Final Report 36 Months of project implementation

New and

Innovative

**Courses for** 

Precision



# PERIODICAL REPORT - S. SEIFULLIN KAZAKH AGROTECHNICAL UNIVERSITY

**MSc/SARA KITAIBEKOVA** 

Joint Project: Capacity Building in the Field of Higher Education ERASMUS+ 2018



# CONSORTIUM

### **Project organigram**









# It was updated 6 and developed 5 courses within 10 Educational Programs which had been accredited for 5 years by :

- 1. "Geodesy and Cartography";
- 2. "Agroecology";
- 3. "Soil Science and Agrochemistry";
- 4. "Precision farming";
- 5. "Animal feed and feeding";
- 6. "Applied Geodesy";
- 7. "Agroecology";
- 8. "Selection and reproduction of agricultural animals";
- 9. "Land management";
- 10. "Agroengineering"



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### Updated courses:

- «Physics and soils" 5 ECTS 60 % in relation to the preexisting course (MSc);
- 2. "Remote sensing of the Earth" 5 ECTS 40 % (BSc);
- "Feed production with the basics of agronomy and botany"- 5 ECTS- 40% (BSc);
- 4. Precision farming basics 5 ECTS- 40% (BSc);
- 5. Agrosoil science- 5 ECTS- 40% (BSc);
- 6. State control over the use and protection of land- 5 ECTS-50% (BSc)

 $\sum$ (Total number of updated courses) = 6

 $\overline{\Sigma}$ (Total number of ECTS) = 30



### WP2 Development

### New courses:

- 1. "Precision agriculture"- 4 ECTS- PhD;
- 2."Precision Agriculture"- 4 ECTS- MSc;
- 3. "Innovative technologies for production of livestock products" 10 ECTS-MSc;
- 4. Management and decision making in precision agriculture"- 5 ECTS- MSc;
- 5. Agrocenoses a component of the biosphere"- 5 ECTS- MSc
- $\sum$ (Total number of new courses) = 5
- $\overline{\Sigma}$ (Total number of ECTS) = 30



## **I STAGE - WP 1 PREPARATION**

N⁰	Activities
1.1	Appointment of responsible persons for project implementation and creation of a project working group
1.2	Overview of current undergraduate / master's study programs in the target area at the university
1.3	Development of an agreement on an educational strategy and guidelines for the development of undergraduate / graduate curricula, including the use of new educational technologies
1.4	Develop questionnaires for the analysis of existing curricula / disciplines:for teachers, students and employers
1.5	Development of a survey schedule
1.6	Conduct a survey of various target groups
1.7	Analysis of responses to questionnaires
1.8	Drawing up an analytical report on the results of the analysis of existing curricula / disciplines
1.9	Preparation of a syllabus for each module based on the internal potential of the university
1 10	Determine the composition of teachers who are required to conduct at least 20% of classes in English







## **II STAGE: DEVELOPMENT, QUALITY, DISSEMINATION**

N⁰	Activity
	WP2 DEVELOPEMNT
2.1	Prepare a set of new core curricula and transferable modules, including innovative teaching aids; develop curricula;
2.2	Prepare a set of documentation for PAL and VCR;
2.3	Eligibility criteria for participants and retraining programs for academic teachers.
	WP3 QUALITY
3.1	Quality Assurance Strategy / Quality Plan, including internal / external quality assessment / reports in accordance with the Quality Plan
	WP4 DISSEMINATION
4.1	Distribution and application / communication plan using a set of promotional materials; Distribution Events, Joint Web Platform, NICOPA+ Agreement
4.2	Full media coverage of project events, including the development and support of a joint web platform







# **NEW COURSES FOR BSc and MSc**

- 1. Remote Sensing and Application of Earth and Environment related PA;
- 2. Using of SENTINEL 1-2-3 imagery for agricultural field monitoring;
- 3. Global Navigation Satellite Systems (NAVSTAR, GLONASS, GALILEO, etc.);
- 4. Optimizing computer vision algorithms and real-time implementations;
- 5. Web technologies (Agro SDI, Geo-portals, Geo-services, Geo-analytical systems);
- 6. Basics of the Precision agriculture characteristics, technologies, economic efficiency, optimal use of resources;
- 7. Yield sensors for Precision Agriculture;
- 8. Soil physical properties and its measurement;
- 9. Application of Precision Agriculture for crops growing;
- 10. Start up initiatives for future engineers;
- 11. Management and Decision Making in Precision Agriculture;
- 12. Intensive course to leverage acceptance of the new technologies "in-field";
- 13. Precision livestock farming;
- 14. Ecological aspects of Precision Agriculture.







1. Educational programs (10) were passed specialized internal initial accreditation(Ex-Ante) by IAAR (Independent Agency for Accreditation and Rating) registered on the European Quality Assurance Register in Higher Education (EQAR), Full member of the European Association for Quality Assurance in Higher Education (ENQA);



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3. Feedback and recommendations were received from 16 universities of the Republic of Kazakhstan and employers: Gorbunov B.N., associate Professor of "Technical Mechanics" Department of S. Seifullin KATU; Yegimbayeva A.E., the Head of "Physical and Economic Geography" Department of L.N. Guymilev Eurasian National University, Akhmetova N.Z., the Head of "Geodesy and cartography" of L.N. Guymilev Eurasian National University, Bayazitova K.N., the Head of "Food Security" Depatment of M.Kozybayev North Kazakhstan University, Koitanova A.N., the Head of Students' Department, Astana IT University; Sabelfeld V.K., Director of "AgromashHolding"; Kuranbayev A.A., the Head of "Ecological Biotechnology" of the National Biotechnological Center;



Sauer I.A., General Director of AgroFirm "Rodina", graduate of S. Seifullin KATU; Kovaleva L.F., LLP "Logos Grain"; Kazhgaliyev N.Zh., Kazakh "Akbas" Cattle Breeding Chamber Deputy Director; Toishibekov O., Deputy Director if "Remote Data" Department of JSC National Space Center "Garysh Sapary"; Kabylkanov K.P., Director of LLP agricultural holding "Dulat"; Sabyrov M.M., Director of LLP "Zharkyn, Aiyrtau District of North Kazakhstan Region; Andreev V.I., Chairman of the Technical Committee 102 "Waste of production and consumption"; Zvyagin G.A., the Head of the Department of Survey, Monitoring of Lands and Laboratory Research of the NC JSC Branch of the state corporation "Government for Citizens", Nur-Sultan.



4. The study programs are approved in the following order: reviewed by the quality group of the EU Erasmus + NICOPA project; at a meeting of the department; at the Methodological Bureau of the Faculty; on August 26, 2020 it will be approved by the Scientific and Methodological Council of the University.

5. The accreditation process is carried out in accordance with ESG 2015 (Standards and Guidelines for Quality Assurance in the European Higher Education Area) 100%, because universities of Kazakhstan have been studying in the framework of the Bologna Process since March 2010.



# Quality indicators which have been chosen for the peer review template:

- -Thematic content of studying program;
- -Learning outcomes'
- -Access to adequate learning resources;
- -Interdisciplinary modern teaching materials;
- -Equipment and faciliyies for conducting practical works;
- -Societal impact and regional development work



# QUALITY- WP 3



WP3 - Quality Control

Recommendations for quality assessment of implementation of new and modernized curricula modules

## ACTIVITIES IN QUALITY (EXAMPLE)

	Мероприятия	Исполнители	Сроки	Форма завершения
1	Разработка внутреннего плана обеспечения качества	Солтан Г.Ж	До 01.06.19 г	план
2	Создание группы обеспечения качества в университете	Токбергенов И.Т.	До 01.06.19 г	списочный состав группы
		Разработка процедуры самоконтро	ля	
3	Разработка рекомендации по индикаторам качества разработанных учебных курсов	Серекпаев Н.А Солтан Г.Ж Имашева А.Ш.	До 01.11.19 г	методические рекомендации
4	Разработка процедуры рецензирования учебных курсов	Серекпаев Н.А Солтан Г.Ж Имашева А.Ш.	До 01.11.19 г	положение о процедуре рецензировании учебных курсов
5	Разработка шаблонов для вопросников (on-line опросник) и отчетов	Әліпбеки О.Ә Солтан Г.Ж.	До 01.09.19 г.	формализованный шаблон
6	Проведения анкетирования среди обучающихся и преподавателей	Әліпбеки О.Ә Нукешев С.О Ермеков Ф.Е	15.11.18 – 01.04.20	результаты анкетирования
7	Проведения анкетирования среди работодателей	Әліпбеки О.Ә Нукешев С.О Ермеков Ф.Е	15.11.18 - 01.04.20	результаты анкетирования
8	Отчеты обратной связи от целевых групп обучающихся и преподавателей	Әліпбеки О.Ә Солтан Г.Ж	После каждого опроса (анкетирования	отчет
		Мониторинг и оценка (М & Е)		
9	Отчет самоконтроля с необходимыми выводами и рекомендациями (в том числе сравнение с планом работы мероприятий проекта)	Әліпбеки О.Ә Солтан Г.Ж	каждые 6 месяцев	отчет
10	Оценка результатов и их качества в форме специально разработанного шаблона отчета	Токбергенов И.Т. Әліпбеки О.Ә Солтан Г.Ж	каждые 6 месяцев	отчет

### **EXAMPLE OF QUESTIONAIRE**



 Знакома ли Вам аббревнатура международного образовательного проекта NICOPA?
 ДА НЕТ

БЛАГОДАРИМ ВАС ЗА УЧАСТИЕ В ОПРОСЕ!



#### MICOPA

Уровень – Преподаватели

Уважаемый преподаватель, просим Вас ответить на несколько вопросов:

Укажите область Ваших научных исследований \_ исисредсинке Cerescho Kopenoslennich megyryny 1. Как Вы думаете, внедрение цифровых технологий в сельское хозяйство повысит эффективность работы аграриев? HET TA 2. Как Вы думаете, внедрение точного сельского хозяйства имеет практическую ценность для аграриев? (JA) HET Вы знакомы с основными элементами точного землелелия? (AA) HET 4. Вы знакомы с ключевыми технологиями точного земледелия? (JA) HET 5. Вы знакомы с ключевыми технологиями точного сельского хозяйства? (IA) HET 6. Вы готовы разработать модуль курса по элементам точного земледелия? ДА HET 7. Вы готовы разработать и преподавать курс по енетеме точного земледелия? ЛА (HET) 8. Вы готовы разработать и преподавать курс по системе точного сельского хозяйства? ДА HET 9. Вы слышали о реализации в КазАТУ им. С.Сейфуллина международного проекта по точному сельскому хозяйству? /JIA HET 10. Вы хотели бы принять участие в международном образовательном проекте по точному сельскому хозяйству? HET (ДA 11. Знакома ли Вам аббревиатура международного образовательного проекта NICOPA? (JA) HET

#### БЛАГОДАРИМ ВАС ЗА УЧАСТИЕ В ОПРОСЕ!

### **ANALYSIS OF ANSWERS**

Обще						
				119		
		да	нет	да	нет	
	2 вопрос	106	13	89,08	10,92	
	3 вопрос	87	32	73,11	26,89	
	4 вопрос	73	46	61,34	38,66	
	5 вопрос	87	32	73,11	26,89	
	6 вопрос	29	90	24,37	75,63	



	1. Какое из приведенных ниже понятий Вам знакомы:						
	□ точное земледелие						
	□ точное сельское хозяйство						
	🗆 🗆 геоинформационные системы						
	дистанционное зондирование Земли						
	радионавигационные системы						
ла	Если Вы не знакомы с приведенными понятиями перейдите <b>к вопросу №4</b>						
нет	2. Полезно ли внедрение точного сельского хозяйства в деятельность						
nei	агроформировании?						
	3. Вы заинтересованы в изучении точного сельского хозяйства?						
	4. Вы слышали о реализации в КазАТУ им. С.Сейфуллина международного						
	проекта по точному сельскому хозяйству?						
	5. Этот проект образовательный и научно-исследовательский?						
	6. Знакома ли Вам аббревиатуру международного образовательного проекта						
	NICOPA?						

### **DISSEMINATION AND SUUSTAINABILITY – WP4**







УТВЕРЖДАЮ: Соординатор проекта И.Т. Токбергенов 2018 г.

МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА РЕСПУБЛИКА КАЗАХСТАН

КАЗАХСКИЙ АГРОТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ ИМ. С. СЕЙФУЛЛИНА

ПЛАН РАСПРОСТРАНЕНИЯ

#### ПО ПРОЕКТУ №. 597985-ЕРР-1-2018-1-КZ-ЕРРКА2-СВНЕ-ЈР «НОВЫЕ И ИННОВАЦИОННЫЕ КУРСЫ ПО ТОЧНОМУ СЕЛЬСКОМУ ХОЗЯЙСТВУ» NICOPA

	Астана 2018					
13.	Заключение договора по проекту NICOPA+ для всех желающих быть ассоциированными партнерами проекта	Токбергенов И.Т. Китайбекова С.О. Солтан Г.Ж.	на постоянной основе	проект договора		
14.	Сбор образовательного и информационного материала в DROPBOX	Ермеков Ф.К. Солтан Г.Ж.	на постоянной основе	информация в электронном виде		
15	Распространение информации через Офис PASO	Токбергенов И.Т. Алипбеки О.А.	на постоянной основе	программа семинара, информационные бюллетени, буклеты, Roll up, постеры		

### **EMPLOYERS**

1. ТОО «Шагала агро», СКО, Кызылжарский район, с.Бугровое, директор Омаров Ж.Ж.;

2. ТОО «Шатило и К», СКО Жамбылский район, с. Казанка, ул.Коституции,8 - директор Адам О.Э.;

3. ТОО «Атамекен-агро», СКО, Жамбылский район, с.Благовещенка, ул. Пионерская, 15

- директор Сухов В. В.;

4. КТ «Мамбетов и К», СКО, Мамлютский район, с.Минкесер — директор Жунусов А.Н.

5. ТОО Агрофирма Родина, Акмолинская облать, Целиноградский р-н, - Гендиректор Сауэр И.А.

6. ТОО КазНИИ защиты растений и карантина, г. Алматы, директор Сагитов А.О.

7. ТОО НПЦЗХ им. Бараева А.И.

8. ТОО Казахский НИИ земледелия и растениеводства – Директор Кененбаев С.Б.

9. TOO «Eurassia Group Kazakhstan» г. Кокшетау

10. ТОО «Найдоровское» Осакаровский район, Карагандинская область

11. Агрохолдинг «Астана - Феникс», Акмолинская обл., заместитель Председателя Плужник Д.П.

12. ТОО «Агрофирма ТНК», исполнительный директор Сейтказимов Алмас, 8 777 870 80 78»

# WEB – SITE NICOPA: www.nicopa.eu





### New and Innovative Courses for Precision Agriculture







# http://kazatu.kz/nicopa



#### «Новые и инновационные курсы по точному сельскому хозяйству»

Цель проекта - модернизация учебных планов в области точного сельского хозяйства с использованием новых технологий -Географической Информационной Системы/ГИС, больших данных, дистанционного зондирования - путем анализа и обновления существующих учебных планов в соответствии с потребностями в области образования; на разработку новых сертифицированных учебных планов в соответствии с новыми достижениями, требованиями рынка труда и Болонским процессом; на тестирование инновационных учебных программ и распространение результатов.

Консорциум NICOPA состоит из 16 партнеров и 4 ассоциированных партнеров с необходимым опытом, образовательными навыками и деловыми связями.







# http:kgu.kz/nicopa

Образовательный портал МОДЕРНИЗАЦИЯ 3.0		поиск
¥K (C) 🏙 🖪	🔯 Russian 🔻 🏓 Почта	🕀 версия для слабовидящих
<b>UALIKHANOV</b> NIVERSITY	SH. UALIKHANOV KOKSHETAU STATE UNIVERSIT Ш.УӘЛИХАНОВ АТЫНДАҒЫ КӨКШЕТАУ МЕМЛЕ КОКШЕТАУСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРС	Ү КЕТТІК УНИВЕРСИТЕТІ РИТЕТ ИМ. Ш. УАЛИХАНОВА
УНИВЕРСИТЕТ ~ АБИТУРИ	ЕНТУ ~ ОБРАЗОВАНИЕ ~ НАУКА ~ ERASMUS+ ~	СТУДЕНЧЕСКАЯ ЖИЗНЬ ~

Главная - NICoPA

NICoPA



Co-funded by the Erasmus+ Programme of the European Union



Erasmus+

ERASMUS PLUS 2016 LMPI	
SA&RuD	
Academica	







# http://www.nkz/nicopa









### PERSPECTIVES OF COOPERATION

1. Enhance networking and internationalization, as partners involved develop new training concepts and curriculum. OFFICE PASO NETWORK and INTERNATIONIZATION (it should be signed an agreement)

2. Enhancing the attractiveness and competitiveness of EU HEIs is a key goal of the Bologna Process. In an increasingly globalised world and with the expansion of HE provisions in emerging economies, NICOPA helps HEIs from the Consortium to develop a strong brand to ensure they remain competitive.

3.Collaboration of HEIs and enterprises in education and development of new curricula, involvement of professionals from SMEs in teaching precision agriculture. Unfortunately, few HEI laboratories or companies can reasonably claim to be able to respond to the technological challenges in the agriculture. Few universities can afford the necessary infrastructure, agricultural laboratories and experts in all fields of this multidisciplinary science, and few enterprises can afford research activities. Therefore, the project aims at overcoming these boundaries and problems through sharing EU experience and providing opportunity for more HEIs to develop the necessary infrastructure and technology for precision agriculture implementation in the regions.

### PERSPECTIVES OF COOPERATION

4. The NICOPA EU collaboration should continue after the end of the project with the open course initiative to build a case of good practice based on the collected experience and based on the positive experience. NICOPA project works towards that the organizational, technical and quality-related issues are addressed in order to share content, and make it easily accessible at European level.

It was agreed by the partners to develop ECTS documentation facilitated and quality enhanced by the supporting documents: course catalogue, learning agreement, transcript of records, work placement certificate. ECTS contributes to transparency in other documents such as the Diploma Supplement. **Sustainability strategy** of NICOPA will maintain its activities, services and benefits during its projected lifetime and after the project follow up and the strategy is worked out with the consortium right at the planning stage. To ensure sustainability following factors are included in the worked out strategy: the project fully meets academic, professional and social needs of target countries; active participation of all target groups is guaranteed; high degree of inter-institutional cooperation; intensive involvement of the non-university partners in the project implementation. The representatives of the non-university partner organizations will be involved in the information events and conferences more often and will comprehensively support the project by promoting the project vision both within and outside their institutions.

The cooperation between universities and stakeholders is ensured by "NICOPA university – enterprise agreement". Universities and enterprises joint their efforts particularly in the field of improvement of training high qualified specialists by offering internships as well as in research activities.

The webpage of the project is online and in full operation: www.nicopa.eu.

# **WP4 Dissemination**

the Eu	* Programme DISSEN	MINATION	
N⊵	Activities	Deadline	
1	Development of information booklets, brochures, posters, newsletters, roll-ups	May-December, 2019/completed	-
2	Regional Seminar "Strategy curriculum design based on European good practice and Bologna principles"	May 2019/ completed	
3	Training "GIS. Precision Agriculture. Remote sensing» at Berlin Technical University	August 2019/ completed	
4	Information Day Erasmus Days "Erasmus for All"	October 2019/ completed	
5	Dissemination of information after training in Berlin	October 2019/ completed	Annual of the Concession
6	Participation at the International Conference "A new social dimension in mission and higher education"L.N. Guymitev ENU	October 2019/completed	
2	Re-training for faculty members after training in Berlin	December 2019/completed	
8	Zoom, Skype conference with partner universities of Furkmeniatan, Uzbekistan, Kazakhstan, EU	February 2020/completed	
			700m.ru

# **WP4 Dissemination**









### WP4 Dissemination (on -line consultations for farmers "Extension-KATU"



время	Ie	ма		Лектор
11:00 - 11:20	Искусственное осем использование сист скотоводстве	енение и емы «Smaxtec» в	Джакупов Истат наук, профессор	<b>ай Тусупович</b> – доктор ветеринарных НАО «КАТУ им. С.Сейфуллина»
11:20 - 11:40	«Smaxtec» – как вози профилактике зараз болезней КРС	можный инструмент в ных и незаразных	Бейсембаев Кан PhD, ассоцииров HAO «КАТУ им. 0	<b>чатжан Каиргельдинович</b> – доктор анный профессор 2.Сейфуллина»
11:40 - 12:00	Вопросы, обсужден	ие		
Дата - 19 м	ная 2020 года,	Ссылка для https://global.gotome /1608660 Контакты: <u>abstalgat@</u> Талғат Абсаттар : +7 Динара Набиева: +7	входа: <u>seting.com/join</u> <u>105</u> mail.ru 775 000 5773 701 299 7799	Начало семинара - 11:00 ч.

**NASE** ОНЛАЙН - СЕМИНАР ДЛЯ ФЕРМЕРОВ Применение инновационных технологий на молочных фермах Время Лект Бостанова Сауле Куанышпековна - к.с-х.н., Направленное выращивание телок 11:00 - 11:30 ассоциированный профессор НАО «КАТУ им. молочного направления С.Сейфуллина». Система идентификации и удаленного Мирманов Арман Барлыкович 11:30 - 12:00 контроля живой массы молодняка ассоциированный профессор НАО «КАТУ им. молочного направления продуктивности С.Сейфуллина». в рамках ПЦФ МСХ РК на тему «Трансферт и адаптация инновационных технологий для оптимизации производственных процессов на молочных фермах Северного Казахстана» Начало семинара - 11:00 ч. Дата - 22 июля 2020 года Ссылка для входа: https://global.gotomeeting.com/join /826929357 Контакты: abstalgat@mail.ru Талғат Абсаттар : +7 775 000 5773 Пинара Набиева: +7 701 299 7799



в рамках ПЦФ МСХ РК на тему «Трансферт и адаптация инновационных технологий для оптимизации производственных процессов на молочных фермах Северного Казахстана»



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Co-funded by the Erasmus+ Programme of the European Union



### **15.10.2020** Global Event Erasmus Days "Key to success through experience", online round table



#### ONLINE ROUND TABLE "THE KEY TO SUCCESS THROUGH

#### EXPERIENCE"

#### Date: October 15, 2020

Venue: Zoom platform, identifier 507 576 5938, access code 532462375 Time: 17:00

**Organizer:** International Cooperation&Multilingual Education Development Center (IC&MEDC), S. Seifullin Kazakh Agrotechnical University

Aim: familiarization with the best practices for the implementation of EU Erasmus

+ projects, as part of the global event Erasmus Days

**Participants:** project coordinators, heads of the departments, deans of the faculties, lecturers and students

AGENDA:

### 1.Participation of S. Seifullin KATU in EU Erasmus + program "Capacity building in higher education"

KitaibekovaS.O., the Head of InternationalCooperation Department, Institutional Erasmus+ coordinator at S. Seifullin KATU

### 3. Erasmus+: opportunity of cooperation between HEIs of Europe and Kazakhstan

GabrieleComodi, Prof, of Energy System, Coordinator of ASIAXIS project, Marche Polytechnic University, Italy,

4. Development of new and innovative courses in precision agriculture

Satybaldiyeva G.K., the Head of "Ecology" Department, academic manager of NICOPA project

Kitaibekova S.O., the Head of international Cooperation Department, manager of NICOPA project, S. Seifullin KATU

### 5. Disseminating information about literacy knowledge through the DIREKT Online Platform

OrazymbetovaZh.A., the Head of scientific and information resources Department, developer of DIREKT project, S. SeifullinKATU

Meiramova S.A., Director of IC&MEDC

### 6. Methodological approaches to the development of modules of third-level educational programs at the universities of Kazakhstan and Russiawithin SAGRIS project

Ismailova A.S., Associate Professor of "Accounting and Audit Department, local coordinator of SAGRIS project, S. Seifullin KATU

7. The significance of the PAWER project results in the development of students' academic mobility

Baitelenova A.A., Associate Professor of Agriculture and Crop ProductionDepartment, local coordinator of PAWER project, S. Seifullin KATU

8. Development of modules for the development of green skills in the framework of the SUSDEV project

NICOPA



20-21.10.2020 Fair of CBHE projects organized by EACEA, NEO in Kazakhstan, Ministry of Education and Science of the Republic of Kazakhstan







Frasmus+

Co-funded by the Erasmus+ Programme of the European Union

IrriWatch

NICOPA



IrriWatch, an operational irrigation scheduling

Dr. Wim Bastiaanssen ADB Consultant

Giovanni Capannella

system for all farmers in Kazakhstan Traper Aut Labor

ADB

11.09.2020 S. Seifullin Kazakh Agrotechnical University (KATU)the team of NICOPA project jointly with the Asian Development Bank (ADB), organized an online seminar on the topic "Drone and Remote Sensing Technologies for water productivity in agriculture".



19-20.11.2020 the Education Audiovisual and Culture Executive Agency (EACEA) of the European Commission organized an online Regional Cluster Meeting on CBHE Projects Impact in Central Asia. 5 members of EU Erasmus+ NICOPA project took part at cluster Meeting on-line.









13.01.2021 Local conference within EU Erasmus+ NICOPA project "Transfer and adaptation of precision agriculture technologies in the production of crop production"







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### 13-22.01.2021 Master classes conducted by EU HEIs: TUB, EXOLAUNCH, CULS, AUP





#### sustainability

#### A Spatiotemporal Assessment of Land Use and Land Cover Changes in Peri-Urban Areas: A Case Study of Arshaly District, Kazakhstan

#### Onggarbek Alipbeki <sup>1</sup>4<sup>,</sup><sup>10</sup>, Chaimgul Alipbekova <sup>2</sup>, Arnold Sterenharz <sup>3</sup>, Zhanat Toleubekova <sup>3</sup>, Meirzhan Aliyev <sup>3</sup>, Nusvultan Mineyev <sup>1</sup> and Kalytbek Amangaliyev <sup>3</sup>

- Stellahan Angyee', Rainstata Bondyee', and Kasyiwe Antadguiyee'. Department of and use and Codeose, Schölm KashA Aye. Behala University, Dengia seruse, Ed., Nucleikan (2000). KashAstun, phickelahan arkania (2011). menduan sanzadylmailar (0AA). Department of 1999 performing of Department of Schöll KashAspa Tohykal University. Zhenga revens, St., Nucleikan (2000). KashAstan, dasingdibraalas.

- University of Berlin, Germany's arrold attlescolaunch.com
   Correspondence: calipbek@mail.rs; Tel.: +7/7715309635

#### Received: 14 January 2020; Accepted: 16 February 2020; Published: 19 February 2020

Abstract: In this study, the spatiotemporal dynamics of land use and land cover (LLC) were evaluated in the port-teshes are set of the Arshaft desite, which beaders the capital of the Barphile co-(LLC) dynamics constrol on taining provided capital carbon the angle and possible and (1986, 2008, and 2018). During the study period, neticeable charges occursed in LLCC. There was an insome in the area of tailed land and period, neticeable charges occursed in LLC. There was an during the study of the study period, neticeable charges occursed in LLC. There was an during the study of the study of the study period. The study of the study surveyse in our area on attem to that and a tortest and a reasonant in the partners. There was a sharps increase in the build-up arous, that is a three was an informationation of and use thereagh an increase in the share of anable land as well as the transformation of a grites/thread land for development. However, in general, the influence of unbun spraced in this peri-subun area has so far been accompanied by only a slight focus or his sustainable development.

Keywords: land use and land cover; remote sensing; supervised classification; change detection; driving factore; Anhaly district

#### 1. Introduction

1. Inhomotion
1. Inhomotion
Using a set of the set of the start of of Kazakhstan transformed from a provincial regional city into a large metropolis as a result of the combined intract of the above three factors and became the political, economic, and cultural center of Concerned indput to the detect and experimental annual polarization concerned, and testing contain terms to the republic [2]. In the adjacent agric industrial annual under the influence of the metropolia, certain changes also took place during the study period, both under the influence of urban sprawd [6] and other factors [7], which still require analysis and evaluation.

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Englished Mark 12 1956 August Market Market



#### Analysis of Land-Use Change in Shortandy District in Terms of Sustainable Development

#### Onggarbek Alipbeki <sup>1,\*</sup><sup>(0)</sup>, Chaimgul Alipbekova <sup>2</sup>, Amold Sterenharz <sup>1</sup>, Zhanat Toleubekova <sup>1</sup>, Saule Makenova<sup>1</sup>, Meirzhan Aliyev<sup>1</sup> and Nursultan Mineyev<sup>1</sup>

MDPI

C check for

- Department of Land Use and Geodesy: S.Seifallin Kazakh Aero Technical University, Ibenis Avenue, 62. <sup>1</sup> Department of Land Usen and Genders, Schöfflin Kaadal, Alega Tehrindu Ulsivenity, Barris Aver NeurSchnist (2011), Kaadaburis, picked-coloradium (L. C. Lyacita, assocrationali in (S. M. morizhan narata)/ibratian (J. M. annadan, 2016/art pVM). Department of Henri Investion and Quaraties, Schsinflin Kaadah Ages Tehrindu Ulsivensity. Barris Aversus, G. NaveSukan 1900, Kaadabara, changadhumilaru Di DAUALXISI Collard, Elysteinel Ganagaya abardis. Barris Aversus, G. NaveSukan 1900, Kaadabara, changadhumilaru DAUALXISI Collard, Elysteinel Ganagaya abardis. Bardishan 10, 1955 Derin, Germany, annada-andy-andreas. C. Germapoultere candebiolitania (J. K. 2), C. T20150065.

#### Received: 18 April 2020; Accepted: 7 May 2020; Published: 12 May 2020

Abstract: The suburban territories of large cities are transitional zones where intensive transformations in land use are constantly taking place. Therefore, the presented work is devoted to an integrated assessment of land use changes in the Shortandy district (Kazakhstan) based on an integrated study of the dynamics of land use and sustainable development indicators (SDS). It was found that the main tendency in the land use of this Peri-turba area (TUA) during 1920-2018 is their intendication, through an increase in avable lands. Kazakhstan only recently started the systematic collection of SDIs urrough an increase in neuron states. Addatestant only recently sources the systematic concession of source according to international standards. Therefore, to assess the sustainable development of the study area, limited amounts of information were available. Nevertheless, the use of SDIs from 2007 to 2017 area, intend amounts or incommation view available. Neverthetiess, the use of SMS from 2000 5 2017 based that the growth of ecoronic development in the study area is almost adequably accompanied by an increase in the level of social and environmental development. The methodological approach used can be widely used to assess the sustainable development of specific torritories in general and the development of the capital of Kazabistan and their UVa, in particular.

Keywords: land use change; analyze; sustainable development; Shortandy district

#### 1. Introduction

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According to the Food and Agriculture Organization (FAO) statement on food security "by 2050, the world's population will grow to almost 10 billion," which will increase food demand by about 50% compared to 2013 [1]. At the same time, the share of the rural population will decrease, and the urban nonulation of the world will nearb 68% [2]. Increased food production is necessarilated to be urban population of the vector will mach etc., increased toola production is recommended to be accompanied by sustainable agricultural land management [2], including PUA. The purpose of increasing the effectiveness of land use management is to stop or at least slow down

the negative inspact of land use on natural resources. Moreover, adverse processes are often understood the registive impact of land use on natural resources. Mereover, adverse processes are often undershold as degradation of the soil cover under the infibusco of various types of resolution [14], descritifization and salinization [54], depiction of soil infibity [7], politation [9], reduced water quality [9], land gails by rapidity growing often and their consequences [10], determed and the topological variant of the solution systems to need human needs [11, 21]. Bedieds, changes in that use significantly affect the energy systems to need human needs [11, 21]. Bedieds, changes in that use significantly affect the energy of the solution of the solut balance of the entire Earth and the biogeochemical cycles in it, of which 60% are associated with direct human activities (for example, urban spearel and intensification of agriculture) and only 40% with

Land 2020, 9, 147; doi:10.3390/land9050147

www.mdpi.com/sumal/and



ФШНБКИ Онгрбс Элінболуы (АДРЕКИ Онгрск), акдлям, кля Маслунарано сона радочновти Інталіоні Ціона баконсора, уличні реплантика Інталіоні Ціона баконсора), уличні реплантик ВУла, станццят Републикаров программ «Бакшань», примет стакарочу в Кифірально умирератет Великортины по спершалог міссонскої монторит в фотограмограма в за багдика прочи інтрах (ДІА за Реронайсько сона Пермана, Інсаранада Фринция др.). Антр босса 100 обявандія маст. Хорала.

и формирования вространстванся лимателя получи стандатива поятах стан воздаяти создания данные и онифраструктура пространственных данныхо были введены в «Закон о космической данные и онифраструктура пространственных данныхо были введены в «Закон о космической деятельности исследующих Казательна».

оплотов 00. с проволните разлековоческих истова и прострактенных дошок краиботы всеховоже спокасни розни разложениест в былаков Соналитически испательном церовотоличие в поредни били сструктура для кинедения. Багогорая оплащитите блибого 00 КахПУ на ССМернота внераме стат трагтохваром образовательного преста Гаронебного снога Гаронуст-МСОР, да ногрупно-сталичи о образовательно инера точное с сиського майстан, цель ингроот массаданительских и образовательно ингра точное с сиського майстан, цель ингроот



стрини прозыватель, всер болсе 40 рубликация, налас Хараш, 2. Она сенциалае общест виште растови, работы МИС, IIC (IIIICAII МАХ СССР, СПК из учивая севриторе КанШНУР), видуровний серов НИР, вспорятнуров, НО досторитуров и ВИС (КанЦАУ), а так ех ВИС АОНВ «Клансстат Парин Сандра-Канасская (в досторя). А майсте сама Ч.А. етокстательный исхолитесь и учиствая сероне фулканстатавия, прикламос НИР и билисе приектов в област создание и форморования

AJIMIJEEKOBA Hannyas Adveararoona. (ALIPBEKOVA





NICOPA

министерство СЕЛЬСКОГО ХОЗЯЙСТВА РЕСПУБЛИКИ КАЗАХСТАН

КАЗАХСКИЙ АГРОТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ ИМ. С.СЕЙФУЛЛИНА

Алипбеки О.А., Алипбекова Ч.А.

**РАЗРАБОТКА** ПРОСТРАНСТВЕННЫХ **ДАННЫХ: СОЗДАНИЕ** И ФОРМИРОВАНИЕ



Утверждено Ученым советом университета

Нур-Султан 2020

### ARTICLES



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ДАННЫУ

РАЗРАБОТКА ПРОСТРАНСТВЕННЫХ , СОЗДАНИЕ И ФОРМИРОВАНИЕ









### **PRESS- RELEASES**



#### PRESS RELEASE

On the 11th of Sentember, 2020 online seminar on the tonic "Drone and Romote Semine vm me 11. on expensive, 2020 ordene sensuar en the 0494 "Extent and Remote Souring Technologies for water productivity in garichane" was experimed by Asian Development Basis (ADB) under the Water Financing Pragma to provide a Knowledge and Innovation Support for ADB's Water Financing Program to provide a Knowledge and enposity strengthening to the Matisity of Aglicolature of the RapAble of Knowledge.

and a sumplex of parameters on approve to Annuments. In overprefasses with S-Solffan KATU these end-objects endotational time on operational irrigation advices; you must for farmers in Kacakhatan who cas benefit feres thin analysis on irrigation voltenes, will heritare, or your encourage/net, or elifations and one possibility. The analysis hand on duly satellite images. Drove measurements are cated our for acapting additional internation on solid and encourage of a low for the voltable of the satellite images. The workshop morphatical unlexed addivension in the South and Nerdere Kazakhatan in objected from. On a large scale of the net brains, statile second sensing is how south for making right second.

Automatic Vallain the financeoids of the ADB plot project. Giuvanii Copamelli (director of the representative office), Babett Corell to Ensert from the UKS, Tablenguov UT, Dayou TL, Dayou C, Santan M, Santan S, San

Deputy Head of the KATU GB-center KATU Bekbassa A.K. presented the results of the survey "Results of drate surveys", where she noted that the technologies and data shown reduce infration suster cossumption and increase productivity. The introduction of this technology and services throughout the ocamy voli linearea the difficiency of nutrate real.

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The information obtained at this seminar will be reflected in the educational program. Les menuranos oronando al this semanter will be reflected in the deacanonal program, new/insofersione coments in the field of precision agriculture, developed and modernized within the framework of the EU Emenuse-NICOPA project for bachelors and master students of partner indvessibles of Kasadatana, Undeckinan and Turkmenistan, the piloting of which started from Segmenter 2020.

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#### Press release

On the 20<sup>40</sup> effective 2020 the Euler collective the 100 merics-wave of Kazakhuna joining the Diologia process and the 22th autoivenues of the participation of Kazakhuna Hills in Temps and Euroness representations. The event was equitable by the Notional Euroness representation of the Monizoy of Calculation and Science of the Zapplie of Calculations the One Linearies Office to with Science and Science of the Zapplie of Calculations the One Linearies of European Unice with Science and Science on Unice Calculations and a science of the Education and Science Temperature Linearies and Science and Science Internet Science Andrewissal and Culture Executive Aprece (ZCEX) of the European Unice.

The proper of the fair was to femiliarize a wide maps of subcholden with the achievements and reachs of Erzuman-CHBE projects to enhance that influence and dissertance bent protects. During the fair, the truns shared the integrate reperience in project projections from the protects have shared as the project and their impact at the influence and anticular levels, as well as the project and their impact at the influence and the impact of the structure of the integration of the structure of the s

It was attended 50 participants from 10 EU Examus+ projects from S. Seifadin KATU, where they could be introduced with the implementation of KATU Examps + projects: NICOPA, IQAT\_SRUD, SUSDEY, PAWER, DIREKT, ASIAXIS, DECIDE, SAGRIS and other 24 moiscret of IBIE of Razabitans.

Manager of NICOPA project

#### Prove enterna

On the 13th of Marg. 2020 Ensembles Office "Ensembles RATU of 5. Seldelin KATU conducted on-line seminar and the topic Applications of GH sequencings and Earth restruct seming in the specializational ensembles." I have a seminary of the second seminary of the second seminary descent and the second seminary of the second seminary of the second seminary ensembles of the second seminary of the second seminary of the second seminary problem on the hyperball descent seminary seminary seminary seminary seminary seminary ensembles on the hyperball descent seminary semina

Manager of NEOPA project Jef Sara Kitsibekova



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On Jammy 13, 2021, at 18:00 on the 2000M platform, a Local scientific and methodological conference "Emotion and adaptation of precision agriculture technologics in the production of exp robustion" was hild within the Framework of the EU Emmun \* project "New and insuvative corners in processing applications" NICOPA.

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constraints the starter of the UB mass. Native plaque the start of the MB mass of the MB mass

Manager of NICOPA project

#### Press-release

On 19-20 November 2028, the Education Audiovisual and Culture Exerctive Agency (EACEA) of the European Commission organized an online Regional Choter Meeting on CBBE Projects Impact in Control Asia.

Inspect for count Acia. Senders et (EU: Ensumes NECODA project (Gallenkiews S., Sollan G., Barletoners A., Stayholdrev OL. Menners PED, Josh part a cluster Meeting on else. The overs run semplation of the JOACMA of Coreend Networks mention of Utbackane, Roadbacka, Noticus Danaue Officion from 4th of Coreal Asian contention of Utbackane, Roadbacka, Project O Centre Meeting and the project system of the Section of Coreal Asian Opported Coreal Meeting and the project system project Coreal Asian coreation on well as programming from the Essengen Corean Section, the Essengen Opported Network Meeting and an used teaming and annual Corean Asian Section (Section Section 2016). Opported Network Meeting and the project and the Section of Corean Asian Opported Network Meeting and the project and the Section of Corean Asian Opported Network Meeting and the project and the Section of Corean Asian Opported Network Meeting and the project and the Section of Corean Asian Opported Network Meeting and the project and the Section of Corean Asian Opported Network Meeting and the project and the Section of Corean Asian Opported Network Meeting and the project and the Section of Corean Asian Opported Network Meeting and the project and the Section of Corean Asian Network of Corean Asian Asian Corean Classica and the transformation of Corean Asian Network Corean Asian and the Instantian Corean Asian Section (The Section Asian Network Corean Asian Network Corean Asian (Section Corean Asian Network Network Network Network Network Network Network

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Context and Objectives: It simu at bringing together project coordinators and local CBHE project team members (stational coordinators) from Kazukhstan, Uzbekistan, Tajikistan, Koptgentent and Turkmenistan is order

Section 2012 Control Technical National Natio

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Press release

Representatives of the EU Franzus + projects also look part in the Franzus Days overts organized by the Novemberk State Agnatian University (Ismaliova A.S., SAGRUS project), Oriol. State Agnatian University (Mediselenko N.N., SARUD project), M. Korybuyev North Kearkstate University (Killabera S.G., Ermenne + project).

Manager of NICOPA project Sara Kitalbekawa

Press referred

From the period of Jammy 13 (81 22, 2021) it was expanied On-Jane Manner Chaose for 13J Emanae-NRCOPA perjoint members of 3 Kanahhann, 3 Uzhekahan and 3 Tackarainaa HEM. Manner Chaosa wase expansioned by 14J partners from Berlin Tacharaina. EXXX4.JNNTH (Genmany), Agelvahand University in Pitveler (blogaris), Caech University of UR Sciences (Caeb Benehold).

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Press - release

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All material will be used by the members of NICOPA project at their classes.

Manager of the project

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## **Office PASO**



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#### REGULATION

#### SERVICE OFFICE PASO

S.Seifullin Kazakh Agrotechnical University EU Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP "New and Innovative Courses for Precision Agriculture " NICOPA

Nur-Sultan- 2020



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Depirty-Chairman of the Board for Science, Innovation Activities and International Affairs Tokbergenov Ismail 2019

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Approved by:

WORK PLAN OF

OFFICE PASO

S.Seifullin Kazakh Agrotechnical University EU Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP "New and Innovative Courses for Precision Agriculture " NICOPA

Nur-Sultan- 2019



# **Office PASO**









### **NICOPA+AGREEMENTS**



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Cooperation Agreement "NICOPAUniversity-Enterprise"

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## **Final Conference and Autumn School**







10 – 14 October 2022

NICoPA New and innovative courses in precision agriculture



October 10-11 AUTUMN SCHOOL «The importance of the use of the navigation system in the development of precision agriculture»

> October 12-14 FINAL CONFERENCE

Saken Seifullin Kazakh Agrotechnical University, Nur-Sultan, 62, Zhenis Avenue Joint Project: Capacity Building in the Field of Higher Education ERASMUS+2018



# Program

NICOPA







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#### AGENDA

AUTUMN SCHOOL "The importance of the application of the navigation system in the development of precision agriculture" and FINAL CONFERENCE within the project 597985 EPP-1-2018-1-KZ-EPPKA2-CBHE-JP "New and Innovative Courses for Precision Agriculture" (NICOPA) partner universities of Germany, Bulgaria, Czech Republic, Uzbekistan, Turkmenistan and Kazakhstan

Date: October 10 - 15, 2022 Venue: Astana, S.Seifullin Kazakh Agrotechnical University 9.10.2022 - arrival of participants

Time	Activities
participants	AUTUMN SCHOOL / 10 – 11.10.2022 Off-line and on-line platform zoom ID 963 729 0639 пароль 12345 – lecturers, students and employers of partner universities of Germany, Bulgaria, Czech Republic, Uzbekistan, Turkmenistan and Kazakhstan
10.10.2022 (classrooms Big Data, building of Technical Faculty)	
09:00-09:15	Registration of participants of the Autumn School
09:15-09:30	Welcome speech and introduction to the program of the event, <b>Ismail Tokbergenov</b> , co- coordinator of the project, acting Chairman of the Board of S. Seifullin KATU
09:30-10:15	Lecture «"The role of precision agriculture in the development of sustainable land use", Onggarbek Alipbeki, S.Seifullin KATU
10:15-11:00	Lecture "The use of GIS technologies for the formation of informative layers in solving problems of the Committee for Forestry and Wildlife of the Republic of Kazakhstan", Sergey Sartin, M.Kozybayev NKU
11:00-11:15	Coffee break
11:15-12:00	Lecture "The main elements of the precision farming system", Nurbol Kakabaev, Miras Suraganov, Ualikhanov University
12:00-12:45	The practical part - the use of a laser drone, group work in the PASO laboratory, <b>Sergey</b> Sartin, M. Kozybayev NKU
12:45-13:00	Discussion
13:00-14:00	Lunch
14:00-18:00	Visiting EXPO exhibition, city sightseeing (departure of transport from the main building)



# **Summer School in Prague**



#### Summer School

New and Innovative Courses for Precision Agriculture Geographic Information System/Remote sensing/Space Technologies

July 25-29, 2022

Czech University of Life Sciences Prague





### Summer School, within the framework of the NICoPA project in Prague

During the period of July 25-29, 2022, the Summer School "Practical application of precision agriculture through research" was held at the Czech University of Life Sciences in Prague at the Faculty of Engineering, within the framework of the EU Erasmus+ project 597985-EPP-1-2018-1-KZ- EPPKA2-CBHE-JP NICoPA "New and Innovative Courses for Precision Agriculture".

The Summer School was attended by partner universities from the Agrarian University in Plovdiv (Bulgaria), EXOLAUNCH (Germany), S. Seifullin Kazakh Agrotechnical University (Kazakhstan), the National University of Uzbekistan, Tashkent Institute of Irrigation and Melioration, Tashkent University of Information Technologies (Uzbekistan) as well as partner universities of the EU Erasmus + CUPAGIS project "New training programs on precision farming" from Algeria, Bulgaria, Estonia and Germany.

The Dean of the Faculty of Engineering Jiří Mášek, Professor Frantisek Kuchala gave a welcoming speech at the Summer School and gave a tour of the university campus. During the Summer School, lectures and practical classes were held by lecturers from the Czech University of Life Sciences, the Estonian University of Technology: "Precision Agriculture as a tool for natural resource management" (Prof. Frantisek Kumhala), "Monitoring of crop production using satellite sensing" (Associate Professor Itka Kumhalova), "Recipes for cooking an appealing presentation" (Prof. Soomere), "Practical demonstration of robotic team results. State of the art and the potential of field robots use" (ass. prof. Kroulík).

- In addition to lectures and practical classes, the participants of the Summer School visited the Steknik Experimental Farm in Zatec, the Zatec Hop Research Institute, where they practically demonstrated the use of a capacitive throughput sensor to control a hop picking machine, field surveys using UAVs, practical examples of visualization of other special crops in Orloje in Zatec, as well as a practical demonstration of the results of the robotic team. At the end of the Summer School, the participants visited the Center for Precision Farming in CZU in Prague and the farmstead Dolni Ujezd, Litomysl, where a tour of the livestock farm was held and the use of precision farming technologies in the practical work of agricultural holdings was demonstrated
- At the end of the Summer School, all participants received certificates and a Coordinating Meeting of the Project Management Team was held, where the activities of the completion of NICoPA project were discussed.















# Thank you for you attention!

MSc/SARA/KITAIBEKOVA Manger of the projet

