



# ReedBASE

Development of a cross-border innovation platform/cluster for  
using common reed *Phragmites australis* biomass  
as a source of sustainable energy



## ASSESSMENT REPORT and ReedBASE Memorandum of Understanding

October 2017



Federal Ministry for the  
Environment, Nature Conservation,  
Building and Nuclear Safety



Implemented by



Succow  
Stiftung



## PROJECT PARTNERS

- ❖ Michael Succow Foundation, Germany (Lead Partner)
- ❖ Institute of Market Problems and Economic-Ecological Research (NAS), Ukraine
- ❖ Agricola NGO, Ukraine
- ❖ Agency of European Innovation, Ukraine
- ❖ Cross-Border Cooperation and European Integration Agency, Moldova
- ❖ WWF Danube Carpathian Programme, Romania

## Funding

This project (Nr. 76845) was funded by the German Federal Environment Ministry's Advisory Assistance Programme (AAP) for environmental protection in the countries of Central and Eastern Europe, the Caucasus and Central Asia and other countries neighbouring the European Union. It was supervised by the Federal Agency for Nature Conservation (BfN) and the German Environment Agency (UBA).

## Disclaimer

The responsibility for the content of this publication lies with the authors. The contents of this publication are purely for information and research purposes and should not be used as the basis for any commercial decisions.

## CONTENTS

1. EXECUTIVE SUMMARY	2
2. INTRODUCTION	4
2.1 ReedBASE Project Overview	4
2.2 Regional Overview and Desk Study	5
2.3 Stakeholder Analysis and Consultation “Roadshow”	7
3. WETLAND BIOMASS RESOURCE USE	8
3.1 Current Biomass Utilisation	8
3.2 Potential Biomass Utilisation	8
4. ReedBASE CLUSTER FORMATION	10
4.1 Triple Helix Approach	10
4.2 Main Directions of ReedBASE Cluster Activities	10
4.3 Potential ReedBASE Innovation Projects	11
ANNEX Potential Collaborative Projects	13
A2.1 Prut floodplain	13
A2.2 Danube floodplain between Reni and Orlivka	14
A2.3 Danube floodplain around Leski and Vylkove	15
A2.4 Dniester Delta	16
ReedBASE Memorandum of Understanding	17

## 1. EXECUTIVE SUMMARY

The ReedBASE project commenced in September 2016 and will end in March 2019. Funded by the German government, it concerns the development and fostering of a broad-based cross-border innovation group (covering Ukraine, Moldova and Romania) for using reed biomass as a source of sustainable energy as well as raw material for other products. This in turn promotes the conservation and wise use of reedbeds around the north-west coast of the Black Sea.

ReedBASE aims to establish a working group (or “cluster”) of interested organizations, including so-called “Triple Helix” institutions (government, business, and researchers), in order to enhance their collaboration.

The group will seek to identify priority research areas, development projects and commercial investments for improving traditional utilisation as well as renewable energy production from reed biomass.

These priorities include innovations in wetland management, harvesting machinery, processing equipment, and products. Over time, it is expected that the group would expand to other European states with rich reed resources such as Poland, Hungary, Austria and Slovakia.

Up to now (September 2017), ReedBASE has undertaken the following activities in the lower parts of the Danube, Prut and Dniester rivers (the “project area”):

1. Prepared a desk-based study concerning the former and current status of wetlands in the project area, and identifying strengths and weaknesses in existing reed harvesting and biomass processing and combustion technologies;
2. Compiled a data base of stakeholders and decision makers from different governmental and non-governmental organisations from

national to local level, which are or should be involved in sustainable reed bed utilisation in the project area; and

3. Conducted a stakeholder consultation “roadshow” in order to identify potential partners for promoting the sustainable use of reed biomass harvested in the project area.

As a result of this work, this assessment report presents the most promising approaches in the project region for future cooperation, between the administration of nature conservation and science. In practice, this report proposes a Memorandum of Understanding for the formation of a ReedBASE cluster under the leadership of the Institute of Market Problems and Economic-Ecological Research (National Academy of Science of Ukraine) in Odessa.

In addition, the report proposes a range of potential projects (see Annex) that could be jointly developed and implemented by the ReedBASE cluster. These projects comprise:

### *Prut floodplain between Cahul and Colibași*

- Willow cultivation (furniture, fencing, energy)
- Reed harvesting for construction materials (thatch, panels, fencing)

### *Danube floodplain between Reni and Orlovka*

- Rewetting unused land for restoring ecosystem services and reed production
- Willow cultivation (furniture, fencing, energy)

### *Danube floodplain around Leski and Vylkove*

- Use of waste reed for renewable energy production
- Conversion of rice paddy to wetlands for restoring ecosystem services and reed production

### *Dniester delta*

- Research on peat formation, fire impact and



carbon sequestration across the whole area

- Willow cultivation (furniture, fencing, energy)

*Thematic project*

- Research and development on biomass harvesting (reedbed management, cutting regime, mowing and baling equipment, storage); processing (construction materials, briquettes, pellets) and marketing (certification, transport, export).

Such a combination of environmental research, engineering and practical implementation of sustainable wetland management and paludiculture will lead to innovations in the management of reedbeds and other wetland habitats that contribute to the:

- Restoration of ecosystem services including amongst others the habitat improvement for migratory birds and waterfowl and the mitigation of greenhouse gas emissions;
- Nutrient retention and water purification in reedbeds and therefore improvement of water quality of the Black Sea;
- Development of climate change adapted land management schemes;

- Provision of renewable biomass for energy production and material use;
- Reduction of energy imports on regional scale;
- Support of regional economies and increase of local job perspectives;
- Establishment of showcase paludiculture-based enterprises.

Thus, the project area alone could sustainably generate some 100,000 tons of reed biomass per year. In energy terms, this is equivalent to almost 50,000 tons of coal, or 39.5 million cubic metres of gas. Using reed biomass would not only provide a substantial amount of energy, but also avoid emitting some 79,000 tons of CO<sub>2</sub> from burning fossil fuels.

Moreover, the extent of organic soils, which are particularly suitable for carbon storage, cover significant areas in the Prut (3,873 ha) and lower Dniester (20,466 ha). Modest estimates indicate that the organic soils in the project area contain around 850,000 tons of carbon, and this amount is increasing as the organic matter accumulates over time.

## 2. INTRODUCTION

### 2.1 ReedBASE Project Overview

The ReedBASE project concerns the development and fostering of a broad-based cross-border innovation group (covering Ukraine, Moldova and Romania) for using reed biomass as a source of sustainable energy as well as raw material for other products. This in turn would promote the conservation and wise use of reedbeds around the north-west coast of the Black Sea.

Reeds grow prolifically in the lower parts of the Prut, Danube and Dniester river basins in Ukraine, Moldova and Romania. Indeed, one of the largest extents of reedbeds in the world occurs in the region. However, extensive modification of floodplains since the 1950s (for flood control, irrigation and fisheries) has had significant impacts on wetland habitats and biodiversity, as well as wetland ecosystem services. In particular, monotonous reedbeds have become more widespread, and generally regarded as a nuisance. Yet, reeds mostly grow on land that is too wet or marginal for conventional agricultural production and represent a substantial source of biomass for construction materials, shade and shelter matting and renewable energy. Such use of reed biomass can contribute to climate change mitigation by:

- storing CO<sub>2</sub> on mid-term scales in construction materials;
- safeguarding carbon stocks in peat soils formed by the accumulation of reed rhizomes; and
- substituting fossil fuels with renewable biomass for energy production.

ReedBASE aims to establish a working group (or “cluster”) of interested organizations, including so-called “Triple Helix” institutions (government, business, and researchers), in order to enhance their collaboration. The group will

seek to identify priority research areas, development projects and commercial investments for improving traditional utilisation as well as renewable energy production from reed biomass. These priorities include innovations in wetland management, harvesting machinery, processing equipment, and products. Over time, it is expected that the group would expand to other European states with rich reed resources such as Poland, Hungary, Austria and Slovakia.

Since its inception in September 2016, ReedBASE has undertaken the following activities in the lower parts of the Danube, Prut and Dniester rivers (the “project area”):

1. Prepared a desk-based study concerning the former and current status of wetlands in the project area, and identifying strengths and weaknesses in existing reed harvesting and biomass processing and combustion technologies;
2. Compiled a data base of stakeholders and decision makers from different governmental and non-governmental organisations from national to local level, which are or should be involved in sustainable reed bed utilisation in the project area; and
3. Conducted a stakeholder consultation “roadshow” in order to identify potential partners for promoting the sustainable use of reed biomass harvested in the project area.

The present document provides an assessment of these activities, identifies the potential for further development and proposes a draft Memorandum of Understanding for the formation of a ReedBASE cluster under the leadership of the Institute of Market Problems and Economic-Ecological Research (National Academy of Science of Ukraine) in Odessa. It is expected that

the combination of environmental research, engineering and practical implementation of sustainable wetland management and paludiculture will lead to innovations that contribute to the:

- Restoration of ecosystem services including amongst others the habitat improvement for migratory birds and waterfowl and the mitigation of greenhouse gas (GHG) emissions;
- Nutrient retention and water purification in reedbeds and therefore improvement of water

quality of the Black Sea;

- Development of climate change adapted land management schemes;
- Provision of renewable biomass for energy production and material use;
- Reduction of energy imports on regional scale;
- Support of regional economies and increase of local job perspectives;
- Establishment of showcase paludiculture-based enterprises.

## 2.2 Regional Overview and Desk Study

The ReedBASE project study area covered two regions in Ukraine and one in Moldova (shown in Figure 1), and consisted of:

1. The Lower Prut floodplain in Moldova, from Cahul to Giurgiulesti.
2. Three sections of the Lower Danube floodplain in Ukraine, between Reni and Vylkovo: (A) from Reni to Izmail, (B) from Izmail to Kiliya, and (C) from Kiliya to Vylkove and Primorsky, the latter comprising the northern lobe of the vast deltaic area shared with Romania; and
3. The lower reaches of the Dniester/Turunchuk rivers in Ukraine, from the Moldova border to their entry to the Dniester liman.

The study areas were mapped and analysed using Geographical Information System software. This showed that the total extent of the study areas was 117,920 ha, of which 36,802 ha (31%) comprised low-lying arable land and 35,760 ha (30%) are pure reedbeds; a further 9,974 ha (8%) comprised reed mixed with other vegetation types (grassland, woodland or shrubs). The remaining area was largely represented by open water with 23,139 ha (20%). Protected areas were designated on a total of 22,580 ha (19.1%) of the study areas.

Assuming that about 70% of the reedbed area is accessible (excluding areas under strict protection or unsuitable for harvest), that a two-year harvest rotation is used, and that an average yield of 8 tons of dry reed per hectare is obtained, it is estimated that in its current state of management, the project area could in time sustainably generate some 100,000 tons of reed biomass per year. In energy terms, this is equivalent to almost 50,000 tons of coal, or 39.5 million cubic metres of gas. Thus, using reed biomass would not only provide a substantial amount of energy, but also avoid emitting some 79,000 tons of CO<sub>2</sub> from burning fossil fuels.

The extent of organic soils, which are particularly suitable for paludiculture and carbon storage, covered significant areas in the Prut (3,873 ha; 3.3%) and lower Dniester (20,466 ha; 17.3%). Although further research is needed concerning the organic layer depth, organic bulk density and carbon content, assuming modest estimates of an average depth of 10 cm and 35 kg of carbon per cubic metre, the organic soils in the study areas contain in the order of 850,000 tons of carbon, and this amount is increasing as the organic matter accumulates over time.

These initial results from the Desk Study demonstrate that the wetland biomass resources (mainly reedbeds), as well as the organic soils, of the lower Prut, Danube and Dniester rivers are economically and environmentally significant in

their own right. Further research, development and investment would allow these resources to be better managed and utilised while at the same time maintaining their ecological sustainability.

**Figure 1: Location of the three ReedBASE study regions**

Source: ReedBASE project



## 2.3 Stakeholder Analysis and Consultation “Roadshow”

ReedBASE conducted a survey of organisations that are or might be interested in the sustainable use of biomass from reed beds within the study area. As a result, 118 organisations were identified, comprising research institutions, businesses, public authorities and civil society organisations (Table 1). These organisations

were included in a data base (included as an Annex to the Desk Study). Clearly, a high potential exists to form an interest group or cluster in order to identify, develop and implement innovative approaches for wetland biomass management and utilisation within and beyond the study areas.

**Table 1: Organisations related to wetland biomass utilisation in the project area**

Source: ReedBASE project

Sector	No. in UA	No. in MD	Total
Research / education	19	5	24
Industry	19	17	36
Government / PAs / IGOs*	32	7	39
Civil society	12	7	19
Total	82	36	118

\*Includes protected area administrations and inter-governmental organisations

In order to evaluate the actual interest among stakeholders in forming a ReedBASE group or cluster, ReedBASE experts conducted a tour of various towns in the study areas from 15 to 18 June 2017. The towns concerned were Cahul, Reni, Izmail, Vylkove and Mayaki. In each location, meetings were convened with representatives from local public authorities, research institutions, businesses and civil society organisations. Excursions to see wetland management practices and reed processing facilities were also undertaken. Overall, 33 people attended the meetings and shared information about reed harvesting; reed

processing for thatch, mats, briquettes and pellets; willow production for furniture, fuel and fodder; and even production of *Chlorella* algae and water hyacinth as chicken feed additives. Many products were used both locally and exported abroad (especially thatch reed to Germany).

Most of the participants expressed interest in the formation of a ReedBASE cluster provided that it would be active and generate initiatives that would benefit the local communities where wetland biomass occurs.



### **3. WETLAND BIOMASS RESOURCE USE**

#### **3.1 Current Biomass Utilisation**

Within the ReedBASE project area, the main species of interest for sustainable biomass raw material production are reed and willow because of their wide distribution, abundance and high biomass concentration. Alder also has high potential for production of both high quality construction wood and fuel wood.

In Moldova, the reed resource is rather limited: in the study area it amounted to just 1,744 ha. However, willow grown on a short rotation or pollarded for biomass production is being introduced as a suitable approach to wetland use. In Ukraine, reed is a substantial resource. Unfortunately, instead of use, large areas of reed are often simply set alight in situ by local people who hope to clear ground for grazing or market

gardening. This leads to a large uncontrolled release of carbon, accidental fires, and deposition of ash which can affect industrial processes.

Reed is most often harvested in the form of bunches for export to the Netherlands, Germany and Denmark for making thatched roofs, as well as mats for insulation panels or fencing and even some handicrafts. Such harvesting is prevalent in the lower Dniester between Mayaki and Belyaivka, and lower Danube around Vylkove. At present, reed is rarely used in either Moldova or Ukraine for heating because a full cycle of logistics and processing that is specific for reeds is not developed.

#### **3.2 Potential Biomass Utilisation**

Given its wide occurrence and abundance, reed utilisation has the highest potential in the study area in the short term. It is currently harvested mostly for construction materials, but it can also be used as a source of organic chemicals and for energy by combustion or digestion for biogas. Indeed, since as much as 50% of the reed harvested for thatch is unsuitable for that purpose. Such “waste reed” amounts to several thousand tons a year in Vylkove alone, seeking other uses for this by-product would mitigate uncontrolled illegal dumping and burning and increase economic efficiency.

Unfortunately, there remains a big gap between the potential for new uses of reed biomass, and the current reality. While there are significant

benefits to gain, there are also significant obstacles involved even in implementing relatively simple reed processing plants, and achieving economic viability for such small-scale initiatives is difficult. This is shown by a Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis (Table 2), based on the information from the ReedBASE Desk Study.

To address such obstacles, it will be necessary to draw together the various actors (government, research bodies, businesses and civil society) in a way that allows them to collaborate on innovative approaches for using wetland biomass. This issue is discussed in the following section.

**Table 2: SWOT analysis of energy generation from harvesting reed**

STRENGTHS		WEAKNESSES	
Concentrated source of non-cultivated biomass		High ash, silica, chlorine content	
Biomass properties similar to other crop residues / energy crops		Difficult and expensive to harvest (not a waste)	
Relatively high polysaccharide content		Harvest unpredictable as weather dependent	
Easy to store and dries passively		Current processing equipment not optimised for reed biomass	
Contributes to restoration of wetland ecosystem functions		Availability usually far from infrastructure - roads, buildings, power supply - and markets	
Superior qualities as animal litter and bedding		Low investor interest as a novel, not mature, product	
Ash does not sinter and easily removed; can be used as a soil conditioner			
OPPORTUNITIES		THREATS	
Rewetting drained floodplains for reliable cropping and carbon sequestration		Ecologically unsustainable harvesting	
Mitigation of uncontrolled burning by economic incentives (fuel resource instead of waste reed)		Fire risk, incidental and arson	
Increase market awareness of reed biomass advantages		Price volatility and market distortion from grants / subsidies	
Set up research projects to improve harvesting and processing technologies			
Use of amorphous silica by-product			



## 4. ReedBASE CLUSTER FORMATION

### 4.1 Triple Helix Approach

Innovation for efficient and sustainable use of renewable resources is gaining global importance and needs transboundary efforts for optimisation. The “Triple Helix” approach is one in which the potential for innovation and economic development is enhanced by close, mutual interaction between government, research bodies, and industry.

For example, in 2009 the European Commission established the European Institute for Innovation and Technology (EIT) to connect and stimulate cooperation between top-level academic and industrial research and development institutions. EIT currently administers five so-called Knowledge and Innovation Communities (KICs) from their headquarters in Budapest, Hungary.

Forming a Triple-Helix cluster is the best way to promote innovation for sustainable use of

wetland biomass, and obtain the inherent ecosystem benefits this approach entails. Such a ReedBASE cluster could cooperate to develop initiatives and address obstacles that impede ecologically and economically sustainable use of the considerable existing and potential wetland biomass resources available in the lower Prut, Danube and Dniester river floodplains.

A possible scenario for establishing a ReedBASE cluster is to form it under the leadership of the Institute of Market Problems and Economic-Ecological Research (National Academy of Science of Ukraine), in which interested organisations express a willingness to participate and share information by signing a Memorandum of Understanding (see Annex 1). The group would start in Ukraine and Moldova, and then expand to include interested organisations from other European countries.

### 4.2 Main Directions of ReedBASE Cluster Activities

#### 4.2.1 *Clearing-House Role*

The central role of the ReedBASE cluster would be to act as clearing house, facilitating contacts and information sharing among its members. It would identify opportunities to strengthen its membership base, and to promote good practice for reedbed management throughout Europe. In particular, ReedBASE could undertake activities such as:

- Screening eligibility for relevant project grants e.g. EU Transnational Danube Programme, EU Horizon 2020, EU Neighbourhood Programme, EIT and other national and bilateral schemes
- Forming consortia of members to bid for

grants for research and development projects

- Joining the Triple Helix Association (<https://www.triplehelixassociation.org/about-tha>)
- Seeking collaboration with the European Institute of Innovation and Technology and relevant Knowledge and Innovation Communities.

#### 4.2.2 *Policy Development*

The government sector has a major role in facilitating the use of wetland biomass as a source of renewable energy, within its overall green energy policy. Topics to be addressed include:

- Enforcement of water protection zone

management and rewetting floodplain areas where appropriate

- Promotion of short rotation coppice for materials and energy
- Designating reed as a recognised energy crop
- Incentive schemes for research and business creation at local level to initiate economic development based on short carbon cycles
- Certification of product quality (thatch, briquettes and pellets) according to European standards
- Delivering necessary infrastructures such as electricity supply, communications and transport

#### 4.2.3 Research Needs

Universities and research institutes in the region should engage with international networks and organisations, as well as strengthen their investigations of, and train local expertise in, aspects such as:

- Long-term monitoring of impact on habitat diversity and quality
- Assessment of carbon stocks in wetland biomass and organic soils
- Wetland management especially for carbon sequestration
- Evaluation of ecosystem services improved by wetland restoration and wise management
- Paludiculture opportunities on peat soils
- Designing optimal biomass harvesting regimes
- Innovative construction materials from wetland biomass
- Economics of wetland biomass utilisation

### 4.3 Potential ReedBASE Innovation Projects

After analysis of the ReedBASE project study areas presented in the Desk Study, the outcomes of the first stakeholder meetings, and the assessment made in this report, 8 potential site-based projects were identified as a starting point for development by the cluster. In addition, there

#### 4.2.4 Business Investment

The private sector is the main driver for the development and marketing of new products, resulting from appropriate wetland biomass policies and incorporating research results. There are opportunities in many aspects of the biomass energy supply chain, including:

- Development and sale/lease of biomass harvesting equipment
- Development and sale/lease of biomass processing equipment
- Development and sale/lease of end-use equipment (boilers and CHP units)
- Repair and servicing of biomass-related equipment
- Sale of products, including exports

#### 4.2.5 Social Engagement

Civil society organisations, although not a formal part of the Triple Helix system, can still play an important role by promoting awareness, increasing acceptance of and raising demand for wetland biomass products:

- Creating awareness of wetland biomass value as a natural capital asset
- Promoting consumption of locally produced wetland biomass products
- Discouraging ad hoc burning of reedbeds as anti-social behaviour and wasting resources
- Promote the role and value of ecosystem services of wet- and peat-land ecosystems especially in the climate change context.

is a potential thematic project for research and development to improve biomass harvesting, processing and marketing. These projects all require collaboration and innovation among various stakeholders in order to succeed, and have the potential for cross-border cooperation.

The site-based projects are listed below and elaborated further in the Annex.

*Prut floodplain between Cahul and Colibași*

- Willow cultivation (furniture, fencing, energy)
- Reed harvesting for construction materials (thatch, panels, fencing)

*Danube floodplain between Reni and Orlivka*

- Rewetting unused land for restoring ecosystem services and reed production
- Willow cultivation (furniture, fencing, energy)

*Danube floodplain around Leski and Vylkove*

- Conversion of rice paddies to wetlands to restore ecosystem services and reed production
- Use of waste reed for energy production

*Dniester delta*

- Research on peat formation, fire impact and carbon sequestration across the whole area
- Willow cultivation (furniture, fencing, energy)

*Thematic project*

- Research and development on biomass harvesting (reedbed management, cutting regime, mowing and baling equipment, storage); processing (construction materials, briquettes, pellets) and marketing (certification, transport, export).

## ANNEX

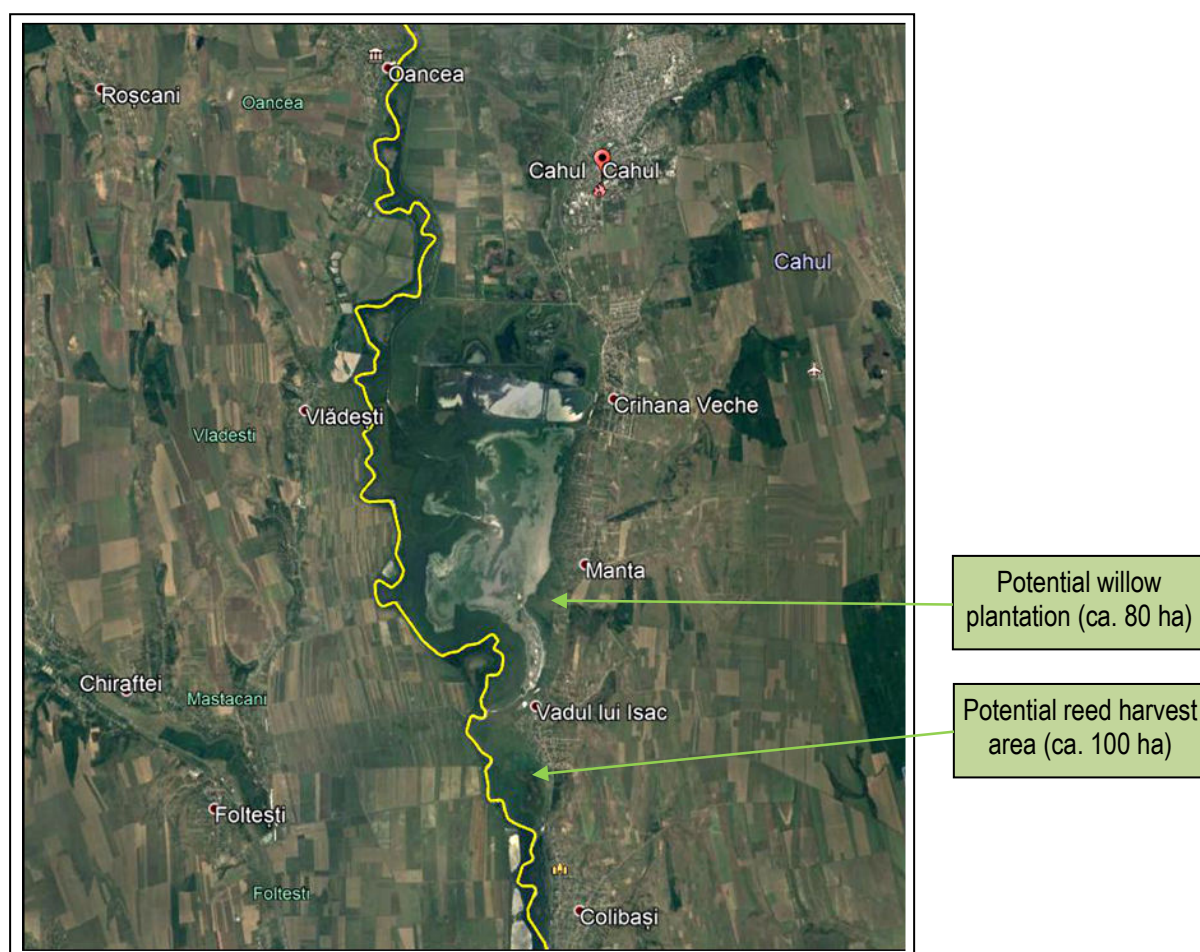
### POTENTIAL COLLABORATIVE PROJECTS

#### A2.1 Prut floodplain

The River Prut floodplain between Cahul and Colibași is well placed to serve local markets for construction materials and renewable energy produced from willows (at Manta) and reeds (from Vadul lui Isac to Colibași). Experience with growing willow as an energy crop is already being developed in Moldova. For example, in April 2016 one hectare of willow was planted at Cucuruzenii de Sus village, Orhei district, on farmland owned by a vocational school in Orhei town. The initiative is promoted

by the Energy and Biomass Project in Moldova, with financial support from the European Union.

The fact that this part of the Prut and its floodplain forms the border with Romania means that projects could be developed and implemented as transboundary and twinning initiatives, combining sustainable use of plant biomass with restoration of floodplain dynamics for improvement of water quality and fish production.





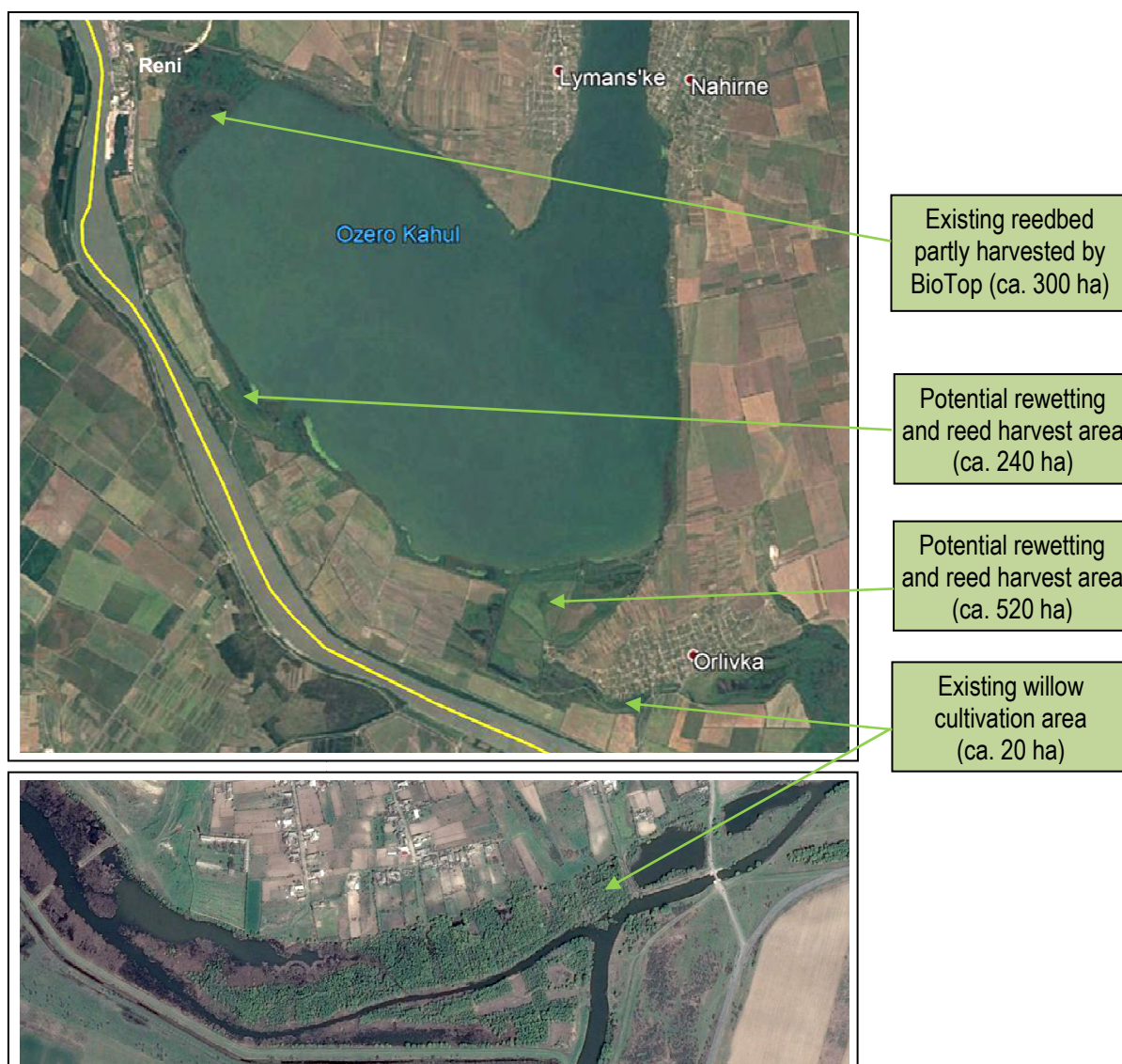
## A2.2 Danube floodplain between Reni and Orlivka

The small area of reedbed southeast of Reni (at Kirgani) is currently partially harvested by BioTop Ltd for the production of biomass pellets (about 100 tons / year) that are sold to local businesses. This operation is in a pilot development stage and expected to increase in volume over coming years.

An area of about 15 ha in the floodplain south of Orlivka is currently used for growing and pollarding willow trees. The municipality of Orlivka recently received a biomass boiler to heat its community hall, funded by an EU project on adaptation to climate change. Both types of biomass use could be expanded in the area to provide sources of renewable energy for

heating purposes. For reeds, this could be done by rewetting and managing floodplain areas that are not used for agriculture (about 760 ha), which would also restore natural ecosystem services such as flood alleviation, water quality improvement (removing sediments and organic pollution) and fish spawning areas.

Willow production could be extended along the course of canals linking Lakes Kagul and Kartal. As this part of the Danube floodplain is adjacent or close to the borders with Moldova and Romania, the projects could be developed and implemented as transboundary and twinning initiatives.



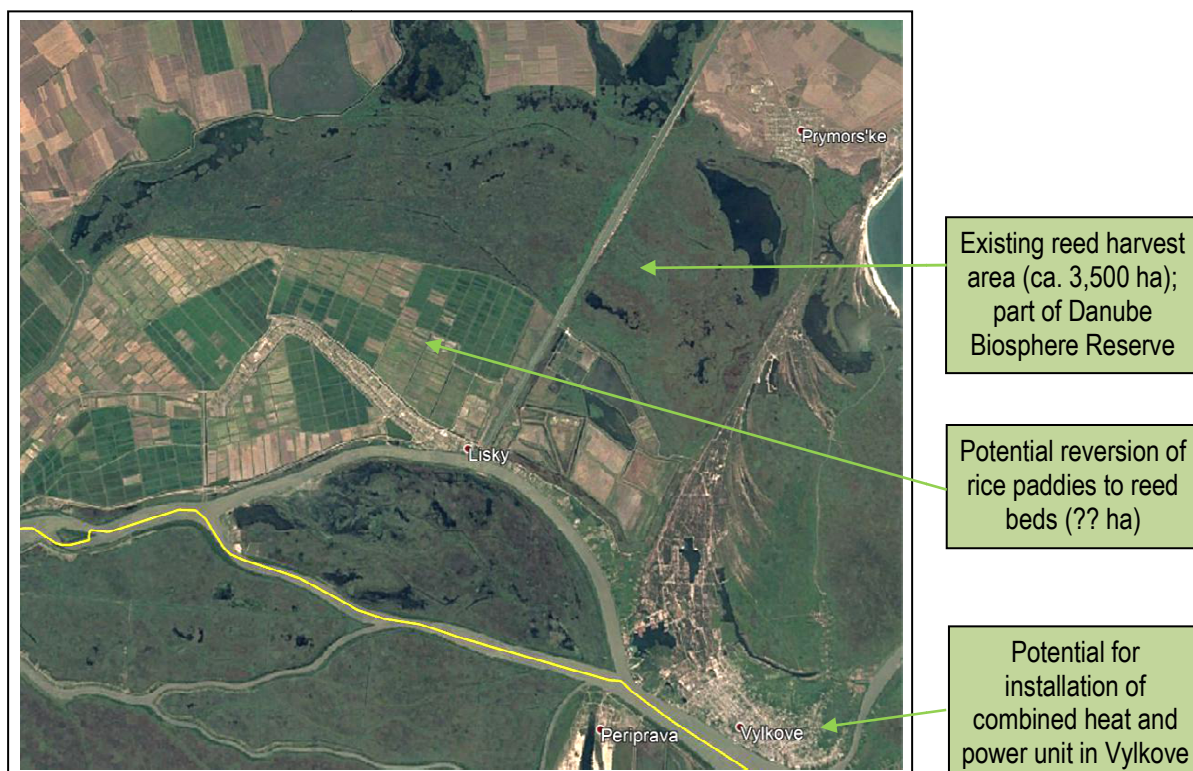
### **A2.3 Danube floodplain around Leski and Vylkove**

Several thousand tons of waste reed are generated each year from reed harvesting for thatch (a by-product of sorting cut reed into bundles of specific dimensions). This waste reed should be disposed of in an environmentally neutral way (e.g. not burning or dumping). Efforts to make briquettes have met with various obstacles (unreliable power supply, limited market demand). At the same time, Vylkove town suffers from power shortages and energy for heating.

A possible alternative use of waste reed is as a bulk feed (in bales) for a combined heat and power unit. Small-scale units are increasingly available and gaining in efficiency and a project to research the feasibility of this in Vylkove could be undertaken.

The floodplain around Leski was converted to rice paddy during the Soviet period. However, rice production is becoming less viable in the face of competition from imports and the cost of maintaining the water level infrastructure. There is potential for investigating the feasibility of returning some polders to the natural floodplain water regime. This would generate reedbeds that are easier to harvest as well as restore ecosystem services such as flood alleviation, water quality improvement (removing sediments and organic pollution) and fish spawning areas.

As this part of the Danube and its floodplain lies opposite to Romania, projects could be developed and implemented as transboundary and twinning initiatives.





## A2.4 Dniester Delta

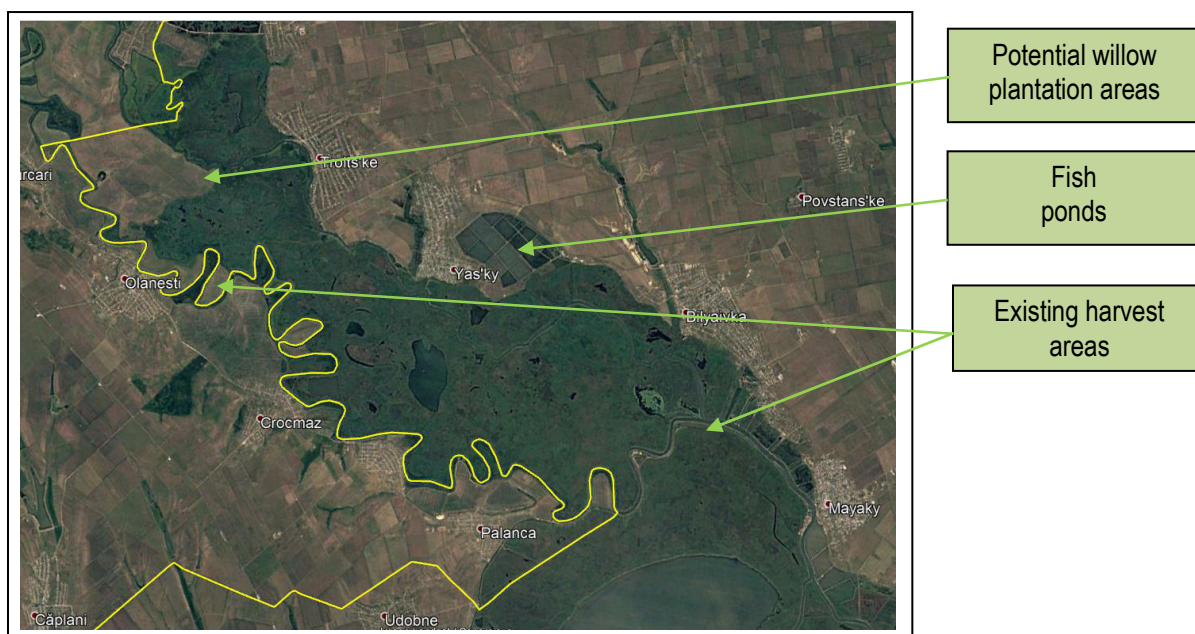
The Dniester / Turunchuk delta comprises the largest contiguous area of organic soils in Odessa oblast. Much of the area lies within the Dniester National Nature Park, where some of the reed biomass is harvested. However, fires often occur here which can impede the further development of peaty soils.

There is the potential for conducting research on peat formation, fire impact and carbon sequestration across whole area in order to determine whether there is a net accumulation of carbon, and whether the rate of accumulation can be enhanced. If the results are positive, the carbon could be sold on the voluntary carbon market as a means of supporting the Dniester

National Nature Park administration.

It appears that some of the adjacent floodplain area, which should be in the water protection zone, is currently managed for arable production. Such areas, especially those where access is more difficult, might be better used for willow production. A project could be developed to investigate this alternative, which would also restore ecosystem services such as water quality improvement (removing sediments and organic pollution) and fish spawning areas.

As the delta lies along the border with Moldova, projects could be developed and implemented as transboundary and twinning initiatives.







**ReedBASE**

# **MEMORANDUM OF UNDERSTANDING**

**Between the  
Parties of the ReedBASE Innovation Cluster  
about cooperation in the field of**

**Innovative Utilisation  
of  
Renewable Biomass  
from  
Ecologically Sustainable  
Reedbed Management**

**October 2017**

## **Article 1**

### **FOUNDING PARTIES**

The founding Parties to this Memorandum of Understanding (MoU) are:

Institute for Market Problems and Economic and Ecological Research (IMPEER), Odesa, Ukraine

The Institute addresses topical issues of deepening market reforms in the national economy, as well as elaborating the strategy and tactics for sustainable, balanced socio-economic, bio-energetics and economic and ecological development of the Ukrainian Black-Sea coastal zone.

Michael Succow Foundation for the Protection of Nature (MSF), Greifswald, Germany

is a partner in the Greifswald Mire Centre (GMC), an internationally renowned centre for peatland research and restoration. MSF has been involved in several projects of German and international cooperation in the field of peatland re-wetting, restoration, and paludiculture in the context of greenhouse gas emissions reduction and sustainable peatland management with on the ground experience in Germany, Ukraine, Belarus and Russian Federation.

Agricola, Reni, Odesa Oblast, Ukraine

Since 2011, Agricola has promoted the development of reed harvesting from dense reedbeds to improve biodiversity, especially around Lake Kagul (Reni raion). It has facilitated cooperation between foreign investors and local companies, and carried out biodiversity monitoring work on the ecological results of reed harvesting.

Agency of European Innovations (AEI), Lviv, Ukraine

The NGO Agency of European Innovations (AEI - [www.aei.org.ua](http://www.aei.org.ua)) is one of the leading research and innovation intermediary organisations of Ukraine with great experience in reasearch and development, management and consultancy activities in various projects under EU scientific framework programmes and cross-border cooperation programmes.

Cross-border Cooperation and European Integration Agency (ACTIE), Cahul, Moldova

ACTIE plays an important role in the Lower Danube Euro-region and has excellent relations and a well-established network in the area. ACTIE enjoys the full support of the local administration, with which it has cooperated to implement various environmental improvement projects.

Danube Region Centre for Sustainable Development and Ecological Research, Kilia, Ukraine

The Centre was established as an autonomous non-governmental body in 2017 by Odesa Oblast Council to carry out environmental monitoring and implement projects for sustainable development in the Lower Danube region.

BioTop Ltd

BioTop is a Ukrainian-British joint venture company located in Reni that carries out commercial reed harvesting and processing for roofing thatch, insulation mats and biomass pellets.

## **Article 2**

### **Contributions of Founding Parties to ReedBASE**

Within the framework of this MoU, for the successful and fruitful development and implementation of the cooperation, each Founding Party offers the following support:

1. Institute for Market Problems and Economic and Ecological Research (IMPEER):
  - a. Will take the role of Lead Partner and formally host the ReedBASE innovation cluster at its facilities within the National Academy of Sciences of Ukraine
  - b. Will be responsible for organising meetings. At least one meeting of the Parties will be held each year, within one month of the anniversary of the commencement of this MoU
  - c. Contribute expertise on technology and markets relevant for the harvest of biomass and marketing of biomass products within ReedBASE implementation projects.
2. Michael Succow Foundation for the Protection of Nature, Germany (MSF):
  - a. Will support the development and implementation of ReedBASE projects, especially on sustainable wet- and peat-land management (paludiculture),
  - b. Will support the development of transboundary biosphere reserve concepts that include sustainable management of reedbeds and wetlands in the ReedBASE project region.
  - c. Will provide access to international peatland and paludiculture networks via the Greifswald Mire Centre (GMC).
  - d. Will promote the publication of joint results arising from ReedBASE project implementation.
3. Agricola
  - a. Will promote the continuous dialogue between and foster the network of relevant stakeholders for future ReedBASE innovation project implementation
  - b. Contribute with expertise on sustainable reedbed management
  - c. Promote on national and international levels the results of the ReedBASE cluster
  - d. Will provide information and expertise for regional biodiversity and nature conservation issues.
4. Agency of European Innovations (AEI):
  - a. Will contribute to the ReedBASE cluster expertise on biomass technologies and management schemes of reedbeds from western Ukraine, e.g. Tisza River catchment
  - b. Will facilitate contact with relevant stakeholders for future project development
  - c. Will provide information and expertise on international innovation and development funding e.g. via Interreg or Horizon 2020 programmes
  - d. Will promote the ReedBASE cluster's activities and opportunities for collaboration via its dissemination tools, including social media
  - e. Will raise the awareness of the topic at different events.
5. Cross-border Cooperation and European Integration Agency (ACTIE):
  - a. Will facilitate contact with relevant initiatives and stakeholders in Moldova
  - b. Will promote synergies for transboundary project implementation between Moldova, Romania and Ukraine
  - c. Will support the creation of the biosphere reserve in the Lower Prut region
  - d. Will support the development and implementation of various actions and projects aiming to achieve ReedBASE objectives
6. Danube Region Centre for Sustainable Development and Ecological Research:
  - a. Will facilitate contact with relevant initiatives and stakeholders in Odesa oblast

- b. Will promote synergies for transboundary project implementation between Ukraine, Moldova and Romania
  - c. Will support the development and implementation of ReedBASE projects
  - d. Will provide information and expertise for regional biodiversity and nature conservation issues.
- 7. BioTop Ltd:
  - a. Will facilitate contact with relevant commercial initiatives and stakeholders in Odesa oblast
  - b. Will support the development and implementation of ReedBASE projects
  - c. Will provide information and expertise relating to business and biodiversity issues.

### **Article 3**

### **ACCEDING PARTIES**

1. Organisations eligible to accede as Parties to this MoU shall meet at least one of the following criteria
  - (a) Be a public authority or agency
  - (b) Be a body involved in academic research and development
  - (c) Be a registered commercial enterprise
  - (d) Be a registered civil society organisation
2. The Organisation must be established in a country that is a member of the Council of Europe.
3. Organisations other than the founding signatories shall submit a written request to IMPEER to accede to the MoU. On receipt of such a request, IMPEER shall promptly inform the other Parties and accession is effective 30 days after the date of circulation, provided no objection is received.
4. If any Party objects to the admission of an applicant, it shall notify IMPEER in writing of the reasons for its objection within 30 days of the application. IMPEER will request the applicant to clarify any objections within 30 days of requesting clarification. In case the matter is not resolved at this stage, IMPEER will convene a panel of three independent Parties to decide whether or not the applicant can be admitted to the MoU.
5. If, in the opinion of IMPEER or a majority of Parties, a Party is considered to have breached the terms of this MoU, their membership of ReedBASE may be suspended until the matter is resolved, or if not resolved within 60 days, a vote held in a general meeting to decide whether or not the Party should be expelled from ReedBASE.
6. All parties will jointly cooperate in innovative project development and implementation in the fields of sustainable management of wetland biomass resources, processing of biomass-based materials, and biomass-based renewable energy use in the transboundary region between Ukraine, Moldova and Romania along the Prut, Dniester and Danube Rivers.

## **Article 4**

### **PURPOSE**

1. All Parties believe that there is much to gain by establishing a working relationship between them in order to enhance their respective interests. The purpose of this MoU is establish a framework within which the Parties will work in partnership through mutually beneficial cooperation and collaboration in supporting high standards of practice for ecologically sustainable reedbed management.
2. The Parties to this MoU will form a European Knowledge and Innovation Cluster known as “ReedBASE”.
3. The role of ReedBASE is to promote research, management and utilisation of reedbeds as a basis for sustainable eco-economic development, especially for the benefit of local communities and maintaining and/or restoring wetland ecosystem services.
4. The subject of future ReedBASE collaborative projects will include, but not necessarily be limited to, the following topics:
  - Sustainable wet management of reedbeds
  - Special adaption of this wet management for reedbeds on peatland (paludiculture)
  - Restoration of hydrological regimes
  - Preservation and restoration of ecosystem services
  - Accordance with statutory nature conservation targets
  - Avoidance of the introduction of foreign species for cultivation

## **Article 5**

### **PERIOD**

This MoU enters into force when at least four parties adhere to it by signature.

## **Article 6**

### **ORGANISATION AND MANAGEMENT**

1. The relationship of the Parties shall be that of an informal collaborative group. Each Party will designate a contact person for coordinating their inputs to the implementation of this MoU.
2. The Institute of Market Problems and Economic-Ecological Research of the National Academy of Science of Ukraine (IMPEER) will take the role of Lead Partner, and will be responsible for organising meetings as required on its own initiative or within three weeks at the request of at least three other Parties. At least one meeting of the Parties will be held each year, within one month of the anniversary of the commencement of this MoU.
3. IMPEER, in consultation with the Parties, may establish a Board, Secretariat or any other body that would serve to administer and implement the MoU more effectively. The establishment of such a body is subject to the agreement of the Parties in a general meeting and its terms of reference shall be attached to the MoU as a Protocol.

4. The specific areas of cooperation and collaboration are set out in the Action Plan to this MoU, which will be reviewed and updated at least annually.
5. Each of the activities listed in the Action Plan shall have a written subject, responsibilities, timetable and resources required. Each Party concerned agrees to provide all required technical information and data for the purpose of facilitating the implementation of the Schedule.

## **Article 7**

### **FINANCIAL TERMS**

This MoU shall be implemented based on the following conditions:

- (a) Parties shall be responsible for their own financial and tax affairs;
- (b) Parties hosting meetings will provide rooms, associated facilities and refreshments free of charge;
- (c) Travel costs to meetings will be borne by the Parties independently;
- (d) The financial arrangements for implementing activities included in the Action Plan to this MoU shall be assessed by each Party concerned and where appropriate agreement shall be reached on sharing income and expenditure between them.

## **Article 8**

### **DECLARATION OF INTEREST**

Each Party will notify IMPEER if it has any financial or non-financial interest or involvement in any other Party to this MOU.

## **Article 9**

### **CONFIDENTIALITY**

Each Party agrees to keep confidential all data which are provided by the disclosing Party, to be of a proprietary or confidential nature, and this condition shall remain in force permanently, including after any departure from or ending of this MoU, unless waived by the disclosing Party in writing.

## **Article 10**

### **LIABILITY**

1. No Party has the right to make commitments of any kind on behalf of any other Party.
2. This MoU does not impose any liabilities on the Parties other than those mentioned above, and hereby indemnifies each other against all claims arising from negligence, malpractice, incompetence or any other event.

## **Article 11**

### **AMENDMENTS**

The Parties may amend this MoU in any respect at a meeting and/or electronic poll called by IMPEER provided that at least 60% of the Parties are in favour. Amendments shall be numbered and dated and appended as Annexes to this MoU.

## **Article 12**

### **INTERPRETATION**

This MoU is written in the Ukrainian and English languages both of which are equally authoritative. However, in case of any dispute over interpretation, the English version shall prevail.

Done at Odesa on 25 October 2017



