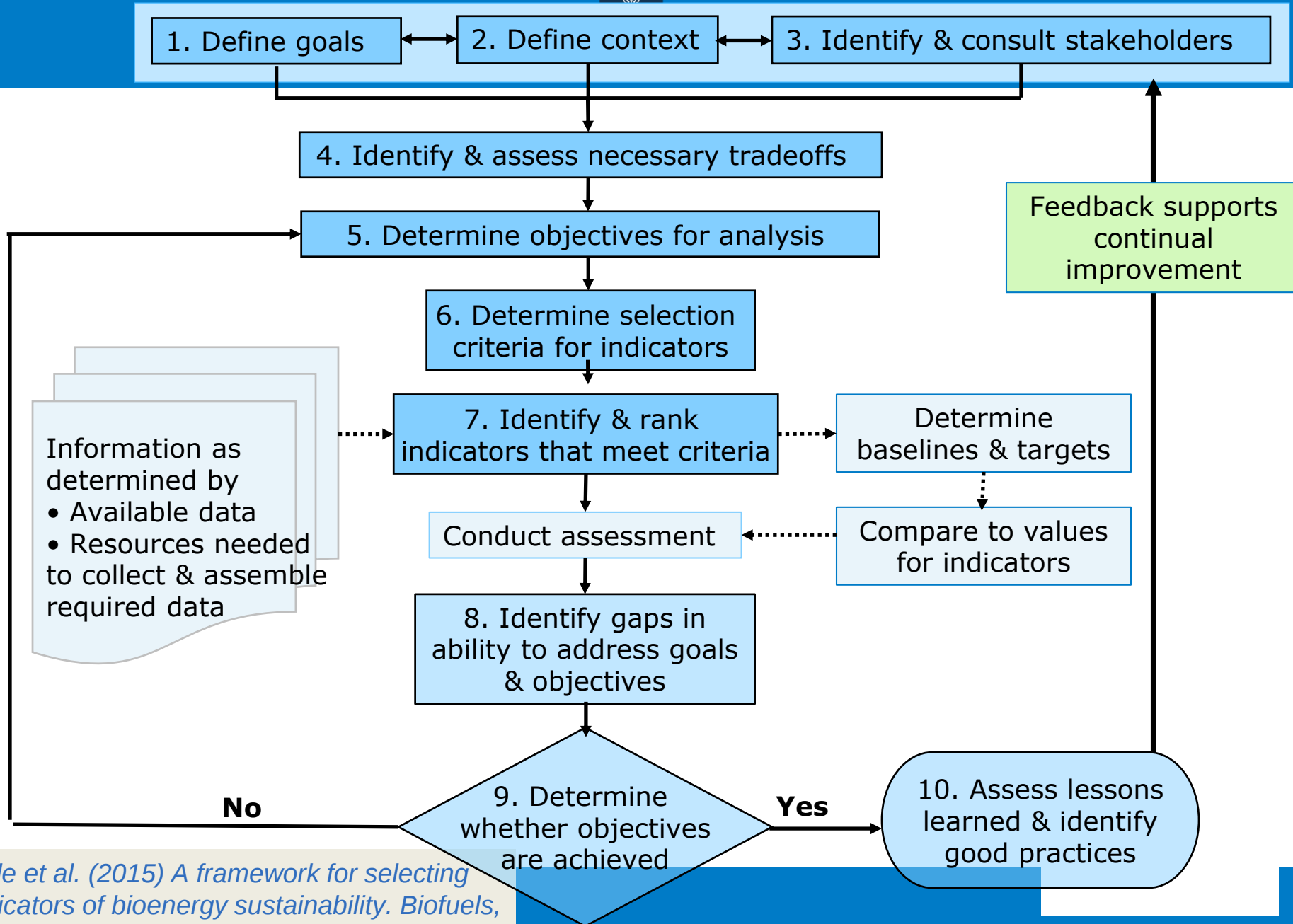
- How to assess sustainability?
 - Precautionary Principle
 - Opportunity Principle
- How to prove Sustainability
 - By law, legal requirements
 - Bilateral agreements between countries
 - Certification systems in free market



Certification system:

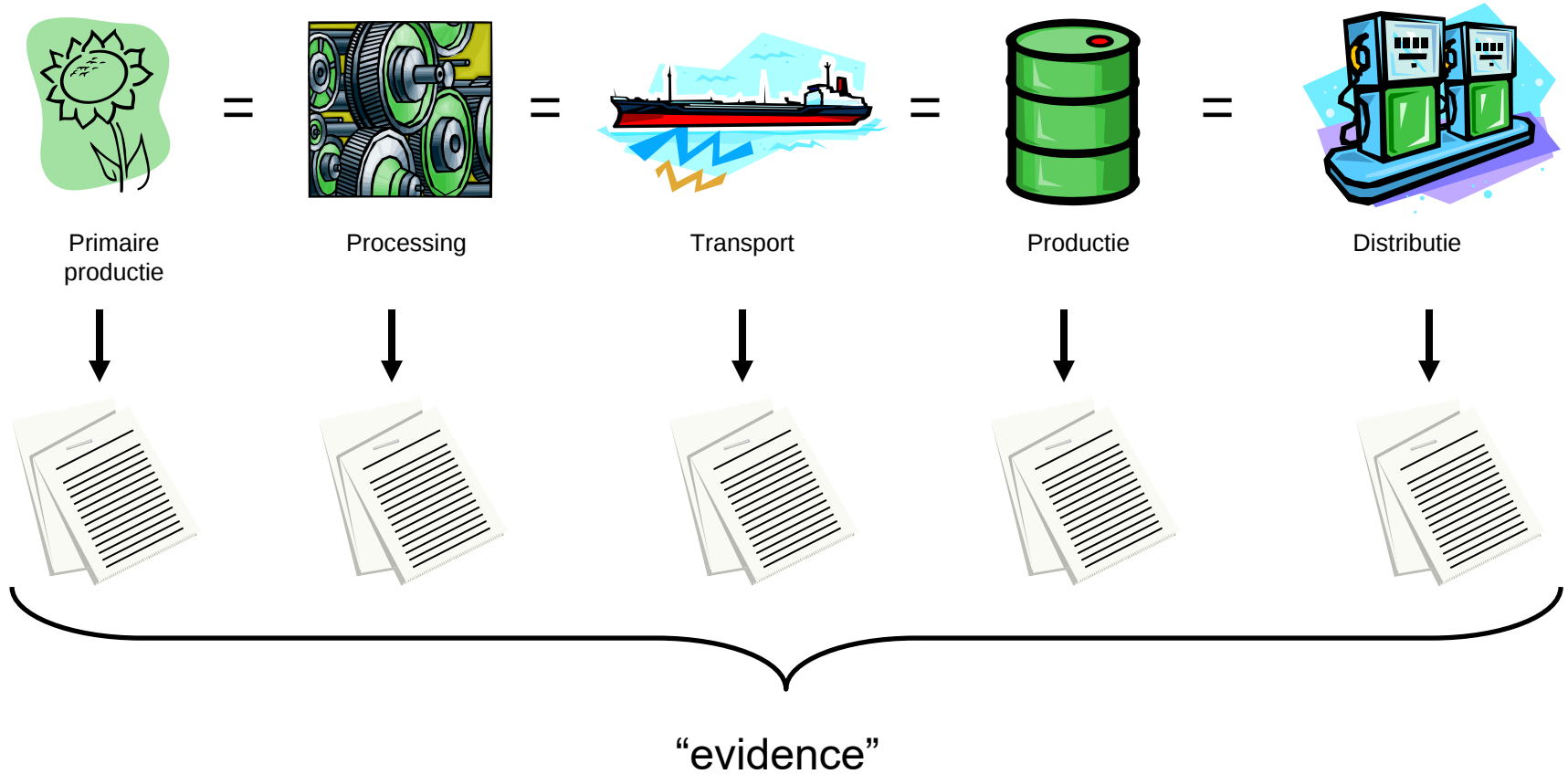


Framework for Selecting Indicators





Chain of Custody





Netherlands Enterprise Agency



Examples of Sustainability Indicators and Certification Schemes



24 Sustainability Indicators agreed by all GBEP partners

(2011)

Environmental	Social	Economic
1. Life-cycle GHG emissions	9. Allocation and tenure of land for new bioenergy production	17. Productivity
2. Soil quality	10. Price and supply of a national food basket	18. Net energy balance
3. Harvest levels of wood resources	11. Change in income	19. Gross value added
4. Emissions of non-GHG air pollutants, including air toxics	12. Jobs in the bioenergy sector	20. Change in consumption of fossil fuels and traditional use of biomass
5. Water use and efficiency	13. Change in unpaid time spent by women and children collecting biomass	21. Training and re-qualification of the workforce
6. Water quality	14. Bioenergy used to expand access to modern energy services	22. Energy diversity
7. Biological diversity in the landscape	15. Change in mortality and burden of disease attributable to indoor smoke	23. Infrastructure and logistics for distribution of bioenergy
8. Land use and land-use change related to bioenergy feedstock production	16. Incidence of occupational injury, illness and fatalities	24. Capacity and flexibility of use of bioenergy



Implementation in EU

- Renewable Energy Directive (COM2009/28):
 - Obligation on biofuels for transport
 - GHG-emissions: $\geq 50\%$ better than fossil equivalent, 60% new installations
 - Biodiversity: no go areas
 - Carbon sinks: preservation of status of areas
 - EU: cross compliance requirements (agriculture and nature protection)
 - Reporting requirements: food security and food prices, ILO, land security
- For waste, residues and solid biomass:
 - Waste and residues (not from agriculture, aquaculture, fishery, forest): only GHG-emission requirement
 - For solid biomass for energy possibility of national sustainability requirements



Netherlands Enterprise Agency

Realisation of the Renewable Energy Directive obligation by the Energy Agreement (2013), Netherlands





Indicative Contribution of R.E. options

Source	2013	2020
Wind on sea	3,1	27,0
Wind on land	20,6	54,0
Solar PV	0,9	11,6
Biomass Cofiring	6,1	25,0
Waste Incineration	13,3	11,7
Biomass CHP	3,5	13,6
Biomass Heat	19,0	31,6
Biofuels	18,0	35,6
Renewable Heat	6,1	36,3
TOTAL	105,5	261,6
Percentage R.E.	4,4%	14%

[PJ]



For Biomass:

2013: 59,9

2020: 117,5

Doubling the amount of biomass



Sustainability requirements import wood

- co-firing in coal fired power plants: 25 PJ (3.5 Mton pellets)
 - Only biomass complying with sustainability requirements (SFM, GHG emissions, carbon debt, ILUC)
 - Same conditions apply to large scale industrial use of wood pellets (e.g. industrial steam production)

Requirements for:

- Greenhouse gas emissions over the whole supply chain
- Soil quality using residues from agriculture or nature
- Carbon and land use impact using biomass from forests
- Sustainable forest management (biodiversity, regulation)
- Chain of custody (traceability, mixing, mass balance)

Growth path for small holders (category 2)

RED2 in Europe

(2020-2030)

What is guaranteed by the sustainability criteria for **BIOENERGY WITHIN THE CLEAN ENERGY PACKAGE ?**

Bioenergy, to be...

- ✓ accounted towards the overall renewable energy targets
- ✓ gain financial (public) support

need to meet the sustainability and greenhouse gas emission savings criteria irrespective of the geographical origin

Exemptions:

- ✓ Waste & Industrial residues - only GHG criteria apply and soil quality for agricultural land to be monitored)
- ✓ Installations below 20 MW (solid biomass fuels) and 2 MW (gaseous biomass fuels) unless Member States decide otherwise

SUSTAINABILITY CRITERIA

Agricultural biomass

- ✓ Protection of highly biodiverse land
- ✓ Additional criteria in case of land use change:
 - ✓ Protection of land with high carbon stock, namely if it had the status of wetlands or continuously forested areas in 2008, but no longer has this status
- ✓ Protection of land that was peatland in January 2008

Forest biomass

- ✓ Legality of harvesting operations
- ✓ Forest regeneration of harvested areas
- ✓ Areas designated by law for nature protection purposes including wetlands/peatlands are protected
- ✓ Minimize negative impacts on soil quality and biodiversity
- ✓ Long-term production capacity of forests is maintained or improved
- ✓ LULUCF criteria
- ✓ Risk-based approach:
 - a) Sustainability criteria are in place and enforced at national level
 - b) If not, sustainability criteria have to be ensured at sourcing area level

RED2 in Europe

(2020-2030)

Agricultural biomass

- ✓ Protection of highly biodiverse land
- ✓ Additional criteria in case of land use change:
 - ✓ Protection of land with high carbon stock, namely if it had the status of wetlands or continuously forested areas in 2008, but no longer has this status
- ✓ Protection of land that was peatland in January 2008

Forest biomass

- ✓ Legality of harvesting operations
- ✓ Forest regeneration of harvested areas
- ✓ Areas designated by law for nature protection purposes including wetlands/peatlands are protected
- ✓ Minimize negative impacts on soil quality and biodiversity
- ✓ Long-term production capacity of forests is maintained or improved
- ✓ LULUCF criteria
- ✓ Risk-based approach:
 - a) Sustainability criteria are in place and enforced at national level
 - b) If not, sustainability criteria have to be ensured at sourcing area level

GREENHOUSE GAS SAVING CRITERIA

For installations in operation after:

- ✓ For biofuels, biogas and bioliquids compared to fossil fuels: 50% (before 2015), 60% (after 2015), 65% (after 2021)
- ✓ For electricity, heating and cooling production from biomass fuels: 70% (after 2021), 80% (after 2026)

SPECIFIC RULES FOR NEW ELECTRICITY-ONLY INSTALLATIONS

Only to be accounted to targets and supports if:

- ✓ not using fossil fuels as a main fuel
- ✓ 50-100 MW: meeting Best Available Technology associated energy efficiency levels or using Biomass CCS
- ✓ Above 100 MW: electrical efficiency of 36% or applying Biomass CCS



IEA Bioenergy supports implementation

- Task 40: Trade
 - Review of Certification schemes
 - Comparing different approaches
- Task 38: GHG balances
 - Same methodology used for RED scheme
- Intertask Project
 - Development calculations, systems, Governance
- New Task on Sustainability



Future Perspective

- Sustainable Landscapes
 - Producing biomass (renewable resources) for
 - > Food, animals, chemicals and energy
 - Ecological sustainable
 - > Soil quality, Biodiversity, water, low GHG emissions
 - Economic Profitable and Social Accepted
- Sustainable Trading
 - Fair rewards in the value chain,
 - Trust in the supply chain
- Governance system



Netherlands Enterprise Agency

Thank you for your attention

Questions?

Contact:

Kees.Kwant@RVO.nl