EXPERIENCES OF NATIONAL APPROACHES TO ADAPTATION
WEBINAR ON NATIONAL ADAPTATION STRATEGIES AND PLANS
November 18–19, 2020
Virtual platform / Zoom

EU4Climate
Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova, Ukraine

EaP Eastern Partnership

Technology Needs Assessment Project

A GEF Funded project
>Ukraine<

Technology needs assessments for adaptation

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Ukraine National
TNA Coordinator

Міністерство захисту довкілля та природних ресурсів України

Contents

- Process followed
  - Institutional structure for TNA
  - Sectoral / technology workgroups
  - Stakeholder consultations
- Results
  - Technologies identified within respective sectors

Urls

DTU-UNEP

https://tech-action.unepdtu.org/country/ukraine/

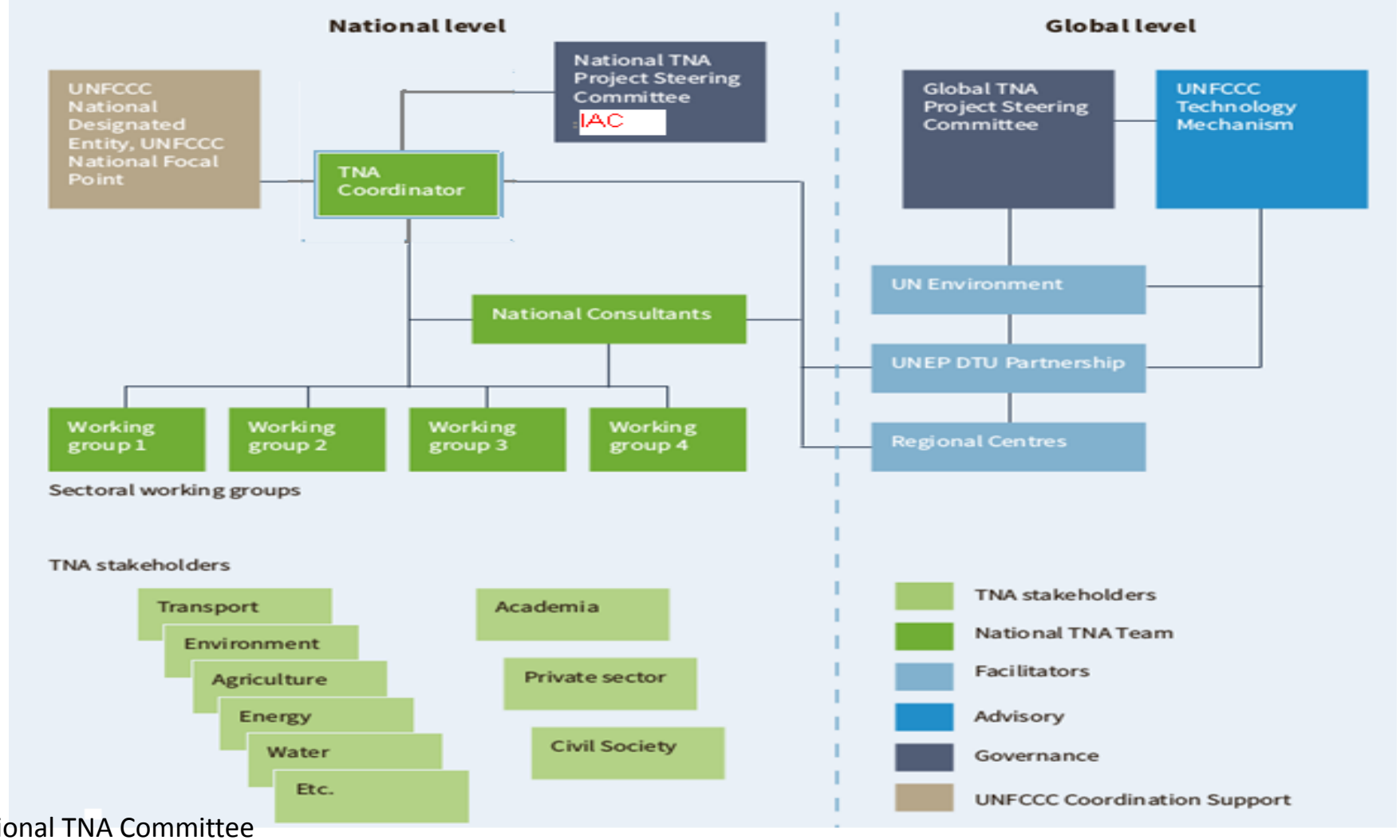
https://tech-action.unepdtu.org/wp-content/uploads/sites/2/2019/09/final-ukraine-tna-adaptation-report.pdf

https://tech-action.unepdtu.org/wp-content/uploads/sites/2/2020/06/baef-ukraine-adaptation.pdf

Ukraine Ministry

https://mepr.gov.ua/news/33450.html

Institutional structure TNA in Ukraine



National TNA Committee

The **role of the National TNA Steering Committee** is assigned to the **Inter-agency Commission (IAC)** on implementation of the UNFCCC. IAC is an advisory body for coordination of activities on different climate change related aspects. The commission was created by the Cabinet of Ministers of Ukraine in 1999 and includes officials at the level of Deputy Ministers of key ministries and other executive bodies, members of Ukrainian parliament, representatives of R&D institutions and NGOs.

Main reasons for using IAC in role of the National TNA Steering Committee

Inter-agency Committee of UNFCCC Implementation consists of representatives of executive bodies, Parliament, National Academy of Sciences and other research institutes of Ukraine and NGOs.

Main functions:

- Organization of development of the strategies and policies for implementation of Ukraine's commitments under the UNFCCC;
- Coordination of ministries and other central and local executive bodies, enterprises, institutions and organizations regarding implementation of the strategies and policies for fulfillment of Ukraine's commitments under the UNFCCC;
- Control of the implementation of strategies and policies in climate change.

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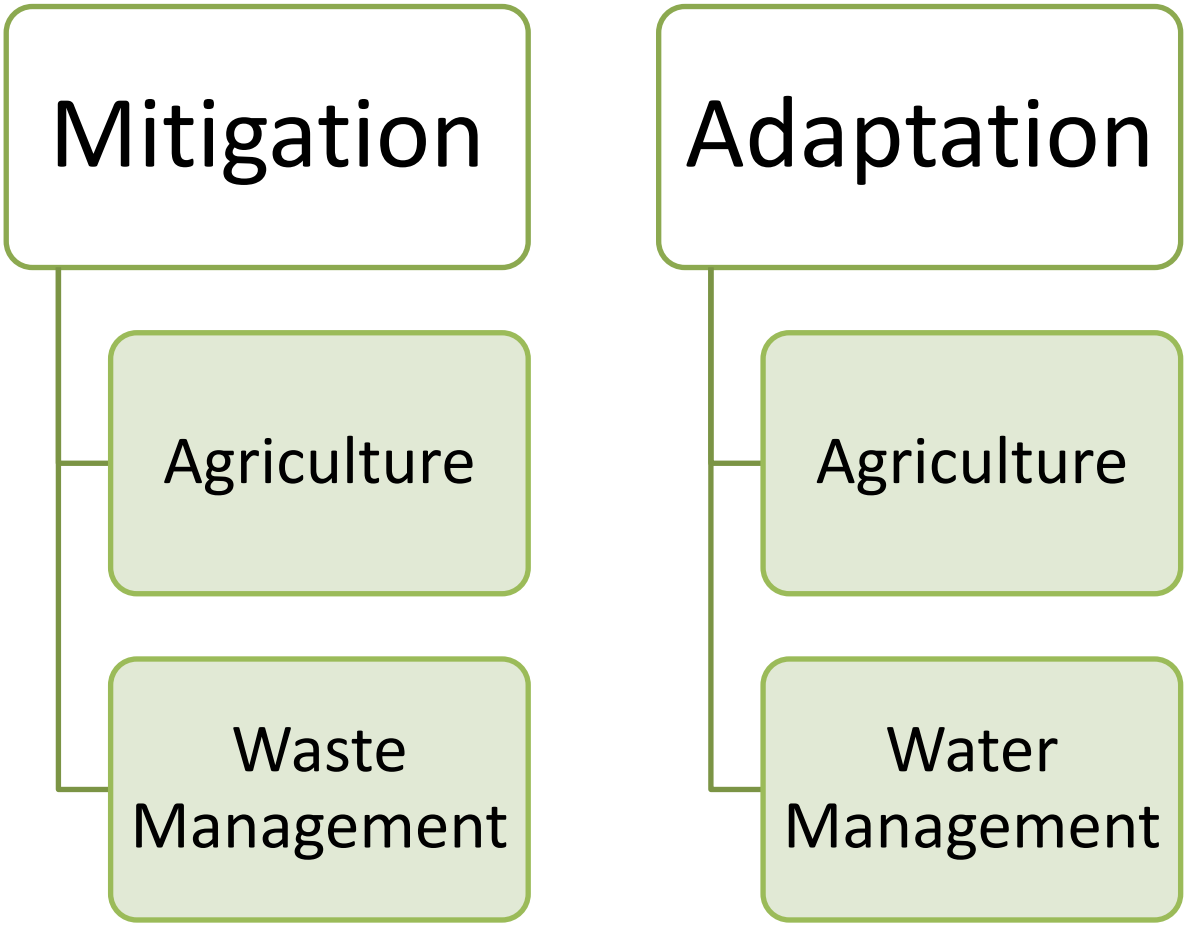
Selected sectors



Main reasons for sector choosing

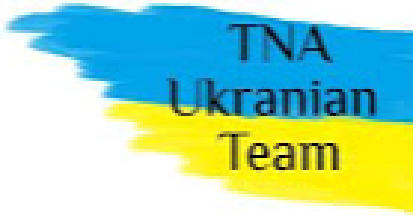
Adaptation – more sensibility for climate change sectors

Mitigation –the sectors, which increased or not decreased GHG emissions in last years

Main arguments for this selection mitigation TNA activity directions in Ukraine are following.

Waste: the solid waste management is one of the most conservative branches of Ukrainian economy that did not change its structure and key indicators since the collapse of USSR (it is illustrated by figures 4.3-4.5). This sector is only one that has an upward GHG emission trend since 1990.

Agriculture: agriculture sector is one of the main economy sectors and gets large share in GDP structure year by year. As well as the Waste sector, it has had an upward GHG emission trend during the last decade.



Українська команда з TNA

Position/Name
National TNA Coordinator – Anatolii Shmurak/ Анатолій Шмурак
Assistant TNA Coordinator – Yevhenia Anpilova / Євгенія Анпілова
National Consultant mitigation waste - Yuriy Matvyeyev / Юрій Матвєєв
National Consultant mitigation waste - Sergeii Shmarin / Сергій Шмарін
National Consultant mitigation agriculture - Mykola Shlapak/ Микола Шлапак
National Consultant adaptation agriculture - Oksana Ryabchenko / Оксана Рябченко
National Consultant adaptation water - Sergiy Snizhko/ Сергій Сніжко
National Consultant adaptation water - Galyna Trypolska / Галина Трипольска

Stakeholder consultations

Date	place	task	participants	results
21 August 2018	Aarhus' center at the MENR	introduction and basic training in project methodology	32 persons (10 from Ministries, 8 from scientific organization, 3 from NGO, 7 from international projects)	proposed candidates for project, proposed directions of project, understanding of complex character of project
28 August 2019	Aarhus' center at the MENR	Second Stakeholder workshop: - Dissemination of Results of first phase of project	50 persons (15 from Ministries, 20 from scientific organizations, 8 from international projects, 2 from finance organizations, 5 from business,	advises for next stages, proposed candidates for next stages, useful links and addresses https://drive.google.com/open?id=1WG9jJ15aUhsspF1Wm69kqiIq2E-fVV5c 1/ List of participants 2) Photo report: 3) 2/ Voice records: 01 record, 02 record, 03 record, 04 record

Expert (not ~~Staceholders~~) Consultations

Expert consultations were made in forms of 4 internal working groups throw phone conversations, e-mails, internet connection, web-services, Excel tables and small working meetings. More than 60 experts =15 Mitigation Agri+14 Mitigation Waste+18Adaptation Agri+10 Adaptation Water

Very often results of consultations have influence for technology identification definition, correction of criteria lists.

More detail in reports

https://tech-action.unepdtu.org/country/ukraine/

Example of expert group work

Table 3.8. First and Second Draft List of Technologies Adaptation Agriculture: Comparison Table	
Technology Title (First Draft)*	Technology Title (Second Draft) **
Increasing efficiency of feed production from crops and crop residue	Construction of underground storage facilities for feed silage
	Pressing and polymeric packaging of roughage
Climate Smart Construction of Livestock Premises	Elevation of premises using optimal ventilation systems
Agroforestry practices (shelterbelt reconstruction)	Implementation of agroforestry practices involving the inclusion of fruit trees, walnut and bioenergy crops
Interactive Integrated Land Management Maps	Development of Integrated Land Management Maps for each district/village associated community
Agricultural Credit Unions Net	Agricultural Credit Unions Net
Development of an agro metrological early warning system	Development of an agro metrological early warning system
Seed Bank	Seed Bank
	Emergency Grain Storage
Drip irrigation in the combination with conservation agriculture practices	Drip irrigation in the combination with conservation agriculture practices
Underground greenhouses	Establishment of underground and semi-underground greenhouses
Inclusive crops production	Inclusive crops production
Integrated Pest and Disease Management	Implementation of practices for the use of growth regulators and adaptogens of a wide range of biotechnological origin
Improving agricultural production sustainability on complex landscapes	Transferring the crop rotation and collecting field crops at earlier periods
	Increasing of perennial grasses including medicinal plants, especially on slopes with steepness more than 3 degrees

Results : Adaptation Technologies

Agriculture: Adaptation

: Technology Needs Assessment

Rank	Abbreviation	Technology Title
1	DI-CA	Drip irrigation in the combination with conservation agriculture practices
2	AFP	Agroforestry practices (shelterbelt reconstruction)
3	IPDM	Integrated Pest and Disease Management
4	EWS	Development of an Agrometeorological Early Warning System

Water sector: Adaptation

Technology Needs Assessment

Rank	Technology option
1	Climate-smart Irrigation
2	Drought risk assessment and mapping
3	Flood hazard assessment and mapping

Results: Mitigation Technologies

Results: Mitigation Technologies Agriculture sector

Technologies	Total score
Organic agriculture	7764
Biogas production from animal waste	7044
Conservation tillage technologies (low-till, no-till, strip-till, etc.)	6991
The production and use of solid biofuels from agricultural residues	6955
The use of information and telecommunication technologies in agriculture for the reduction of GHGs emission in agriculture	6753

Results: Mitigation Technologies Waste sector

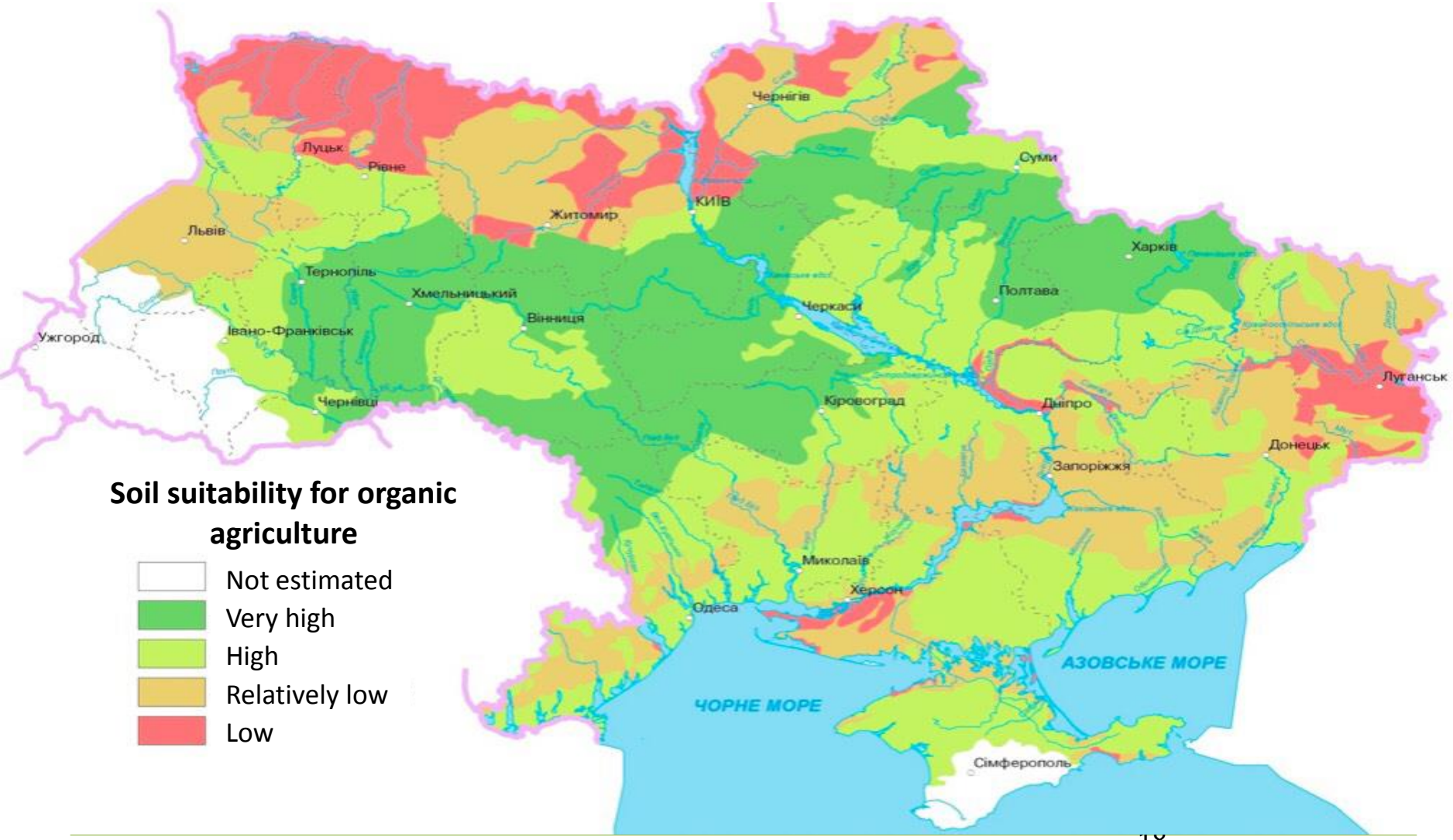
#	Technologies	Total scope
TFS 1W	**Methane capture at landfills and waste dumps for Energy Production (LFG-to-E)**	5602
TFS 4W	**Waste sorting (sorting of valuable components of MSW with subsequent treatment of waste residual by other technologies) (Sorting)**	5375
TFS 2W	**The closure of old waste dumps with methane destruction (flaring, biocovers, passive vent etc.) (Closure)**	5095
TFS 5W	**Aerobic biological treatment (composting) of food and green residuals (Composting)**	4980
TFS 6W	**The mechanical-biological treatment of waste with biogas and energy production (anaerobic digestion of organic fraction of MSW) (MBT-AD)**	4690
TFS 12W	**Anaerobic treatment (digestion) of sewage sludge) (AD-sludge)**	4646
TFS 7W	**The mechanical-biological treatment of waste with alternative fuel (SRF) production for cement industry (MBT-Cement)**	4498

Additional information –TNA&NDC

Table 3.4 - Information on GHGs emissions reduction potential mitigation agriculture

Technology	GHG Emissions Reduction Potential, MT CO_2
Using slow- or controlled- release fertilizer forms or nitrification inhibitors	1.8
Use of information and telecommunication technologies in agriculture for GHGs emission reductions in agriculture	1.8
Conservation tillage technologies (low-till, no-till, strip-till, etc.)	7
Efficient Irrigation Systems (Sprinkler and Drip Irrigation)	1.1
Biogas production from agricultural crops products	4.4
Biogas production from animal waste	1.7
Organic agriculture	8
Production and use of solid biofuels from agricultural residues	11.4
Production of liquid biofuels from agricultural products	0.6
Improved feeding practices and dietary additives for livestock for GHGs emission reductions from enteric fermentation	1.7

Possibility to use maps for promising technologies

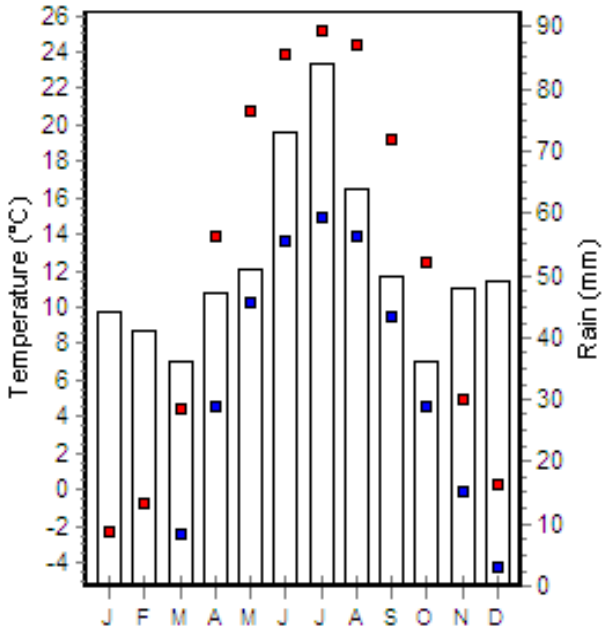


ПРИМЕР ИСПОЛЬЗОВАНИЯ МНОГОМЕРНЫХ ГЕОПРОСТРАНСТВЕННЫХ ДАННЫХ ДЛЯ возможных запросов ПОЛЬЗОВАТЕЛЕЙ УКРАИНЫ ПО ВОПРОСАМ ИЗМЕНЕНИЯ КЛИМАТА

x:30.56878 y:50.44894

высота :98

	мин T	мах T	Осадки мм
Jan	-7.8	-2.3	44
Feb	-6.8	-0.8	41
Mar	-2.5	4.4	36
Apr	4.5	13.9	47
May	10.3	20.8	51
Jun	13.6	23.9	73
Jul	14.9	25.2	84
Aug	13.9	24.4	64
Sep	9.5	19.2	50
Oct	4.5	12.5	36
Nov	-0.1	5	48
Dec	-4.3	0.3	49

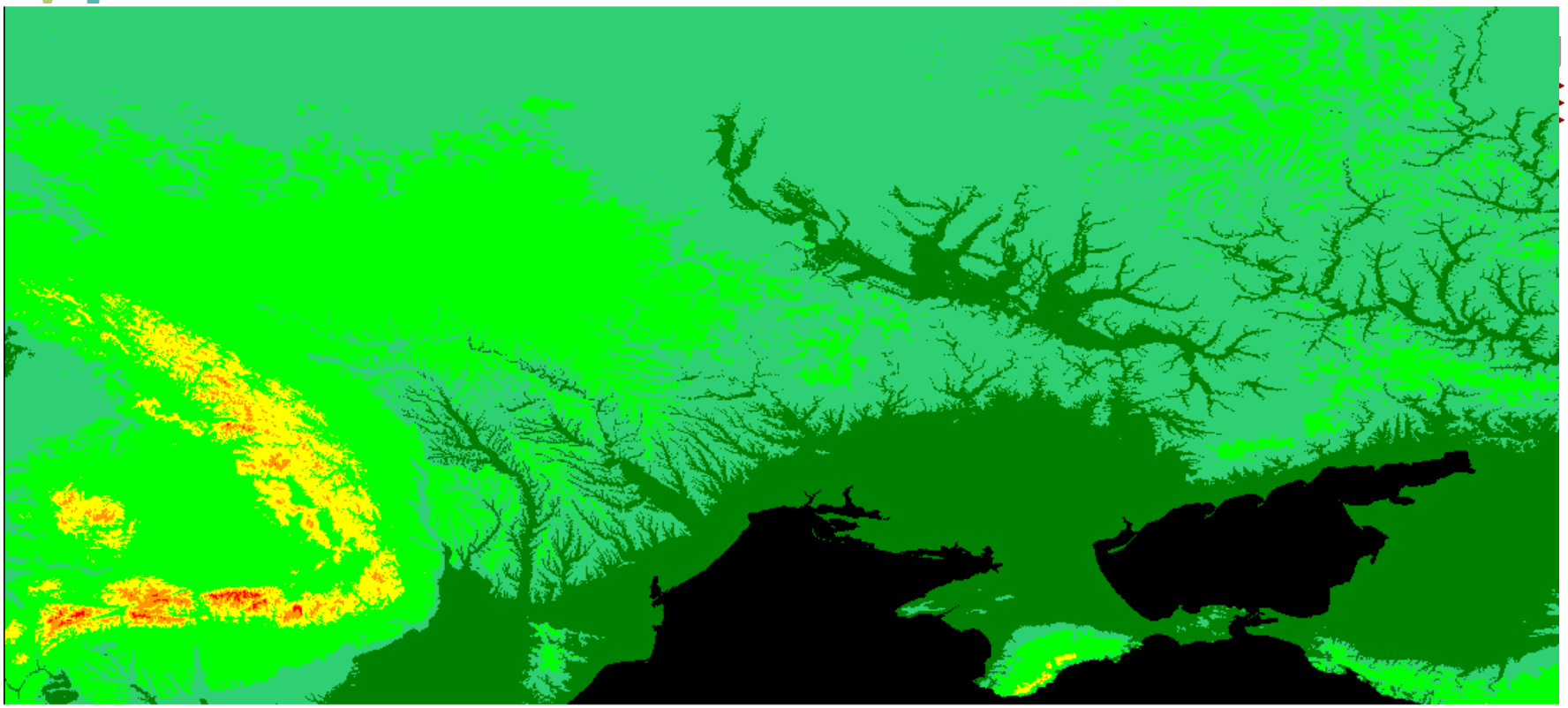


Биоклиматические переменные	Значение
Средняя температура [1]	8.2
среднемесячный разброс температур [2]	8.1
Изотермальность (2/7) (* 100) [3]	24.4
Темпер сезонность (STD*100) [4]	940.9
Макс температура самого теплого месяца [5]	25.2
Мин температура самого холодного месяца[6]	-7.8
Годовой Разброс температур (5-6) [7]	33.0
Средняя температура самого влажного сезона [8]	19.3
Средняя температура самого сухого сезона [9]	-2.6
Средняя температура самого теплого сезона [10]	19.3
Средняя температура самого холодного сезона [11]	-3.6
Ежегодные осадки [12]	623
Осадки самого влажного месяца [13]	84
Осадки самого сухого месяца [14]	36
Сезонность Осадков (CV) [15]	28.2
Осадки самого влажного сезона [16]	221
Осадки самого сухого сезона [17]	121
Осадки самого теплого сезона [18]	221
Осадки самого холодного сезона [19]	134

Климатическая характеристика центра Киева 2008-2010

Один квадратный километр

13*3+19+1= 59 измерений



alt_ukraine
- -195 - 100
- 100 - 200
- 200 - 875
- 875 - 1411
- 1411 - 1946
- 1946 - 2481
- No Data

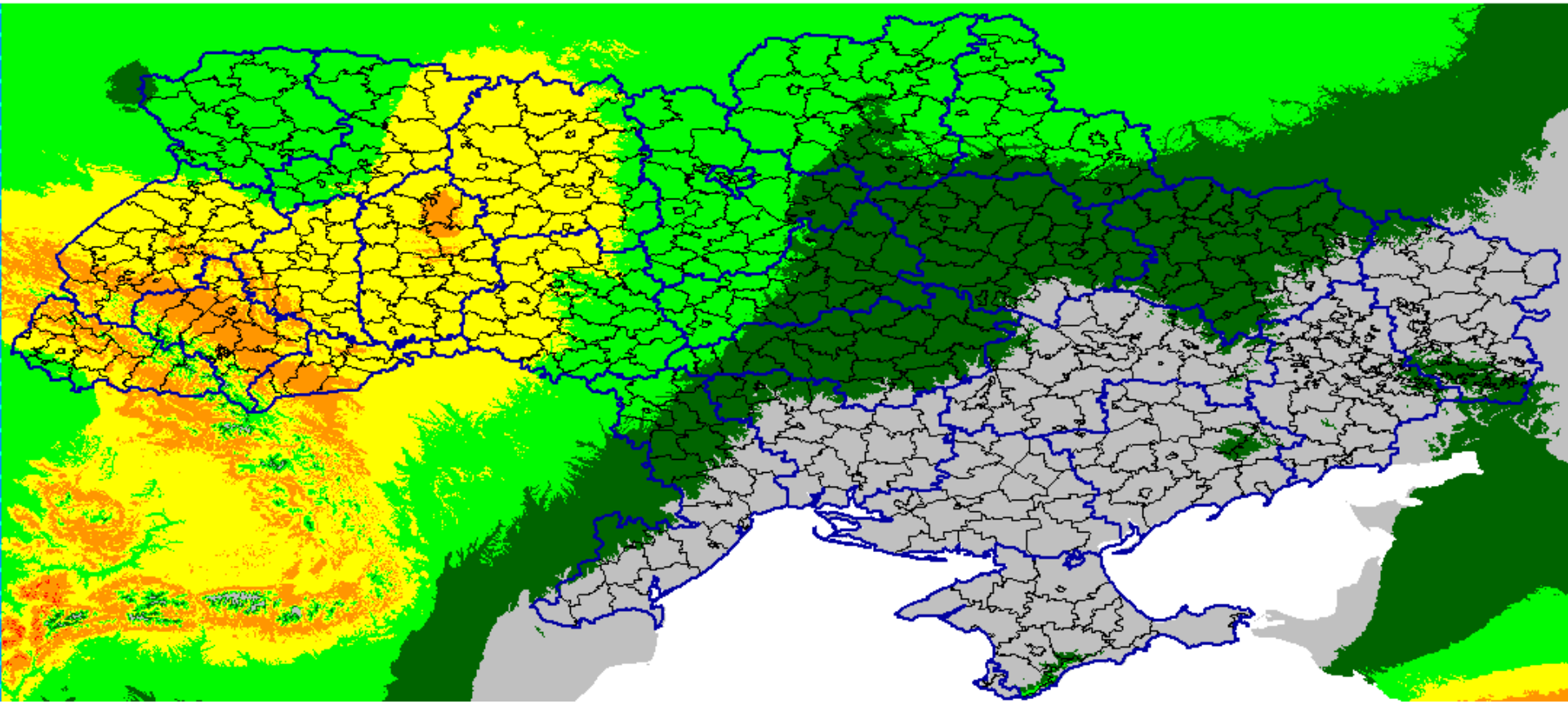
Орографическая карта (высота)
Матрица каждая ячейка = кв километр
2197 колонок * 985 строк = 2 млн164 тыс 045 ячеек

69 слоев =127 миллионов 678 тысяч 655 значений

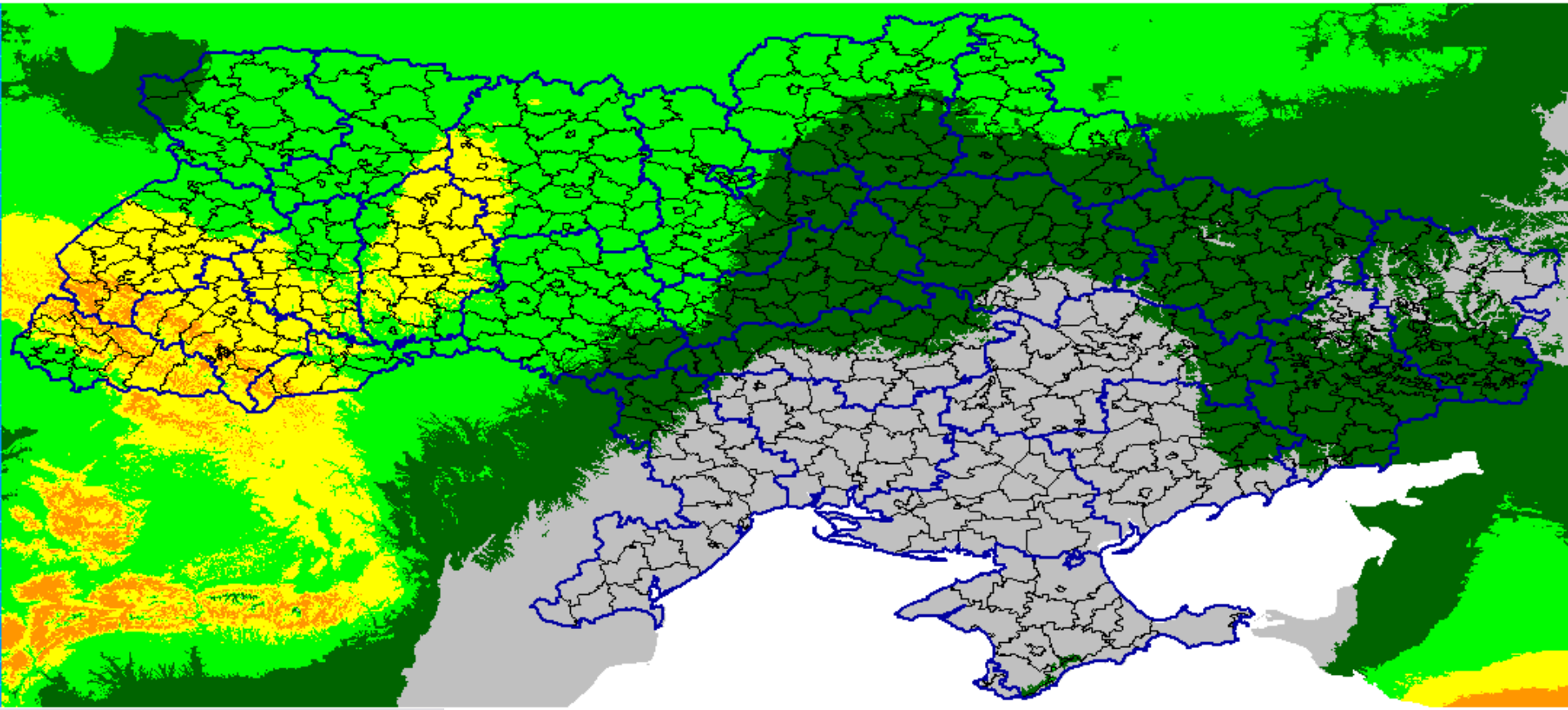
Южноамериканский цветок Solanum tuberosum L.

Вид	**Solanum tuberosum L.**

Длительность сезона вызревания		Допустимые температуры		Допустимые осадки (влажность)	
GMin	90	KTmp	-1	Rmin	250
GMax	160	Tmin	7	ROPmn	500
GUsed	125	TOPmn	15	ROPmx	800
		TOPmx	25	Rmax	2000
		Tmax	30		



Solanum tuberosum L.
2008-2010



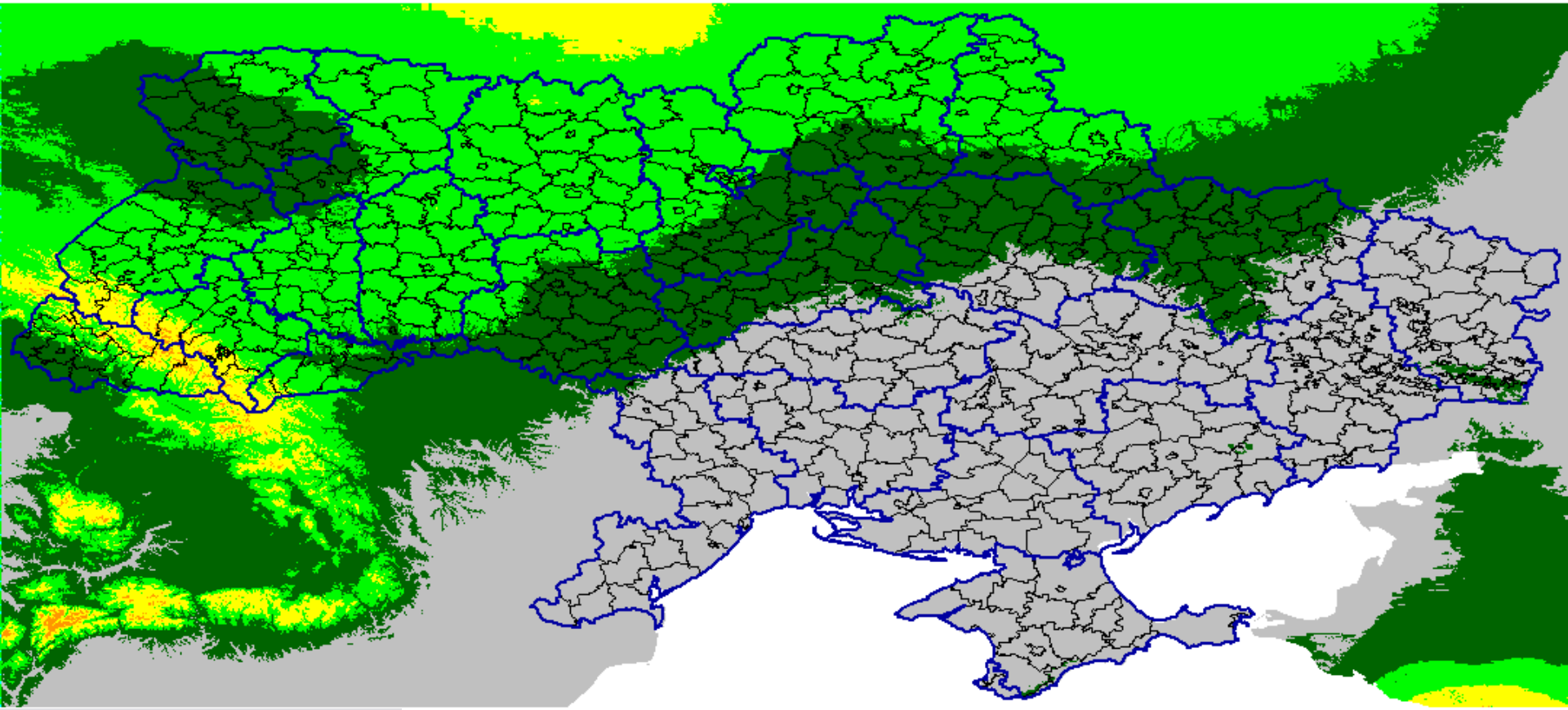
potato2020

- Not suited
- Very Marginal
- Marginal
- Suitable
- Very Suitable
- Excellent

UKR_adm1

Solanum tuberosum L.

2020



potato2080

- Not suited
- Very Marginal
- Marginal
- Suitable
- Very Suitable
- Excellent

Solanum tuberosum L.
2080

ISO Standards

GHGMI Co-Founder and International Chair, ISO Climate Change Standards Committee What are the ISO climate-related standards now? How are they being updated? The main ISO climate change standards that have been published and are now in development include:

ISO 14064-1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

ISO 14064-2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements

ISO 14064-3: Specification with guidance for the validation and verification of greenhouse gas assertions

The above three standards were published in 2006 and updated versions will be published in 2018. Among the important changes now at the Draft International Standard (DIS) stage are:

• *ISO 14064-1 will require companies to report green electricity and associated GHG emission estimates separately from the GHG inventory. As well, ISO 14064-1 moves away from the conventional use of Scope 1, 2, 3, in which users were required to report Scope 1 and 2 only. The DIS requires users to report all significant indirect emissions from the conventional Scope 2 and 3.* • *ISO 14064-3 has been expanded to apply to product carbon footprints (refer to ISO/TS 14067 below).*

***ISO 14065**: Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition ISO 14065 was published in 2013 and work has just started to update/expand it to encompass environmental assurance.*

ISO 14066: Competence requirements for greenhouse gas validation teams and verification teams (published 2011)

ISO Standards

GHGMI Co-Founder and International Chair, ISO Climate Change Standards Committee What are the ISO climate-related standards now? How are they being updated? The main ISO climate change standards that have been published and are now in development include:

ISO/TS 14067: Carbon footprint of products -- Requirements and guidelines for quantification and communication

ISO/TS 14067 was published in 2013 as a Technical Specification (TS) and is currently being updated to focus on quantification with the goal to be published as a full International Standard in 2018. www.ghginstitute.org

ISO/TR 14069: Quantification and reporting of greenhouse gas emissions for organizations -- Guidance for the application of ISO 14064-1 (published in 2013 as a Technical Report)

ISO 14080: Framework and principles for methodologies on climate actions (in development as a Draft International Standard)

ISO 14090: Framework for adaptation to climate change

ISO 14091: Climate Change Adaptation -- A guidance to Vulnerability Assessment (in development)

ISO 14092: Requirement and guidance of adaptation planning for organizations including local governments and communities (in development to become a Technical Specification)

ISO 14097: Framework and principles for assessing and reporting investments and financing activities related to climate change (in development)

Copernicus


IN SITU
CODA
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EUMETSAT
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INFRASTRUCTURE
CSCDA
ESA
SCI Hub
SECURITY
EMERGENCY
EMS
CLIMATE
C3S
ATMOSPHERE
CAMS
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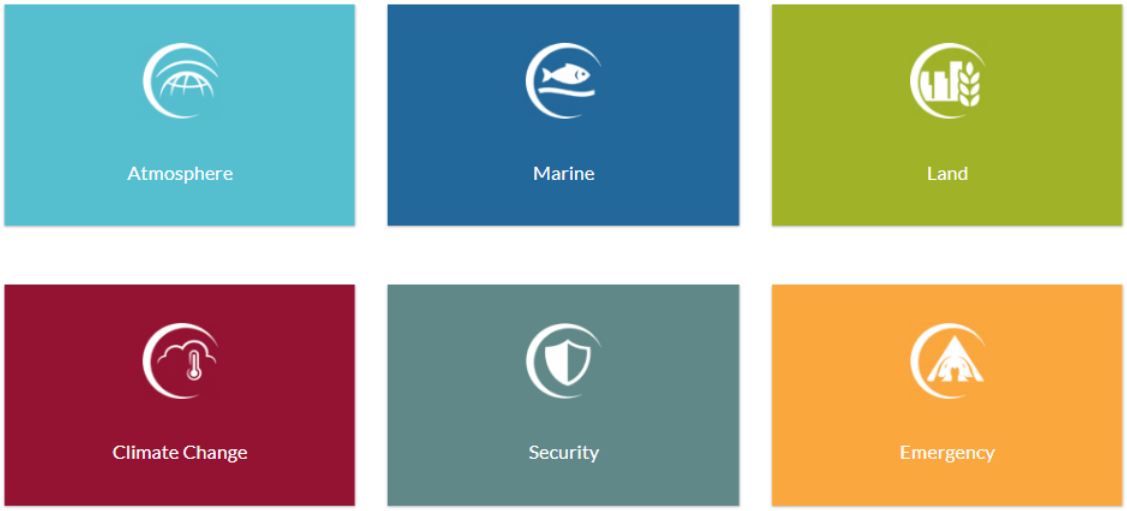
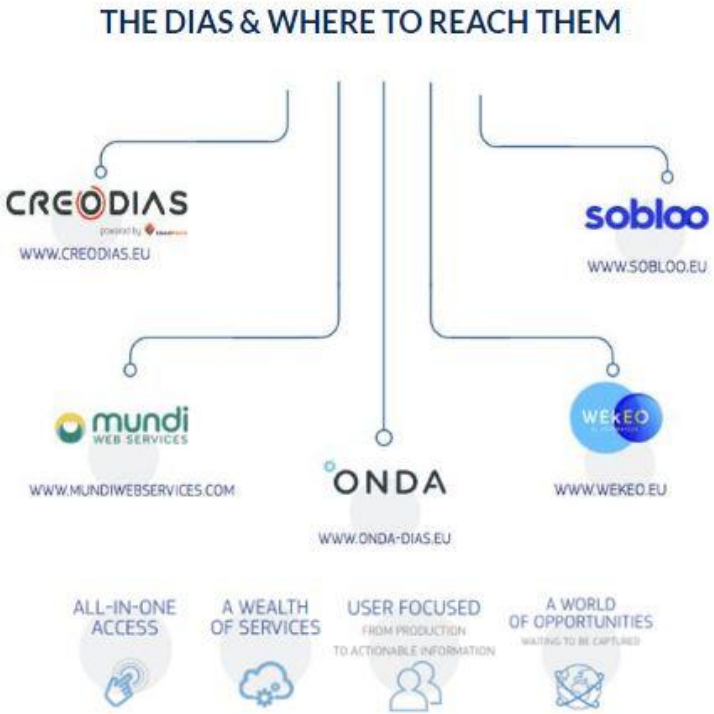
Services





access points to Copernicus satellite data

Two access points to Copernicus satellite data are managed by ESA:

Copernicus Open Access Hub

Previously known as Sentinels Scientific Data Hub, the portal provides access to Sentinel data through an interactive graphical user interface. The portal will also provide access to data produced by future Sentinel missions when available.

Copernicus Space Component Data Access (CSCDA)

The portal provides access to the Copernicus collaborative ground segment. Anyone can view and discover data, but downloading images is restricted to public authorities, European projects and Copernicus services.

Two access points to Copernicus satellite data are managed by EUMETSAT:

EUMETCast

Any environmental data, of any format, can be distributed through EUMETCast. The platform delivers more than 380 different product collections, including EUMETSAT's own satellite data, Copernicus marine and atmosphere data, and a wide range of third-party products.

Copernicus Online Data Access (CODA)

The Sentinel-3 CODA (Copernicus Online Data Access) Web Service provides free and open access to Sentinel-3 products through a 12 months rolling archive with access to Level 1 and Level 2 Marine data in different latency modes (Near Real-Time, Short Time Critical, Non Time Critical). Access is provided either through CODA user interface or through CODA APIs. Both user interface and APIs allow users to set different parameters (geographic area, time, type of product etc) to refine their search in the archive of products. In case users need data older than one year, it is possible to use the EUMETSAT Data Centre.

Experience recommendation

1. For TNA project to use existing structures (not new) and if necessary add additional Functionality
2. For mitigation part chose the sectors with bad tendentious in last decades
3. For adaptation part chose the sectors with sensibility character
4. Difference between experts and stakeholders
5. Before MCA to enable throw all experts common argo language, common definitions, abbreviations.
6. If You have two process TNA and NDC, it will be useful to have some experts works simultaneously in both projects.
7. Use spatial mapping presentation for each technology for 1 stage (recommended) and 2 and 3 stage (required)
8. Remember – adaptation is changed process !!!
9. Use ISO standards for **mitigation** and **adaptation** process !!!
10 . Use Copernicus !!! It is cheapest and right way !!!
11. Each technology must have gender attributes !!!

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Thanks for attention !