

**System Certyfikacji**

**ZRÓWNOWAŻONY ROZWÓJ**  
**W PRODUKCJI BIOPALIW I BIOPEŁYNÓW**




**INSTYTUT NAFTY I GAZU**  
Państwowy Instytut Badawczy



**Land use for raw materials production –  
lands with high carbon stock**


by The Oil and Gas Institute

The KZR INiG-PIB System/4

	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 3 of 15

## List of contents

1. Introduction .....	4
2. Normative References: .....	4
3. Definitions .....	5
4. Description and requirements.....	5
4.1 Wetlands.....	5
4.2 Continuously forested areas and weakly forested areas.....	6
4.3 Peatlands.....	7
4.4 Land use change.....	8
4.4.1 Method of land carbon stock calculation .....	8
4.4.1.1 Calculation of <i>SOC</i> .....	8
4.4.1.2 Calculation of <i>C<sub>VEG</sub></i> .....	9
5. Calculations.....	9
6. Conformity check.....	9
6.1 Criteria.....	10
6.1.1 Wetlands.....	12
6.1.2 Continuously or weakly forested areas .....	12
6.1.3 Peatlands.....	13
7. Check list.....	15
8. References .....	15

	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 4 of 15

## **1. Introduction**

The document contains the KZR INiG System's requirements related to land with high carbon stock. These requirements provide guidelines on sustainable way to produce, process, transport and use biofuel and bioliquids raw materials and feedstocks.

According to the KZR INiG System, it is prohibited to use raw materials obtained from categories of land listed below, unless the status of these lands has changed in comparison with their status in 1<sup>st</sup> January 2008:

- a) wetlands,
- b) continuously forested areas,
- c) weakly forested areas,
- d) peatlands.

Requirements concerning *a-c* are not applicable if during the harvesting period of the raw material, the land had the same status as it had in 1<sup>st</sup> January 2008. In the case of peatland, an exception is possible, as discussed later in this document. If the land falls into to one of these area categories, all subsequent criteria apply.

All these requirements included in this document are valid for agricultural producers participating in the KZR INiG System. Agricultural producers that receive direct payments pursuant to Regulation (EC) no. 73/2009 are obliged to meet Cross-Compliance requirements and therefore they must fulfill agricultural and environmental requirements and standards such as soil and water protection, Habitat and Birds Directives, good agricultural practice and management etc. (for more information see System KZR INiG/6/ *Land for raw materials production – agricultural and environmental requirements and standards*). Whether the farmers are covered by the direct support scheme or not, they are obliged to provide compliance with sustainability criteria related to high carbon stock lands. If there are farmers within the EU who supply raw material for biofuels/ bioliquids production but are not covered by this EU control system or they are beyond EU, all KZR INiG System requirements need to be controlled.


## **2. Normative References:**

All relevant KZR INiG System documents are valid for the scope of application. The normative references display the documents which contents are linked and have to be considered as common points.

*KZR INiG System /1/ Description of INiG System of Sustainability Criteria – general rules*

*KZR INiG System /2/ Definitions*

*KZR INiG System /3/ Reference with national legislation*

	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 5 of 15

*KZR INiG System /5/ Land use for raw materials production - biodiversity*

*KZR INiG System /6/ Land for raw materials production – agricultural and environmental requirements and standards*

*KZR INiG System /10/ Guidelines to auditors and conduct of audit*

The scope of abovementioned KZR INiG System’s documents is based on the following documents:

*EN 16214-3 Sustainably produced biomass for energy applications – Principles, criteria, indicators and verifies for biofuels and bioliquids – Part 3: Biodiversity and environmental aspects.*

*Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC*

### **3. Definitions**

*KZR INiG System/2/ Definitions*

### **4. Description and requirements**


#### **4.1 Wetlands**

Biofuels and bioliquids shall not be made from raw material obtained from land with high carbon stock, namely land that had wetland status in 1<sup>st</sup> January 2008 and no longer has that status; wetlands, namely land that is covered with or saturated by water permanently or for a significant part of the year.

Designation of wetlands reflects designation of geographical boundaries of the area that falls within the definition of „wetlands”. The wetlands boundaries are often not defined precisely; they are movable and can change depending on climate and current precipitation conditions. This influences the precision of the land status classification. For instance, seasonal changes of wetland boundaries influence the fact that the requirements for the assessment conducted on-site must be higher than for assessment of other types of agricultural land. For that reason this requirement applies to all wetlands, not only restricted to the wetlands included in the Convention on Wetlands of International Importance.

In such a case, it may be necessary to integrate data other than geospatial data with on-site assessments results.

The system participants, e.g. and especially: agriculture producers, first gathering points, broker (middleman) are obliged to, among other things:

	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 6 of 15

- prove that the land on which the raw material was cultivated and was obtained has not had a wetland status in 1<sup>st</sup> January 2008 or it has had such a status in 1<sup>st</sup> January 2008, but during harvest of the raw material, the land status has not changed;
- define status, boundaries and characteristic features of wetlands in 1<sup>st</sup> January 2008, together with indication of boundaries for raw materials production, existing or planned, within proximity of this place.

#### **4.2 Continuously forested areas and weakly forested areas**

Biofuels and bioliquids shall not be made from raw material obtained from land with high carbon stock, namely land that had one of the following statuses in 1<sup>st</sup> January 2008 and no longer has that status:

- continuously forested areas, namely land spanning more than one hectare with trees higher than five metres and a canopy cover of more than 30 %, or trees able to reach those thresholds *in situ*
- land spanning more than one hectare with trees higher than five metres and a canopy cover of between 10-30% or trees able to reach those thresholds *in situ*, unless evidence is provided that the carbon stock of the area before and after conversion is of such that, when the methodology laid down in part C of Annex A is applied, the greenhouse gas threshold would still be fulfilled
- is forest according to respective national legal definition


This requirement shall not apply if, at the time the raw material was harvested, the land had the same status as it had in 1<sup>st</sup> January 2008.

The continuously forested areas are defined as land spanning more than one hectare with trees higher than five metres and a canopy cover of more than 30 %, or trees able to reach those thresholds *in situ*.

The weakly forested areas are defined as land spanning more one hectare with trees higher than five metres and a canopy cover of between 10-30% or trees able to reach those thresholds *in situ*.

Continuously forested areas do not include land that is predominantly under agricultural or urban land use, because land under agricultural use in this context refers to trees standing in agricultural production systems, such as fruit tree plantations, oil palm plantations and agroforestry systems when crops are grown under tree cover.

Therefore, raw materials for biofuel or bioliquid production may be harvested from continuously forested areas and weakly forested areas, under the condition that before and after 1<sup>st</sup> January 2008, the area had preserved its status of continuously forested area or weakly forested area. In case of weakly forested areas, it is necessary to ensure fulfillment of requirements on greenhouse gas emission, according to rules of the System KZR INiG/8/ *Guidelines for determination of lifecycle per unit values of GHG emissions for biofuels and bioliquids* . If in 1<sup>st</sup> January 2008, this terrain had been characterized by the same status after

	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 7 of 15

the moment of raw material harvest, the raw materials obtained from the land fulfill the sustainability criteria. It pertains also to continuously forested areas, as well as wetlands. **From other naturally forested areas the raw material harvesting is prohibited.**

Continuously forested areas and weakly forested areas are characterized by the following quantities:

**a) continuously forested areas**

area: > 1 ha  
height: > 5 m  
canopy cover : > 30 %

**b) weakly forested areas**

area: > 1 ha  
height: > 5 m  
canopy cover: 10-30 %

The system participants, e.g. and especially: agriculture producers, first gathering points, broker (middleman) may comply with this criterion by:

- proving that the raw materials are obtained from areas which did not have a status of continuously forested land in or after 1<sup>st</sup> January 2008 (e.g. the areas are agricultural lands);
- in the case when the raw materials are obtained from weakly forested areas, the participants **shall provide evidence** of greenhouse gas emission, including any changes since 1<sup>st</sup> January 2008 in the carbon stock of the area concerned.


Additionally, influence of land use on carbon stock level should be taken into account.

### **4.3 Peatlands**

According to the KZR INiG System, it is prohibited to use raw materials for biofuels or bioliquids production, obtained from land that was peatlands in 1<sup>st</sup> January 2008, unless:

- the soil was completely drained in 1<sup>st</sup> January 2008, or
- there has not been draining of the soil since 1st January 2008.

This means that for peatland that was partially drained in January 2008, a subsequent more profound drainage, affecting soil that was not already fully drained, would constitute a breach of the criterion <sup>iv</sup>.

	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 8 of 15

#### **4.4 Land use change**

The term „land use changes” should be understood as referring to changes in terms of land cover between the six land categories used by the IPCC<sup>viii</sup> (forest land, grassland, cropland, wetlands, settlements and other land) plus a seventh category of perennial crops, i.e. multi-annual crops which stem is usually not annually harvested such as short rotation coppice and oil palm. This means, for example, that a change from grassland to cropland is a land-use change, while a change from one crop (such as maize) to another (such as rapeseed) is not.

In order to determine the carbon stock per unit of surface area with ascribed values of CS<sub>R</sub> and CS<sub>A</sub>, the following rules should be followed<sup>ix</sup>:

- the area for which the land carbon stocks are calculated shall for the entire area have similar:
  - biophysical conditions in relation to climate and soil types;
  - management history in terms of tillage;
  - history of change in carbon stock level in the soil.
- The following is considered a carbon stock at actual land use, CS<sub>A</sub>:
  - in the case of decrease in carbon stock – *the estimated equilibrium carbon stock that the land will reach in its new use*;
  - in the case of carbon stock accumulation – *the estimated carbon stock after 20 years or when the crop reaches maturity, whichever the earlier* .

##### **4.4.1 Method of land carbon stock calculation**

Literature<sup>viii,x</sup> provides several formulas for calculation of land carbon stock. For this document, the formula reported in draft European Standard EN 16214-4 is taken:

For calculation of CS<sub>R/A</sub> the following formula is used:

$$CS_{A/R} = (SOC + C_{VEG})$$

where:

CS<sub>A/R</sub> – carbon stock per a unit of surface area associated with land use, (t C /ha)


SOC – soil organic carbon (t C /ha)

C<sub>VEG</sub> – above and below ground vegetation carbon stock (t C /ha)

##### **4.4.1.1 Calculation of SOC**

According to Commission Decision 2010/335/EU, for mineral soils organic carbon in the soil is calculated using the following formula:



	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 9 of 15

$$SOC = SOC_{ST} \times F_{LU} \times F_{MG} \times F_I$$

where:

- SOC - soil organic carbon (t C /ha);  
SOC<sub>ST</sub> - standard soil organic carbon in 0 to 30 cm the topsoil layer (t C/ha);  
F<sub>LU</sub> - land use factor, reflecting the difference between quantity of soil organic carbon in connection with land use forms, and standard soil organic carbon;  
F<sub>MG</sub> - land management factor, reflecting the difference between quantity of soil organic carbon in connection with basic principle management practice, and standard soil organic carbon;  
F<sub>I</sub> - input factor reflecting the difference in soil organic carbon associated with different levels of carbon input to soil compared to the standard soil organic carbon;

In reference to SOC<sub>ST</sub> and F<sub>LU</sub>, F<sub>MG</sub>, and F<sub>i</sub>, values provided respectively in Table 1 and Tables 2,4,5, and 7 of Commission Decision 2010/335/EU are used.

#### **4.4.1.2 Calculation of C<sub>VEG</sub>**

Above and below ground vegetation carbon stock (C<sub>VEG</sub>) may be calculated by two methods:

- (1) application of formula provided under point 5 of Commission Decision 2010/335/EU;  
or
- (2) application of corresponding standard values, provided in Tables 9-18 of Commission Decision 2010/335/EU.

### **5. Calculations**

Not applicable


### **6. Conformity check**

According to the KZR INiG System, raw materials for production of biofuels or bioliquids are not allowed to be obtained from:

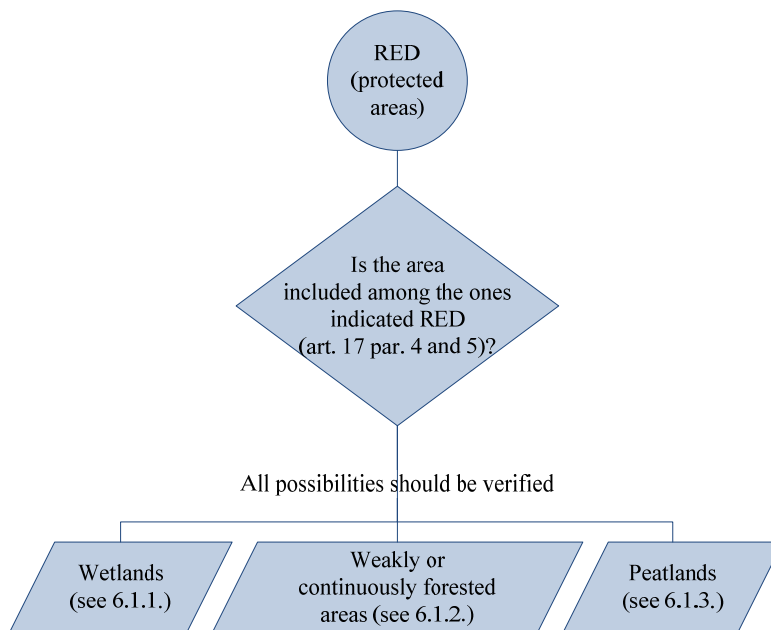
- a) wetlands,
  - b) continuously forested areas
  - c) weakly forested areas,
- and peatlands [art. 17( 5)],

- as long as the status of the land (a-c), has not changed in comparison to its status in 1<sup>st</sup> January 2008. In the case of peatland (li. c), an exception is possible according to section 6.1.3.

In order to prove conformity with requirements of article 17 (3), one should proceed according to the following diagram (Figure 1).

	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 10 of 15

**Figure 1 – Exemplary procedure in the scope of check of requirements of art. 17 (4-5) of Directive2009/28/EC**

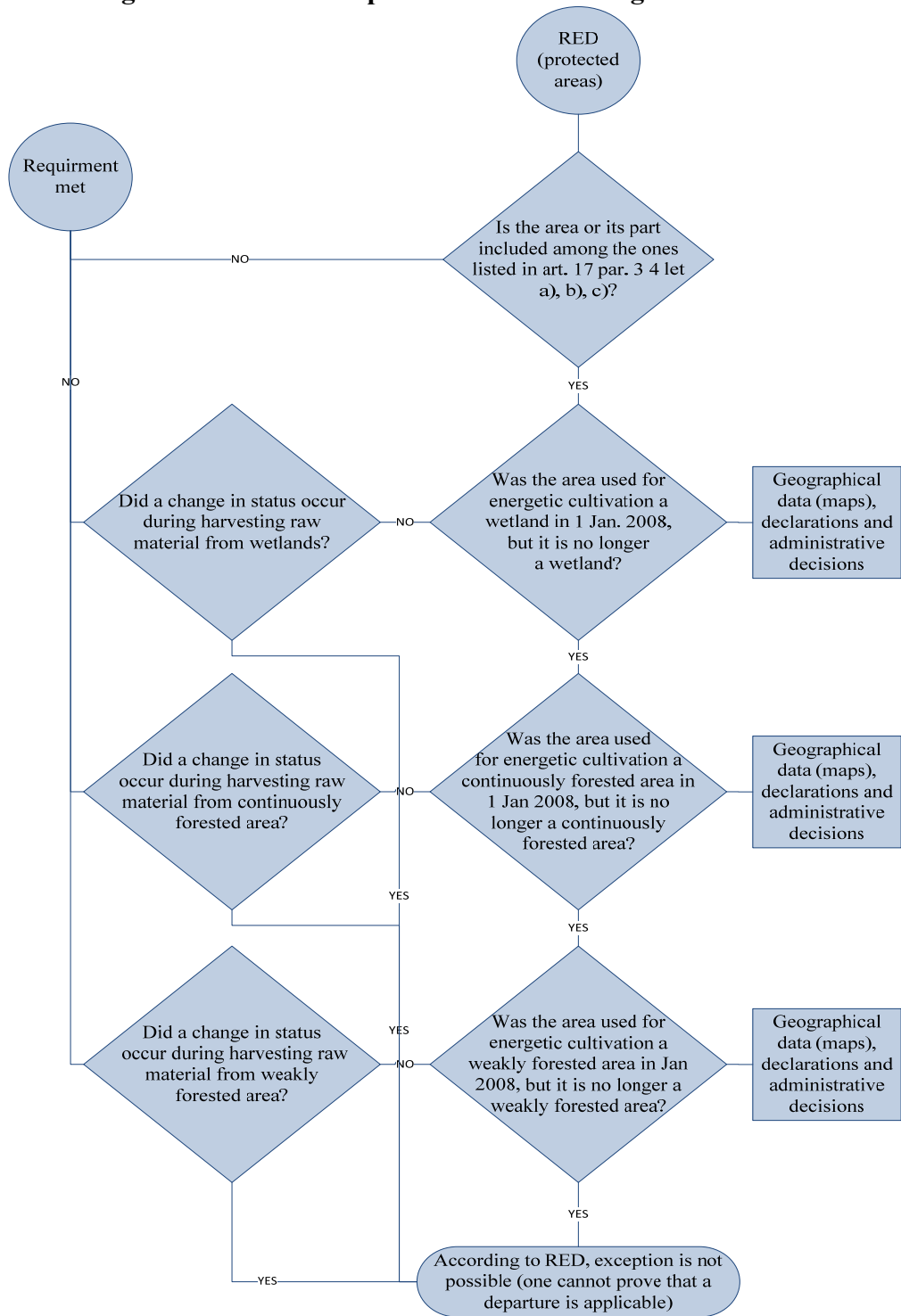



## **6.1 Criteria**

Figure 2 shows the evaluation path for lands with high carbon stock, according to art. 17 (4 a, b, and c).



**Figure 2 – Evaluation path for lands with high carbon stock**



	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 12 of 15

### **6.1.1 Wetlands**

Scenario 1 – the farm/plantation was established after 1<sup>st</sup> January 2008;  
In this case, the participant must prove that in January 2008, the land did not have a wetland status or it had a wetland status in 1<sup>st</sup> January 2008, but production of the raw material on the land cannot result in a change of its status.

Scenario 2 – the farm was established before 1<sup>st</sup> January 2008;  
It should be credibly proved that in 1<sup>st</sup> January 2008 the land did not have a wetland status or it had a wetland status in 1<sup>st</sup> January 2008, but production of the raw material on the land cannot result in a change of its status.

Scenario 3 – establishing of a new farm/plantation;  
In this case, the participant may want to obtain information about the land where the farm/plantation is to be established, in order to check whether the land has/had a wetland status at present and in 1<sup>st</sup> January 2008.

The way to demonstrate the compliance with this criterion by the agricultural producer is to provide:


- a) satellite images, aerial photograph, maps, land use plans; these means of verification may be considered as a reliable source on condition that it may be unequivocally proved on its basis that the land was not a wetland area or indicating lack of existence of water reservoirs in comparison to 1<sup>st</sup> January 2008 and after that date; **or**
- b) reports, lists of water and swamp areas with a description of e.g. land topography, **or** excerpt from water register with map extract; based on this register, it may be checked whether defined wetland areas (e.g., intermediate peatland, e.g. quagmire) are or not located in the given region in comparison to 1<sup>st</sup> January 2008. A document (it may take the form of printouts) with attached map, satellite image or map extract from, land register (containing information about land use purpose) should be provided as proof;

Figure 2 shows the evaluation path for lands with high carbon stock, according to art (17 4 a, b, and c).

### **6.1.2 Continuously or weakly forested areas**

Actions aimed at proving that the land is not a continuously forested area (canopy cover above 30 %) or a weakly forested area (canopy cover of 10-30 %) are subject to evaluation of defined thresholds of canopy cover and possibility to reach those thresholds *in situ*. While also evaluating changes in land use form in comparison to 1<sup>st</sup> January 2008 are taken into account.

The way to demonstrate the compliance by the agricultural producer is to provide:

	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 13 of 15

- a) satellite images, aerial photograph, map extract from land register (containing information about land use purpose) with borders marked out or other geospatial data; these means of verification may be considered as a reliable source on condition that it may be unequivocally proved on its basis that the land was not continuously forested area or a weakly forested area in comparison to 1<sup>st</sup> January 2008 and is not after that date;
- b) typical GHG emission value from approved NUTS 2 area or default GHG emission value for crop used for biofuel production according to Annex V, part D of 2009/28/EC Directive or actual GHG emission value (see Annex 2: *Self-declaration for agricultural producer of KZR INiG System/1/Description of INiG System of Sustainability Criteria – general rules*)

Figure 2 shows the evaluation path for lands with high carbon stock, according to article 17 (4) a, b, and c.

### **6.1.3 Peatlands**

According to the KZR INiG System, it is prohibited to use raw materials obtained from land that was peatlands in 1<sup>st</sup> January 2008. For biofuels and bioliquids produced from raw materials grown on land that was peatland in 1st January 2008, an exception is possible if evidence is provided that the soil was completely drained in 1st January 2008 or there has not been draining of the soil since 1st January 2008. This means that for peatland that was partially drained in January 2008 a subsequent more profound drainage, affecting soil that was not already fully drained, would constitute a breach of the criterion.

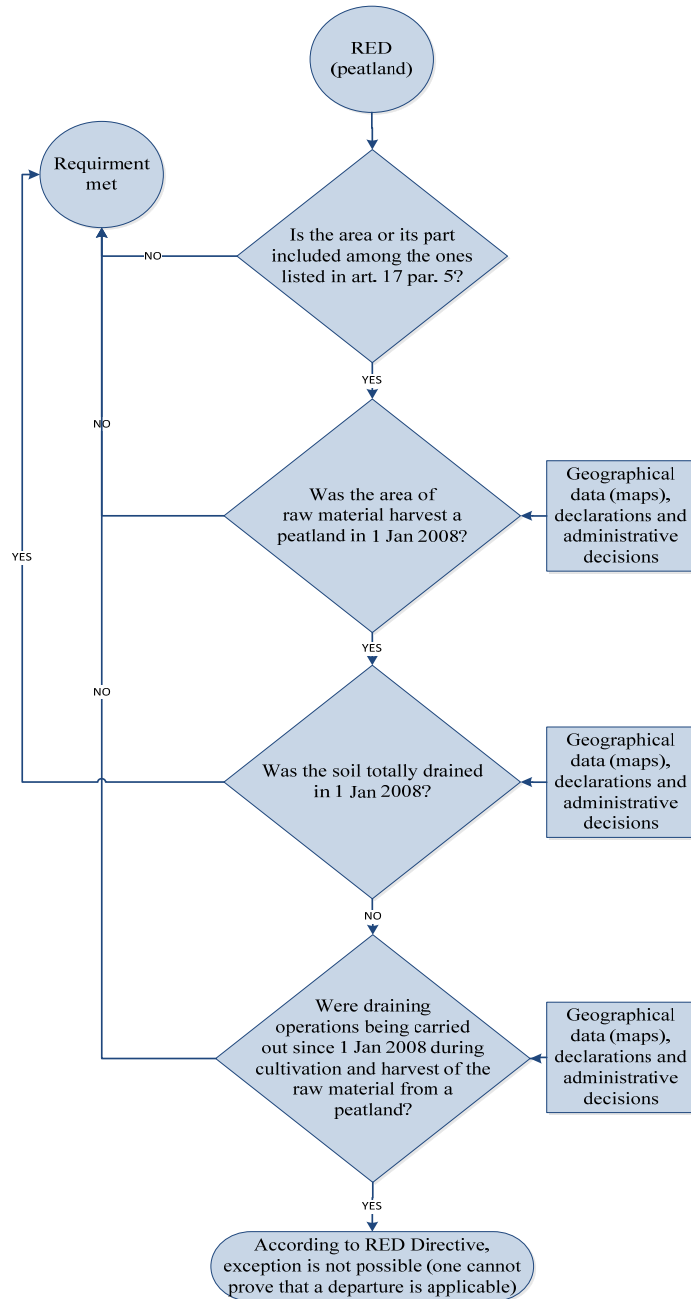
The way to demonstrate the compliance by the agricultural producer is to provide:


- a) satellite images, aerial photograph, map with borders marked out, excerpt from register with map extract; these means of verification may be considered as a reliable source on condition that it may be unequivocally proved, and on its basis that the land has had or has not had the status of a peatland on 1<sup>st</sup> January 2008;
- b) document indicating that after 1<sup>st</sup> January 2008 the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil (e.g. drainage plans).

Figure 3 shows the conformity evaluation path to these requirements.



**Figure 3 – Evaluation check path for peatlands**



	<b>Certification system of sustainable biofuels and bioliquids production</b>	Issue: 1 <sup>st</sup>
		Date:
	<b>Land use for raw materials production – lands with high carbon stock</b>	Page 15 of 15

## 7. Check list

*KZR INiG System/ 10/ Guidelines for auditor and conduct of audit*

## 8. References

- i EN 16214-3 *Sustainably produced biomass for energy applications – Principles, criteria, indicators and verifies for biofuels and bioliquids – Part 3: Biodiversity and environmental aspects.*
- ii Convention on Wetlands of International Importance especially as waterfowl habitat (J. of Laws 1978 No. 7 item 24).
- iii Part C of Attachment V to Directive 2009/28/WE.
- iv Communication from the Commission on the practical implementation of the EU biofuels and bioliquids sustainability scheme and on counting rules for biofuels (2010/C 160/02).
- v Acts on shaping the agricultural structure of 11.04.2003 (J. of Laws 2003 No. 64 item 592 as amended).
- vi Act on protection of agricultural and forest lands of 03.02.1995 (J. of Laws 1995 No. 16 item 78 as amended)
- vii Acts of 25.07.2001 on national register of farms and farm animals, and on changes in some acts (J. of Laws z 2001 r. No. 125 item 1363)
- viii Handbook on GHG inventory in land use change and forestry sector, Consultative Group Of Experts On National Communications From Parties Not Included In Annex and To The Convention, published by UNFCC.
- ix Commission Decision of 10 June 2010 on guidelines for the calculation of land carbon stocks for the purpose of Annex V to Directive 2009/28/EC (2010/335/EU).
- x PrEN 16214-4 *Sustainably produced biomass for energy applications – Principles, criteria, indicators and verifies for biofuels and bioliquids – Part 4: Calculation methods of the greenhouse gas emission balance using a life cycle analysis.*
- xi Council Regulation (EC) No 73/2009 of 19 January 2009 establishing common rules for direct support schemes for farmers under the common agricultural policy and establishing certain support schemes for farmers, amending Regulations (EC) No 1290/2005, (EC) No 247/2006, (EC) No 378/2007 and repealing Regulation (EC) No 1782/2003 (J. of Laws L 30 z 31.01.2009, s. 16–99).
- xii Council Regulation (EC) No 73/2009 of 19 January 2009 establishing common rules for direct support schemes for farmers under the common agricultural policy and establishing certain support schemes for farmers, amending Regulations (EC) No 1290/2005, (EC) No 247/2006, (EC) No 378/2007 and repealing Regulation (EC) No 1782/2003 (J. of Laws L 30 z 31.01.2009, s. 16–99).
- xiii *Cross-compliance rule – Minimum standards, Scope A and Scope B valid from 2011, information folder of Agencja Restrukturyzacji i Rozwoju Wsi*, November 2010.
- xiv Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market. (J. of Laws WE L 230, z 19.8.1991 r.).
- xv *Cross-compliance rule – Minimum standards, Scope A and Scope B valid from 2011, information folder of Agencja Restrukturyzacji i Rozwoju Wsi*, November 2010.